

ISSN-0976-0245 (Print) • ISSN-0976-5506 (Electronic)

Volume 11

Number 12

December 2020



Indian Journal of Public Health Research & Development

An International Journal

Website:

www.ijphrd.com

Indian Journal of Public Health Research & Development

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Print-ISSN: 0976-0245-**Electronic-ISSN:** 0976-5506, **Frequency:** Quarterly
(Four issues per volume)

Indian Journal of Public Health Research & Development is a double blind peer reviewed international journal. It deals with all aspects of Public Health including Community Medicine, Public Health, Epidemiology, Occupational Health, Environmental Hazards, Clinical Research, and Public Health Laws and covers all medical specialties concerned with research and development for the masses. The journal strongly encourages reports of research carried out within Indian continent and South East Asia.

The journal has been assigned International Standards Serial Number (ISSN) and is indexed with Index Copernicus (Poland). It is also brought to notice that the journal is being covered by many international databases. The journal is covered by EBSCO (USA), Embase, EMCare. The journal is now part of DST, CSIR, and UGC consortia.

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Editor

Dr. R.K. Sharma
Institute of Medico-legal Publications
Logix Office Tower, Unit No. 1704, Logix City Centre Mall,
Sector- 32, Noida - 201 301 (Uttar Pradesh)

Printed, published and owned by

Dr. R.K. Sharma
Institute of Medico-legal Publications
Logix Office Tower, Unit No. 1704, Logix City Centre Mall,
Sector- 32, Noida - 201 301 (Uttar Pradesh)

Published at

Institute of Medico-legal Publications
Logix Office Tower, Unit No. 1704, Logix City Centre Mall,
Sector- 32, Noida - 201 301 (Uttar Pradesh)



Indian Journal of Public Health Research & Development

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Trends of Complications of Chronic Otitis Media in Tertiary Care Facility in Western Uttar Pradesh

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Abstract

Objectives: This study aims to investigate the frequency and management of complications of chronic suppurative otitis media (CSOM).

Patients and Methods: Out of 376 patients with CSOM, 44 patients (25 males, 19 females; mean age 48.5±3.5 years; range 21 to 76 years) meeting study criteria were enrolled in this descriptive cross sectional study which was conducted at the Department of Ear Nose and Throat, Head and Neck Surgery. All newly diagnosed patients having CSOM with complications were enrolled. The complications were treated first. Intracranial abscesses were evacuated by neurosurgeons. Radical and modified radical mastoidectomy were performed.

Results: Majority of the patients presented in the second and third decade of life (21-30 years: 27.27%, 31-40 years: 18.18%). Most of the patients (59.1%) had lower socioeconomic status. Canal wall down mastoidectomy was the most common (79.5%) procedure performed. Cholesteatoma was the most common operative finding (100%). Among extracranial complications, subperiosteal abscess was the most common finding (38.63%), while extradural abscess outnumbered (22.72%) in intracranial complications.

Conclusion: Complications of CSOM commonly affect younger people with low socioeconomic status. Collaborating with neurosurgeons may assist in the successful management of this infection.

Keywords: Extracranial complications; intracranial complications; suppurative otitis media.

Introduction

Chronic suppurative otitis media (CSOM) is a chronic inflammation (>3 month duration) of the mucoperiosteal lining of the middle ear cleft. The prevalence of CSOM depends on age, poor socioeconomic condition, poor housing, overcrowding and lack of access to medical care.^[1] Chronic suppurative otitis media is classified into two main categories, tubotympanic and atticointral disease. The former is considered 'safe' from the point of view of complications while the latter has been considered a 'dangerous' form of disease in view of the risks of otogenic

complications.^[2] Central perforations in the pars tensa of varying size and position are seen in this disease. In this condition the risk of developing complications such as brain abscess are very rare but some minor complications may develop like otitis externa, granulation tissue and mucosal polyp.^[3] Atticointral disease most commonly involves the epitympanum. The typical feature of atticointral disease is the presence of cholesteatoma. The relevant pathophysiology of cholesteatoma is negative middle ear pressure, invasion of squamous epithelium and squamous metaplasia of middle ear mucosa. Marginal and attic perforations are commonly found in this disease which expose the anatomical structures of the attic, antrum and mastoid air cells system.^[2,4] In atticointral disease various extracranial complications like mastoiditis, subperiosteal abscess, facial nerve paralysis, labyrinthitis and petrositis with

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bone destruction may occur. The various intracranial complications are extradural abscess, subdural abscess, meningitis, encephalitis, brain abscess, lateral sinus thrombosis and otitic hydrocephalus.^[3,5] The most common bacterial pathogens of otitis media are *Streptococcus pneumoniae*, *Hemophilus influenza* and *Moraxella catarrhalis*. Other pathogens responsible for otitis media are *Staphylococcus aureus*, *Escherichia coli*, *Klebsiella species*, *Pseudomonas aeruginosa* and *Proteus species*. However mixed type (aerobic and anaerobic) pathogens are commonly isolated from chronic suppurative otitis media^[5]

Material and Methods

This descriptive cross sectional study was conducted at the department of Ear, Nose, Throat,

Head (ENT) and Neck Surgery, Saraswathi institute of medical sciences between January 2017 and December 2019 (3 years). Out of 376 patients with CSOM who visited our department during the study, only 44 patients (25 males and 19 females; mean age 48.5±3.5 years; range 21 to 76 years) were enrolled in the study after fulfilling inclusion criteria. All newly-diagnosed patients with chronic suppurative otitis media and complications of any age, race and gender were included in this study. Patients having complications due to acute otitis media and those where no surgical intervention was carried out were excluded from the study. Patients diagnosed with CSOM with complications were admitted into the ENT department. An intravenous (i.v.) line was maintained and all the patients were given intravenous antibiotics while critically ill patients were subjected to a quadruple antibiotic regimen consisting of benzyl penicillin (200,000 to 500,000 units i.v. 6-hourly), chloramphenicol (50 mg/kg body weight 8-hourly), metronidazole (7.5 mg/kg body weight i.v. 8-hourly), and gentamycin (1.5 mg/kg body weight i.v. 12-hourly). This medical treatment was given to patients for at least 2-3 weeks depending upon the severity of the disease. After the complications of CSOM were properly treated, the disease of the ear was then dealt with surgically. Radical and modified radical mastoidectomy was carried out depending upon the extent and severity of the disease. A detailed history regarding ear discharge, onset, duration, frequency and associated illness was taken from patients or parents. Thorough examination

of ears, nose and throat specifically focusing on ears and otogenic complications was performed. Besides routine investigations, pure tone audiometry (if possible), computed tomography scan, and magnetic resonance imaging (in cases where CT scan was not informative) were obtained to determine the site and extent of the complication and its management. In cases of otogenic abscess urgent evacuation was arranged. Intracranial abscesses were drained by neurosurgical colleagues while extracranial abscess was treated by ENT surgeons. Intracranial abscess were urgently treated by neurosurgeon with procedures like bur-hole aspiration, craniotomy and transmastoid excision depending upon the location of the abscess. In case of intracranial complications, primary disease in the ear was treated 3-4 weeks after overcoming the complications. The complications were treated conservatively/surgically before embarking on the treatment of the primary focus in the ears. Informed consent was obtained from patients/ parents after explaining the procedure, its risks, benefits and associated complications. The study was approved by the hospital ethical committee. All patients were followed up to one year to look for any recurrence of complications. The data was collected on a preformed pro forma and statistical analysis was performed using SPSS version 17.0 (SPSS Inc., Chicago, IL, USA) software program. Frequency and percentage were calculated for qualitative data and mean and standard deviation were calculated for quantitative data.

Results

Majority of the patients presented in the second and third decade of life (21-30 years, 27.27%, 31-40 years, 18.18%). Among these patients 26 (59.1%) had lower socioeconomic status while 11 (25%) and seven (15.9%) were from middle and high socioeconomic classes respectively. Most of these patients were received in summer and autumn seasons of the year. Mild to moderate hearing loss was observed in 36 patients (77.27%), while severe to profound hearing loss was recorded in eight patients (18.18%). The main presentation of these patients was discharging ears in all cases (100%) and the most common otoscopic finding was atticointral perforation in the drum (93.18%). Canal wall down mastoidectomy was carried out in 35 patients (79.5%), modified radical mastoidectomy in seven (15.9%) and tympanoplasty in two (4.5%). Intracranial

abscesses were primarily evacuated by neurosurgeons via bur-hole aspiration (45.4%) and craniotomy (25%). Operative findings in this study were cholesteatoma (100%), granulation tissues in 37 (84.1%), and ossicular erosion in 21 (47.7%). Extracranial complications were observed in 31 patients (70.45%). Among these subperiosteal abscess was the most common finding (38.63%), followed by facial nerve palsy (13.63%). Intracranial complications were present in 34 patients (77.27%). Among these, extradural abscess was prominent (22.72%). Meningitis and subdural abscess were recorded in 18.18% and 11.36% respectively. Two patients died due to complications, hence the mortality was 4.5%.

Discussion

Complication rates related to CSOM have been dramatically reduced since the emergence of the antibiotic era. The rapid increase in welfare and the development of health care systems in industrialized countries have made it possible to offer proper medical treatment to patients^{8,9} However, these infections remain major challenges with respect to the diagnosis and management of CSOM in developing countries. Chronic suppurative otitis media may result in complications among individuals irrespective of gender.^[10] In this study males were affected more than females with male: female ratio of 1.3:1 in accordance with the study of Baig with male predominance (56.72%), but differs from the results of Memon where females were dominant with a female-male ratio of 1.2:1.^[11,12] The explanation for male predominance in our set up could be that females have less access to health care facilities due to social taboo. We studied patients with otogenic complications having age ranges from 21-76 years with mean age of 48.5±3.5 years, which is not in agreement with the report of Yagizy where patients ages ranged from 9-74 years with mean age of 31.3 years.^[13] In this study the majority of patients (45.45%) presented in the second and third decade of life which is comparable to the study of Vikram who found the majority of patients were younger with male predominance.^[14] The complications of CSOM have a predilection for younger-aged people probably due to their immature immune system and these people are more negligent about self care. In this study 26 patients (59.1%) had lower socio-economic status which simulates the finding of

Islam where complications of CSOM were common in rural populations with low socio-economic status, poor nutrition and bathe in river or pond water.^[15] Similarly Vikram also experienced that rural and illiterate patients had a higher risk of developing complications.^[14] In the current study there was mild to moderate

hearing loss in 36 patients (77.27%), while severe to profound hearing loss was recorded in eight patients (18.18%), in accordance with the study of Magsi who observed that six patients (10%) had a severe degree of hearing impairment, while 45 patients (75%) and nine patients (15%) had moderate and mild degrees of hearing impairment respectively.^[16] The presentations of these patients were discharging ears in all cases (100%) and the commonest otoscopic finding was atticofacial perforation in the drum (93.18%). Similarly Matanda et al.^[17] found that otorrhea and hearing loss were the major presenting symptoms. However clinical features of this study are at variance with Ceylan's study having otorrhea 44.3%, headache 20.6% and postauricular swelling 10.3%.^[18] The complications of CSOM can be managed by treating the complication first followed by treating the primary source of infection surgically. In the current study a postaural approach was adopted in all patients (100%) and mainly canal wall down mastoidectomy (79.5%) was carried out while in seven patients (15.9%) modified radical mastoidectomy and in two patients (4.5%) tympanoplasty was performed, simulating the results of Magsi who performed canal wall down mastoidectomy in 45 (75%) cases.^[16] Likewise Khan carried out canal wall down mastoidectomy in 23 patients (65.71%), modified radical mastoidectomy in seven patients (20%) and atticotomy in three patients (8.57%).^[19] Our results regarding surgical procedures for CSOM differ from those of Sangupta who performed canal wall down mastoidectomy in 25 patients (62.5%), atticotomy in five cases (12.5%) and tympanoplasty in seven cases (17.5%).^[20] The explanation may be that Sangupta studied cases with limited disease. Otogenic intracranial abscess was primarily treated by neurosurgeons with procedures like bur-hole aspiration (45.4%) and craniotomy (25%). Similarly Sarmast conducted a study on 47 patients with intracranial abscess and 29 patients (61.7%) were treated with bur-hole aspiration, wherein seven patients needed second aspiration while 18 patients (38.3%) were treated with craniotomy. The treatment procedures for intracranial abscess in this study were also similar to

those of Tan, who performed craniotomy in 28 patients (54.9%) and bur-hole aspiration in 23 patients (45.1%) for intracranial abscess.^[21] The neurosurgical techniques adopted in this study differ from Gadgil who treated a total of 33 patients with intracranial abscess-- 22 patients (67%) with craniotomy, nine patients (27%) with open aspiration and two (6%) with bur-hole aspiration, and six patients (18%) with repeat surgical procedures for abscess recurrence.^[22] Operative findings in this study were cholesteatoma in 44 patients (100%), granulation tissue in 37 patients (84.1%), ossicular damage in 21 patients (47.7%) and dehiscent facial nerve in seven patients (15.9%). Similarly operative findings of this study are also consistent with results of Magsi.^[16] The operative findings of this study are also consistent with results of Islam who found cholesteatoma in 76% and granulation tissue in 23% cases.^[15] However our operative findings were not in accordance with Memon's where cholesteatoma was found in 45 patients (11.5%), ossicular damage in 45 patients (11.5%), and exposed facial nerve in six patients (1.53%).^[12] Chronic suppurative otitis media can give rise to intracranial and extracranial complications depending upon the severity of infection. We observed that the most common extracranial complication was subperiosteal abscesses (38.63%) while the most common intracranial complication was extradural abscess (22.72%). Our findings are in agreement with Dubey's study that revealed commonly encountered intracranial complications were otitic meningitis, lateral sinus thrombosis, and cerebellar abscess, which were seen in 13 (19%), 10 (14%), and six (9%) cases, respectively.^[23] The extracranial complications were mastoid abscess, postauricular fistula, and facial palsy 37%, 24% and 14% respectively.

Likewise Yagizy reported that meningitis was the most common (n=15, 35.7%) intracranial

complication of CSOM followed by brain abscess (n=14, 33.3%) and lateral sinus thrombosis

(n=10, 23.8%).^[13] Our results vary from findings of Ceylan who noted that labyrinthitis was the most common extracranial complication (44.3%) followed by facial palsy (35%), mastoid abscess (11.3%), postauricular fistula (7.3%), and Bezold's abscess (2.1%).^[18] The complications of CSOM in this study also differ from

those of Adoga where complications of CSOM were mastoid abscess (6.8%), subperiosteal abscess (1.4%), meningitis (1.4%) and facial nerve paralysis (1.4%).^[24] However we cannot establish the explanation for this difference. Our overall mortality of 4.5% is higher than Mostafa's and Yagizy's mortality of 1.42% and 2.4% respectively.^[13,25]

Conclusion

Complications of CSOM commonly affect the younger age group with low socioeconomic status. Both intracranial and extracranial complications are frequently encountered in our setting. Complications can be prevented if CSOM is treated in time with appropriate medications or meticulous surgery. These complications can be managed successfully with the collaboration of a neurosurgeon if diagnosed promptly and appropriately.

Declaration of Ethical Clearance- Taken from ethical committee of institute

Source of Funding- Self

Conflict of Interest – Nil

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Middle Ear Risk Index [MERI] as Prognostic Factor in Tympanomastoidectomy with Tympanoplasty

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Abstract

Aims: To evaluate a group of patients undergoing surgery for chronic otitis media with reference to the prognostic value of middle ear risk index and other factors in predicting the anatomical and functional outcome of tympanomastoidectomy with tympanoplasty.

Subjects: The study comprised of 90 patients suffering from chronic otitis media with or without cholesteatoma. Patients attending the Otorhinolaryngology out patients department were considered for this study.

Methods: The patients underwent tympanomastoidectomy with tympanoplasty in which mastoidectomy performed was of either canal wall up or canal wall down technique. In cholesteatoma surgery, whenever possible a canal wall up procedure was performed. Myringoplasty was done using autologous temporalis fascia graft by underlay technique. Middle ear risk index [MERI] and other factors were evaluated for their outcome predictive role in patients undergoing tympanomastoidectomy with tympanoplasty.

Results: Outcomes were evaluated in terms of tympanic membrane graft uptake and post operative mean audiological gain. The Middle ear risk index was also found to be significant predictor of the outcome of surgery. The patients with mild MERI scores had significantly better prognosis than the patients with severe MERI scores.

Conclusion: The Anatomical and Functional outcome of tympanomastoidectomy with tympanoplasty is diversely affected by the pathological and technical factors associated with disease and its management. A better understanding of these factors is helpful for better prognostication of the factors affecting the disease and in planning the surgical procedure.

Keywords: Middle ear risk index; Tympanomastoidectomy; Tympanoplasty; Chronic otitis media; Prognostic factors; Canal wall up; Canal wall down

Introduction

The primary objective of surgery for chronic otitis media (COM) is to eradicate the disease and to make the ear safe and dry. The incidence of the ears becoming dry

after surgery and the ears not having recurrent or residual cholesteatoma ranges between 70 to 90 percent in various large clinical trials^[1]. A second objective of surgery for COM is to restore hearing to serviceable levels by means of tympanoplasty. There has been a difference in opinion about the staging of the surgical procedure for COM. Some studies supported the single stage surgery for both elimination of disease and tympanoplasty^[2,3]. Whereas others advocate two stage procedure for achieving the different objectives^[4,5]. Tympanomastoidectomy is the procedure for removal of disease from middle ear cleft done either as open or closed cavity procedure, and

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tympanoplasty is the procedure for reconstruction of the middle ear. The suggested risk categories can be derived from MERI as follows:

MERI 0 = Normal; MERI 1-3 = Mild disease; MERI 4-6 = Moderate disease; MERI 7-12 = Severe disease [9].

Material and Methods

This study has been carried out in the Department of Otorhinolaryngology, Saraswathi institute of medical sciences, Hapur, U.P., India from January 2016 to November 2019. The study comprised of 90 patients suffering from chronic otitis media with or without cholesteatoma. The age of patients ranged from 7 to 46 years and male to female sex ratio of 1.3:1. The patients were subjected to detailed history, general as well as systemic examination, which includes clinical examination of the ear, nose, paranasal sinuses, larynx and pharynx. The complete otological evaluation has been done to assess the exact nature and extent of disease, presence or absence of tympanosclerosis, cholesteatoma, granulation tissue, mucosal polyp and ossicular chain status. In cholesteatoma surgery, whenever possible a canal wall up procedure was performed. Canal wall down technique was done in cases having extensive disease, erosion of the external auditory meatus, or revision surgery for extensive recurrent disease. CWU procedure was done in 67 patients and CWD procedure was done in 23 patients. In our study of 90 patients, 68 patients were having tympanic membrane perforation and 22 patients were having retraction pockets. Out of 68 patients, 8 patients were having anterior perforation, 24 patients were having central perforation, 19 patients were having posterior perforation and 17 patients had marginal or attic perforation. The number of smokers in our study was 18 patients out of 90 patients. The age of the patients in our study ranged from 7 years to 46 years.

Results

The present study has been carried out from January 2016 to November 2019. The study comprised of 90 patients suffering from COM with or without cholesteatoma, of the age ranging between 7-46 years and of both the sexes.

In our study, out of 90 patients, 68 patients had tympanic membrane perforation and 22 retraction pocket. Out of 68 patients, 21 had small size, 35 medium

size and 12 patients had large size perforations. Middle ear pathological conditions such as tympanosclerosis, cholesteatoma, granulation tissue and mucosal polyps were also evaluated as prognostic factors.

The results in tympanomastoidectomy with tympanoplasty depend on variety of factors related to both the pathologic condition and the surgical technique. In our study the purpose was to evaluate whether these variables involved in the surgery for COM can predict the anatomical and functional outcome postoperatively. Surgical technique was not taken into account in our study, because the technique used was same throughout the period of study.

Tympanic Membrane Graft Uptake

Tympanic membrane graft uptake in tympanomastoidectomy with tympanoplasty was evaluated at 3 months post operatively. On otoscopic examination successful uptake of graft was taken only in those patients in whom no remnant of perforation was present in any of the quadrant of tympanic membrane.

Audiological Gain

Pure tone audiometry following tympanomastoid surgery was done at 3 and 6 months and audiological improvement (taken as closure of air bone conduction gap) was measured in all patients undergoing the surgery for chronic otitis media. AB gap (air – bone conduction gap) per case was calculated as mean of AB gap at four frequencies (500Hz, 1000Hz, 2000Hz & 4000 Hz) pre operatively and post operatively. Audiological gain was calculated for each patient by subtracting the post op AB gap from the pre op AB gap. The mean was calculated for each variable by dividing the sum of audiological gain in that group by the total number of cases in the same group.

Pure Tone Audiometry Result at 3 months:

In our study of 90 patients, pure tone audiometry was done 3 months postoperatively and audiological gain was evaluated. The tympanic membrane perforation size did not significantly affected the anatomical outcome i.e. graft uptake as well as functional outcome i.e. mean audiological gain at 3 and 6 months postoperatively. The technical factors, mastoidectomy technique (CWU or CWD) and attempt (primary or revision) of the

mastoidectomy, both significantly affected the graft uptake and mean audiological gain.

Discussion

The principle of management of chronic otitis media is removal of diseased mucosa from the middle ear cleft and an attempt at restoration of hearing. The present study was conducted to assess the prognostic value of the various pathological and the technical factors associated with the COM on the outcome of the surgery. The staging of the surgical procedure according the pathological condition of the middle ear will improve the outcome of the surgery and the compliance of the patients. Middle ear risk index [MERI] is a numerical grading system to stratify the severity of the disease in the patients suffering from the COM. MERI can be used to decide the staging of the surgical procedure according to the severity of the disease.

MERI score was calculated for each patient. Mild, moderate and severe MERI groups were compared for outcome of surgery. MERI was found to be a predictor of outcome in the ear surgeries. The factors analyzed in the present study include perforation size, presence of tympanosclerosis, cholesteatoma, granulation tissue, mucosal polyp, ossicular necrosis, Eustachian tube patency, mastoidectomy technique and primary or revision surgery in COM patients.

Tympanic Membrane Graft Uptake

Tympanic membrane perforation size was evaluated as determinant of graft uptake. Although lower success rates were observed for patients with larger tympanic membrane perforations, statistical analysis demonstrated no significant difference in surgical success rates between the various perforation size categories ($p=0.35$). Our premise is on the basis that underlay technique of tympanoplasty with adequate graft size covers the membrane defect whether large or small. This result is similar to those of Wasson JD, et al.^[10], Pignataro L, et al.^[11], Yung MW, et al.^[13], Baloch MA, et al.^[14] and Vartiainen E, et al.^[15] who have not given any plausible explanation for the conclusion. In our study cholesteatoma was present in 37 patients. The success of graft uptake following tympanomastoidectomy with tympanoplasty was 56.7% in patients with cholesteatoma and 84.9% in patients without cholesteatoma, the difference was

statistically significant ($p=0.003$). Thus, on the basis of this study, cholesteatoma is predictive of result of tympanomastoidectomy with tympanoplasty.

Ossicular necrosis also plays an important role in graft uptake in tympanomastoid reparative surgery. In our study, 51 patients had incus necrosis. The difference in graft uptake between group of patients with necrosed and intact incus was statistically significant ($p=0.009$). In our study 36 patients had malleus necrosis. The difference in graft uptake between group of patients with necrosed and intact malleus was statistically significant ($p=0.002$). In our study 18 patients had stapes necrosis. The difference in graft uptake between group of patients with necrosed and intact stapes was statistically significant ($p=0.012$).

In our study of 90 patients, 78 patients underwent tympanomastoid surgery for the first time, whereas 12 patients underwent revision surgery. The success of graft uptake following primary surgery was 78.2% and in revision surgery it was 41.6%, the difference was statistically significant ($p=0.008$). The result was not in concurrence with the study of Lesinskas E, et al.^[16], who reported no statistically significant difference in graft uptake in primary and revision tympanoplasty.

In our study the cholesteatoma, granulation tissue, ossicular necrosis and revision surgery affected the graft uptake, this was due to deep seated destructive process with persistent inflammation in these patients. Our result for graft uptake was poor in the group of the patients having granulating otitis media as given by Albu S, et al.^[7] for the audiological gain than in the group of patients with simple otitis media. In our study tympanosclerotic plaque was present in 18 patients. The success of graft uptake following tympanomastoidectomy with tympanoplasty was 61.1% in patients with tympanosclerotic plaque and 76.3% in patients without tympanosclerotic plaque. There was no significant difference in graft uptake in both groups ($p=0.190$). Thus, on the basis of this study, tympanosclerotic plaque was not predictive or determinant of successful tympanomastoidectomy with tympanoplasty. Since the tympanosclerotic plaque was removed during tympanoplasty so graft uptake was not affected as the size of perforation was not an influencing factor. This result was in concurrence with that of Wieling EW, et al.^[17] and Prasad PL, et al.^[18].

In our study mucosal polyp was present in 13 patients. The success of graft uptake following tympanomastoidectomy with tympanoplasty was 46.2% in patients with mucosal polyp and 77.9% in patients without mucosal polyp, the difference was statistically significant ($p=0.017$). This may be because of deep seated destructive process with persistent inflammation as in cholesteatoma and granulation tissue patients.

In our study of 90 patients, Eustachian tube was patent in 48 patients and blocked in 42 patients. The success of graft uptake following tympanomastoidectomy with tympanoplasty was 87.5% in patients with patent and 57.1% in patients with blocked Eustachian tube, the difference was statistically significant ($p=0.006$). This suggested that a better ventilated tympanum with patent Eustachian tube was a favourable factor for graft uptake. Our result was in accordance with that of Holmquist [12], Miller and bilodeau [19], Kumazawa, et al. [20] and Tos M [21].

Middle Ear Risk Index

Statistically significant prognostic difference was found among the patients with mild, moderate and severe MERI on the mean audiological gain at 3 months after surgery. On applying the one way ANOVA the p-value was ($P=0.01$). This observation was in concurrence with the finding of Gulati A, et al. [26] and not in concurrence with findings of Khalid A, et al. [27]. Further post hoc Tukey's Honest Significant Difference test was applied to find the difference between mild, moderate and severe MERI groups. It was found that there was statistically significant difference between mild and severe MERI patients with p-value of ($P=0.01$). Thus a severe MERI as compared to mild MERI can be effectively used a bad prognostic indicator.

In our study the p-value for mean audiological gain in the group of the patients with mild, moderate and severe MERI at 6 months after surgery on applying the one way ANOVA was ($P=0.02$), the difference being statistically significant. This observation was in concurrence with the finding of Gulati A, et al. [26] and not in concurrence with findings of Khalid A, et al. [27]. Post hoc Tukey's Honest Significant Difference test was applied to find the difference between mild, moderate and severe MERI groups. Statistically significant difference was found between mild and severe MERI patients with

p-value of ($P=0.04$).

Conclusion

The management of chronic otitis media is a surgical endeavour with the primary aim of eradication of disease and making the ear dry and safe and second objective is to restore hearing to serviceable levels by means of tympanoplasty. A better knowledge of the predictive roles of various factors may be useful in the surgeon's judgment of the operative procedure. The second outcome, audiological gain is not significantly affected by the size of tympanic membrane perforation, whereas it is significantly affected by the presence or absence of tympanosclerotic plaque, cholesteatoma, granulation tissue, mucosal polyp, ossicular necrosis, patency of Eustachian tube, mastoidectomy technique (canal wall up or canal wall down) and attempt of surgery (primary or revision). The middle ear risk index of a COM patient is also helpful in predicting the outcome of surgery, MERI calculated for each patient pre-operatively can help us to predict the outcome of surgery for COM. Thus the surgical procedures can be optimised to give the maximum benefit to the patients and also the financial burden of the surgery can be reduced improving the patient compliance in the developing countries.

Ethical Clearance- Taken from ethical committee of institute

Source of Funding- Self

Conflict of Interest – Nil

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“Break The Chain” to Embrace New Possibilities in Dental Education

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Abstract

COVID-19 is enforcing all professions to make decisions to alter their routine traditional method of patientcare converted into telemedicine treatment to all patient except emergency cases. Even, dental teaching to students also updated with online teaching as well as exams are being converted into typodonts based assessment and the Dental Licensure Objective Structured Clinical Exam (DL-OSCE). It is high time for all of us to upgrade in electronic mode education through apps. One silver lining from the current pandemic situation thought us, we can move toward a more modern and ethical approach to dental licensure.

Keywords: Dental Education, COVID -19, problems and solutions, E- learning, Dental Licensure

Introduction

Dental institutions all over the world are reeling from the consequences of the novel SARS-Co V2 corona virus. As a dentist, we always treat the patients with precautions to prevent infection spread through aerosol transmission, but we are now grappling with the unknown facts regarding COVID-19. Ways to educate students and treat patients during the pandemic of this era has to be ruled out. Hence, this paper will be dealing with the difficulties faced by students, faculties of the education institutions and patients, during the current pandemic. There are few solutions and infection control remedies to tackle the situation to persuade dental education and practice/emergency treatment. We will also discuss on boons and banes of both e-learning and patient treatment. ¹

Students Dilemma

The lockdown enforced sudden shutdown of all colleges and therefore, students had to move to their hometown despite the interstate and inter-district travel restrictions. The situation made increased anxiety among students and their parents to a greater extent. Many students could not carry all their text books and reading material to their native place. There was a lot of miscommunication issues between college authority and students was arose great extent at that time concern.

Post-graduates had to stop many ongoing research writing or studies or work. Ongoing exams came to temporary halt and postponed time table was not made. Some of them especially who completed their course could not move out of institution since paper works got pending. Some of post graduate students cannot participate front line health defence nor can they persuade their further studies like PhD.

In few colleges, house surgeons were asked to complete their paper works and leave although their postings were not end. This will reduce the quality of the work and knowledge of that particular batch because internship students get to practice with true sense of learning. But few students made them to complete their quota in urgency during pandemic disease. Therefore,

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there was a loss of experience and knowledge sharing or learning during internship.

Among undergraduate students, the remain topics were incomplete and it was a greater issue for all the students to adapt to the new way of teaching through online. There were incomplete clinical/practical postings which created chaos among students. Final year students did not learn completely how to handle patients and treat the patients in few departments. But now, it was a greater challenge to students how to handle patients after such a long break or during normal working time. Lack of clarity in case of final years examination time table which is increasing the stress among students.²

Way to solve students' issues by various solution:

· First and foremost, the communication between college authorities and students should be increase. More discussions is required between teachers and students through group calls or chats which will help to know the problems faced by students and solution for it

· There should be continuous student counselling sessions can be given for those students who need help.

· The study materials or the preferred textbooks can be made available in PDF format in the online website of the colleges, so that those students who do not have their texts can easily learn using them.

· Postgraduates or interns who have completed their paperwork through online and given their e-certificates, which can be downloaded and printed by the students themselves so that if not in college they can try to work or persuade their studies being in their hometown.

· Interns who would like to complete their postings shall be given in a crash period in those departments where they want to work with all precaution of infection control measures after the reopening of institutions.

· Conduct of theory exams through online using apps like WebEx, Google meet, zoom etc. to monitor the students while writing down their answers in an A4 sheet. Later, student should scan the answers sheet and submit for correction.

· The Clinical practical exams for final year students are kept pending and viva can be conducted using

the above-mentioned apps. The non-clinical practical exams can be conduct through these applications by giving a case scenario/ Images of slide or object to the student, who can then write a case history or identify with drawing and later scan it to submit for evaluation.

· Students who needs to improve their marks can always apply for a re-examination once colleges reopen.

Faculties/ Dentists Dilemma:

First and foremost, teaching and non-teaching faculties of the institution and local practitioners are more prone to infection from direct contact with COVID-19 patients. The teaching providers subsequently break off from their daily face-to-face teaching, hands-on laboratory training, and clinical training under supervision. Online teaching platform for teaching faculties was made struggle to learn new mode of teaching and also confused to how well the students are understanding or learning through online teaching platforms. Since many ages, all teaching methodologies were requiring direct interaction with the students but this pandemic situation was made no longer valid.²

The number of patients has reduced immensely in both colleges and in their private clinics. All patients should be treated with infection control safety measures. Children may be too un-cooperative or anxious to accept dental treatment due to doctors wearing a PPE kit. This has caused financial issues and high cost of maintenance in both colleges and clinics. Treating Covid-high risk patients [old people, children etc.] and then getting back home, is a concern as there are high chance of spread of infection to the rest of family members.^{2,3}

Patients Dilemma:

Most of the dental institution and clinics are only dealing with emergency cases during this situation and the patients who need treatment doesn't know how to categories their issues into emergency or normal. On the other hand, patients who have serious dental problems are afraid to get treatment from any clinics/ hospitals on threat of COVID-19, these make still worsen the issues and gets more complicated. Few patients who need monthly check-up are facing difficulty to visit the hospitals due to various restrictions on roads and their areas. Children are scared to get treatment by doctors

due to wearing of personal protective equipment (PPE kit).³ Community camps for dental treatment have no options to organized during this period. Economically backward communities might not be able to pay for dental treatment and is left with no option for treatment.⁴

Much of the information and communication are available through social media which make people to undergo stress and other psychological problems. But older individuals may not have access to a smart phone or computer/iPad and they are most vulnerable to the situation which needs extra care.³

Way to solve patient and faculty/ dentists’ issues by various solution:

We should be thought about patient safety as well as practitioners/clinician before handling of patient for any treatment.¹

- Staffs should be given training about online teaching through online applications and utilize more safety measures to treat patients and to educate students as well patients.

- Faculty should conduct regular online meetings to reprioritize goals, reorganize course materials, and obtain training on remote teaching.

- Special considerations should be given for female faculty/staffs with young children at home due to higher risk for COVID-19

- To reduce the risk of spread of COVID-19, online pre-booking for consultation should be made compulsory with a minimal number of appointments. So, it reduces the exposure to viral load for the clinician.

- Appointment for patient should be given exact time for their treatment which reduces the flow of patient and their contact with other patients in hospitals.

- Domiciliary care shall be given for cases that require less attention and consultation through telecommunication can also help.

- Less invasive techniques like use of excavators to remove caries, hand scaling, etc. can be used which produces aerosol production.

- Patients who call up for nonemergency treatment should be educated and can prescribe telemedicine through telecommunication.

The following sign and symptoms of cases are broadly classified as dental emergency/ urgent care/ routine care:¹

Dental emergency	Urgent care	Routine/ Non routine care
<ul style="list-style-type: none"> · Uncontrolled bleeding · Cellulitis or diffuse soft tissue bacterial infection with extraoral or intraoral swelling · Trauma involving facial bone 	<ul style="list-style-type: none"> · Severe dental pain from pulpal inflammation · Pericoronitis · Surgical postoperative osteitis or dry socket · Abscess · Tooth fracture · Dental trauma with avulsion/ luxation · Restoration lost or extensive caries denture adjustment or orthodontic wire adjustment 	<ul style="list-style-type: none"> · Initial or periodic oral examination · Routine dental cleaning and preventive therapies · Orthodontic procedure · Extraction with asymptomatic teeth · Restorative dentistry · Aesthetic dental procedure

“E-LEARNING” AN INNEVITABLE FUTURE

Internet is a powerful resource for reaching millions of people in different geographical regions of the world and serves as an engine to continue education, research,

and treatment.²

In an era of mandatory continuing professional development, the possibility of using new technologies has to be considered and evaluated carefully. Such new

technologies offer the potential for enhancing learning and delivering education in a more convenient and cost-effective manner. Although dentistry is a very handy profession the current pandemic has shown us that we need to improve on technologies for continuation of our education and treatment.³

Potential of Adding An “E” to Learning Process

Improvement in hand-eye coordination, fine motor skills, and reflective skills for the students, is particularly proven in the very early stages of skill acquisition and leads to a conservative preparation approach and better retention of skills. It can therefore be suggested that VR (virtual reality) simulation technology is a valuable resource to traditional dental training methods to be considered during the COVID-19 pandemic to enable distance learning. Web-based learning platforms like zoom, WebEx, google meet etc. enable classes through video conferencing, and allows insertion of videos for better understanding.⁵ Problem-Based Learning (PBL) designed for e learning demands a high level of communication and interaction among students.^{2,5}

ADVANTAGES OF E-LEARNING

From current scenario its evident that technology is very important in dental education. It enables to widen participation, extend possibilities, innovation, and modernization. It increases the level of understanding in students through attractive videos and with the latest 3D imaging with virtual reality-based classes. Its cost efficient and research suggests that technology-mediated learning environments may improve students’ achievement, their attitudes toward learning, and their evaluation of the learning experience. It enhances the self-learning capacity of students. Also, it increases the attendance percentage since students can access it from any part of the world.

DRAWBACKS OF E-LEARNING

From the current methodologies followed its very difficult to incorporate e-learning to all parts of our country since many might not adapt, or some might find it difficult to learn how to use these technologies.⁶

· Technology can never replace face- face learning experiences, it can just aid education.

· Distraction is a major disadvantage of e-learning. While classes are happening students might get notifications or messages that distract their attention.

· Although different clinical dental care stimulators have been developed and yielded satisfying results, they are scarce in educational institutions, some might not be portable and might not incorporate all areas of dentistry.

· It can reduce the communication skills of students in public as well.

LOOKING TO THE FUTURE

Education is evolving day by day. For the complex learning process, the 21st century skills using technology is inevitable. Abundance of information and significant changes brought about by technology is needed. There is a paradigm shift from e-learning being seen as a narrow set of isolated learning activities, unsuitable for many learners and many learning situations, to a new vision of e-learning as a 35-broad approach to learning in the digital age, encompassing rich and dynamic possibilities, engaging learners and looking to the future.

The “e” in learning will remain for many years to come and to play a significant role as dental educators the need to adapt the changes are essential. In a world that values for time and money technology plays an inevitable role.^{5,7}

Conclusion

The COVID-19 outbreaks make providing clinical dentistry and education within the field a herculean task. However, dental educators now have the capabilities and technologies to modernize their approaches of teaching by adopting new digital concepts to amplify communication online. For a country to develop, education is the treasure path, and hence improving education is the key to development.

From the current pandemic situation, we need to understood the limitations that we have in our system, and this situation may once again happen. Hence, we need to change our methods to be useful in all kind of situations.

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Comparative Evaluation of the Prevalence of Dental Caries, Apical Periodontitis and Periapical Abscess in a Population of North Lucknow, Uttar Pradesh, India

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Abstract

Background: Dental caries and periodontal diseases are considered as a major public health problem globally and can be seen across all age groups and in all populations. Several socio-behavioral factors like stress-strain of changing lifestyles as well as consumption of high-sugar diet leads to the alteration in the balance of hormones like progesterone, estrogen and GSH and can affect prevalence of dental diseases.

Aims: To evaluate and compare the prevalence of dental caries, apical periodontitis and periapical abscess in a population of North Lucknow, Uttar Pradesh, India. **Materials and Methods:** 60 patients from north Lucknow population were observed in a free dental camp. Out of these 60 patients, nothing was seen in 30 patients (control group) and in other 30 patients dental caries, apical periodontitis and periapical abscess were detected. Diagnosis was done with the help of diagnostic instruments and intraoral periapical radiographs. Out of the 30 patients in which dental diseases were detected, 6 people had dental caries, 17 had apical periodontitis and the remaining 7 had periapical abscess. **Conclusions:** In this study, dental caries were found to be more prevalent in females than in males. However, both apical periodontitis and periapical abscess were more prevalent in males.

Key words: Caries, periodontitis, periapical abscess, prevalence

Introduction

Oral health is considered as an integral part of general health and a good oro-dental health status can lead to promotion of overall health and well-being of an individual. Contrasting to this fact, it doesn't receive the same extent of seriousness as that of the general health. Epidemiological studies have affirmed that dental caries and periodontal diseases continue to be the major health burdens for global populations and mirror as a costly health care service for both individuals and society.

Untreated carious lesions can cause pain, discomfort, loss of chewing ability, speech alteration and eventually hamper the quality of life of the affected individuals. Despite the fact that the prevalence of caries has shown a downfall in developed countries, factors such as the variations related to socio-economic status, lifestyle changes, access to proper treatment facility, paucity of preventive strategies or dietary counseling; it still continues to remain a major problem in most developing and industrialized countries.^[2] The stress and strain of everyday life as well as the craving for sugary food leads to the change in the balance of hormones like progesterone, estrogen and GSH causing various dental diseases.

However, enough scientific reports relating to community-based evaluation of the prevalence of dental caries and its sequelae in the Lucknow population of

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Uttar Pradesh, are not available in the literature. Thus, the collected data of this study may be beneficial to frame a more accurate profile of the oral-dental health status of the Lucknow population and will complement the caries trends findings in India. Therefore, this study aimed to evaluate and compare the prevalence of dental caries, apical periodontitis and periapical abscess in a population of North Lucknow, Uttar Pradesh, India.

Materials and Methods

This was an epidemiological study involving individuals who participated in the free oral health screening camp organized by the authors from Saraswati Dental College, Lucknow in the department of Conservative Dentistry. The data records of individuals who were screened in that outreach program were employed for the study. The records were coded to ensure anonymity. Informed consent obtained from the participants.

Oral examination was carried out by trained dental surgeons and diagnosis were made based on WHO

guidelines [3] with help of intraoral radiographs. The participants were asked questions related to their oral hygiene practices such as frequency of brushing per day, whether toothbrush is used or not, type of dentifrice (fluoridated or not) used and on daily habits also (use of tobacco- smokeless or smoked form, alcohol, tea, coffee and snacking habits). The study also collected information on age, gender, socioeconomic background of individuals. Proper oral hygiene practices were demonstrated after the screening and their need to seek dental treatment were also emphasized.

Results

Total 60 patients from north Lucknow population were observed. Out of these 60 patients, no dental disease was detected in 30 patients (control group). Whereas, in other 30 patients 6 people had dental caries, 17 had apical periodontitis and the remaining 7 had periapical abscess. Out of these results, the male-female distribution are as follows:



Figure 1A. Patient having intraoral swelling irt 25, 26.



Figure 1B. Patient deep caries involving pulp irt 46

RESULTS

Total 60 patients from north Lucknow population were observed. Out of these 60 patients, no dental disease was detected in 30 patients (control group). Whereas, in other 30 patients 6 people had dental caries, 17 had apical periodontitis and the remaining 7 had periapical abscess. Out of these results, the male-female distribution are as follows:

A. Dental caries:

Male-2 Female-4

B. Apical periodontitis:

Male-9 Female-7

C. Periapical abscess:

Male-4 Female-3

Descriptive Statistics

Table 1. Disease distribution amongst participants

	N	Mean	Std. Deviation	Minimum	Maximum
Control	30	1.50	.509	1	2
Dental Caries	6	1.33	.516	1	2
Apical Periodontitis	17	1.59	.507	1	2
Periapical Abscess	7	1.57	.535	1	2

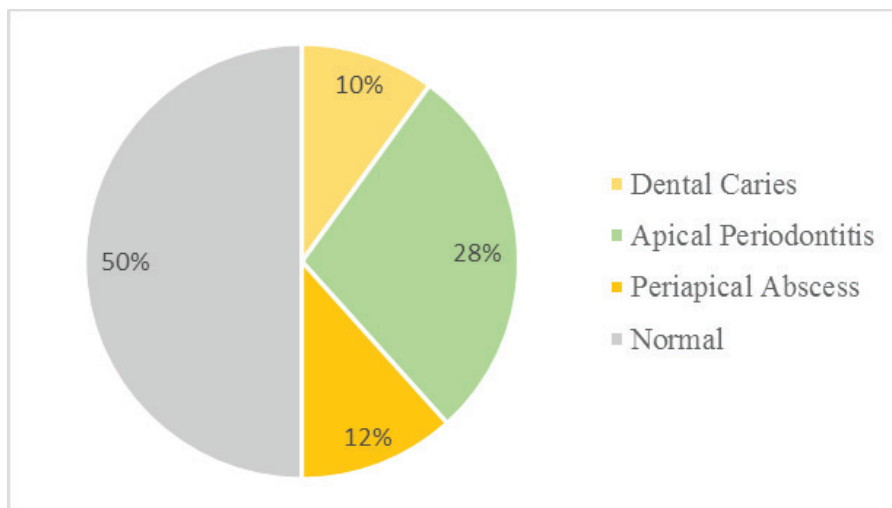


Figure 2. Disease distribution percentages amongst participants

Frequency

Table 2. Frequency distribution irt sex of participants

	Periapical Abscess	Apical Periodontitis	Dental Caries	Control
Female	3	7	4	15
Male	4	10	2	15
Total	7	17	6	30

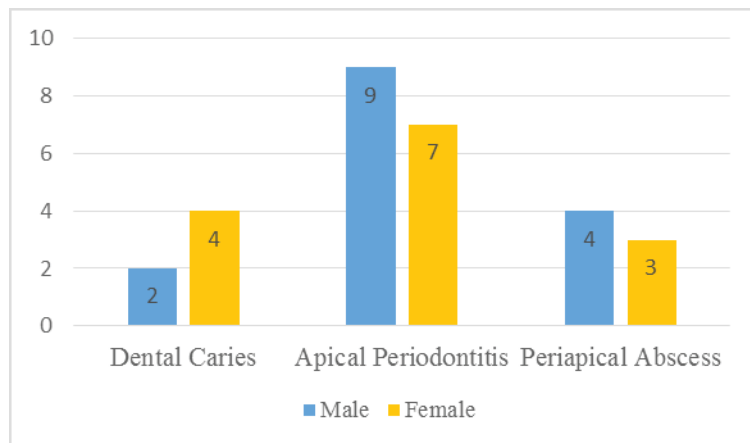


Figure 3. Frequency distribution chart irt sex of participants

Chi-Square Test:

Table 3. Test Statistics

	Control	Dental Caries	Apical Periodontitis	Periapical Abscess
Chi-Square	.000a	.667b	.529c	.143d
df	1	1	1	1
Asymptomatic Significance	1.000	.414	.467	.705

Discussion

Dental caries is a latin word meaning ‘dry rot’. It is the name given to the process of slow disintegration that may affect any of the biological hard tissues as a

result of bacterial action. According to Shafer^[4] dental caries is the microbial disease of the calcified tissues of the teeth, characterized by the demineralization of the inorganic portion and the destruction of the organic

structure of the tooth. According to WHO, caries is a localized, post eruptive, pathological process of external origin involving softening of the hard tooth tissue and proceeding to the formation of a cavity. It is the irreversible, slow progressing decay of the hard tissues of the teeth. It is primarily a local disease that involves destruction of the hard tissues of the teeth by metabolites produced by oral microorganisms.

There is a vast history of dental caries. The rate of caries remained low through the bronze and iron ages. The increase of caries during the Neolithic period may be attributed to the increase of plant foods containing carbohydrates. The beginning of rice cultivation in south Asia is also believed to have caused an increase in caries. Sumerians (5000 B.C.) describe a 'tooth worm' as the cause of caries.

Apical periodontitis is an inflammatory disorder of the periradicular tissues caused by irritants of endodontic origin mostly of persistent microbes living in the root canal system of the affected tooth.^[5] It is primarily a disease of infection. But unlike classical infectious diseases of single specific etiologic agents, apical periodontitis was caused by a consortium of microbial species living in the root canal in an ecologically balanced community form of living organisms referred to as biofilms.^[6]

Periapical abscess is characterized by rapid onset, spontaneous pain, tenderness of the tooth to pressure, pus formation and eventual swelling of the associated tissues. At the initial stages of its formation, the process may be extremely painful as pressure builds up in the restricted periapical space. The establishment of drainage through the root canal may be in some cases end the agonizing process.^[7] In the natural state, an acute periapical abscess may sometimes subside. In most cases the overlying cortical plate eventually perforates and purulence accumulates under the periosteum producing a painful condition. Only with the perforation of the periosteum is the pus to be able to drain into the overlying tissues and allow the major pain to subside. At this stage a local swelling appears and an incision is made in the overlying tissues to allow final drainage. In some cases, natural drainage was done in a few days by perforation of the covering tissue. In others the swelling remains for some time before it gradually subsides.

There is lack of gender wise study of these dental diseases. The result of the study shows that dental caries is more prevalent in females than in males. Reproduction pressures and rising fertility explained why women suffered a more rapid decline in dental health as humans transitioned from hunter and gatherers to farmers and more sedentary pursuits.

Female sex hormones and associated physiological factors was significantly impact cavity formation. Female hormone oestrogen was correlated to cavity rates. A cumulative effect of oestrogen includes fluctuating levels at puberty and high levels during pregnancy that promote cavity and dietary changes. Another cause is biological composition and flow rate of saliva. Women produce less saliva than men, reducing removal of food residue from teeth.^[8] During pregnancy the chemical composition changes, reducing saliva's antimicrobial capacity. Food cravings, immune response and aversions during pregnancy also may cause changes. Women crave high energy sweet foods during the 3rd trimester as well as aversion to meat in first trimester.

Periapical abscess and apical periodontitis cases were found more to be in men as they did not consider it important to visit a dental clinic. They had worse indications of periodontal health as compared to women including higher incidence of dental plaque, tartar and bleeding on probing. However periodontal health of men is important as it may impact a variety of other health factors. Other factors depend on the area of North population of Lucknow that the particular individual is from, like water, intake of food, dietary habits etc.

Conclusion

This study compared gender wise distribution of certain common dental problems due to physiological process of the body.

Under the limitations of that study it can be concluded that dental caries was more prevalent in females than in males due to hyposalivation of female sex hormone and hyposalivation of saliva as compared to men and certain climatic factors. Periapical abscess and apical periodontitis were more prevalent in males due to change in lifestyle and callous attitude of average male regarding their dental health compared to females.

Ethical Clearance- Taken from Ethical Committee of Saraswati Dental College.

Source of Funding- Self funded.

Conflict of Interest- There are no conflicts of interest.

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Upper Extremity Thrombosis Associated with Overactivity: A Comprehensive review article on Paget-Schroetter Syndrome

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Abstract

Paget–Schroetter disease, is a form of deep vein thrombosis (DVT) in upper extremity, in which blood clots occurs in the deep veins of the arms. Paget–Schroetter disease syndrome is accounts for 30–40% of spontaneous axillary-subclavian vein thrombosis (ASVT) and for 10–20% of all upper extremity deep venous thrombosis (UEDVT). Important predisposing factors for UEDVT include indwelling hardware, occult or overt malignancy and other thrombophilic states. Clinical manifestations include heaviness, cyanosis, redness, and dilated, visible veins across the upper arm and shoulder. It is diagnosed by compression ultrasonography with the help of colour Doppler. Thrombosis was managed conservatively with limb elevation and anticoagulation therapy. Hence, there is a need for increasing health workers awareness about risk factors, etiology and the management of this unique and relatively uncommon disorder.

Key words: Deep Vein Thrombosis, ASVT, UEDVT & Thoracic Outlet Decompression

Introduction

Paget-Schroetter syndrome (PSS) or “effort” thrombosis of the axillary-subclavian vein is a rare cause of deep vein thrombosis (DVT) seen in physically active (sportsmen’s) and otherwise healthy individuals. It was first described in 1875 by Paget and Von Schroetter in 1884 and was termed as “Paget-Schroetter syndrome” by Hughes in 1949.¹ Paget-Schroetter syndrome accounts for 30–40% of spontaneous axillary-subclavian vein thrombosis (ASVT) and for 10–20% of all upper extremity deep venous thrombosis (UEDVT).² PSS is diagnosed with the help of Doppler ultrasound, computed tomography, and magnetic resonance venography. Oral anticoagulation alone is insufficient and catheter-directed thrombolysis (CDT) is usually performed during management.³

Definition: Paget–Schroetter disease, is a form of deep vein thrombosis (DVT) in upper extremity, in which blood clots occurs in the deep veins of the arms. These DVTs typically occur in the axillary and/or subclavian veins.⁴

Causes

Crucial predisposing factors for UEDVT include indwelling hardware (central venous catheter, ports, and pacemakers), occult or overt malignancy and other thrombophilic states.⁵ Effort thrombosis usually follows repeated strenuous sporting or physical activities, such as wrestling, playing ball, swimming and gymnastics, which involves vigorous and sustained upper extremity movements. It is believed that retroversion, hyperabduction and extension of the arms involved with these activities impose undue strain on the subclavian vein leading to microtrauma of the endothelium and activation of the coagulation cascade. Substantial evidence now supports that the role of anatomical abnormalities involving the thoracic outlet in the pathogenesis of effort thrombosis.^{6,7}

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Signs & Symptoms:

Unfortunately, effort thrombosis is more common in young adults and otherwise healthy men. It preferentially occurs in dominant arm due to repeated use. Those with UEDVT secondary to central venous catheters, patients with effort thrombosis are usually symptomatic. Swelling and arm discomfort are the most frequent evolving problems. Other symptoms include heaviness, cyanosis, redness of arm, and dilated, visible veins across the shoulder and upper arm. Complications this disease include pulmonary embolism, post-thrombotic syndrome and recurrent thrombosis. Post-thrombotic is more frequent in effort thrombosis, compared to secondary UEDVT, and is the major contributor to the morbidity associated with disease.⁷

Diagnostic Evaluation:

Notably, the clinical features of UEDVT have poor evidence, and less than 50% of those with suggestive symptoms actually have deep venous thrombosis (DVT).⁷ Compression ultrasonography with colour Doppler by virtue of its ease, availability, portability and low cost is currently the preferred initial test in the evaluation of suspected UEDVT.⁸ Radionuclide, magnetic resonance imaging and computed tomographic venography are advanced than ultrasonography. Magnetic resonance venography has the highest sensitivity and specificity among all the non-invasive diagnostic techniques.⁹ Though venography is not necessary for diagnosis, it is almost always done as a part of multimodal treatment strategy to deliver catheter-directed thrombolysis and plan thoracic outlet decompression surgery.⁷

Treatment:

Thrombosis were managed traditionally and conservatively with limb elevation and anticoagulation therapy. However, subsequent long-term data demonstrated an unacceptably high incidence of residual symptoms, disability and recurrent thrombosis with this conservative method.⁷ This has prompted clinicians to evaluate aggressive management strategies involving thrombolysis, thrombectomy, percutaneous and surgical venoplasty, venous bypass and stents. Systemic fibrinolysis is superior to anticoagulation in achieving vein patency but is associated with increased rates of complications such as intracranial hemorrhage.¹⁰

Therapy directed at thoracic outlet decompression (TOD) involves resection of the first rib, division of the scalenus muscles and or infraclavicular approach.¹¹

Conclusion:

Thrombosis is a complex and uncommon condition with a distinct pathological property. Most health workers unfamiliar with effort thrombosis manage it likely to classic lower extremity DVT. Instead, effort thrombosis is ideally managed using a multimodal approach consisting of routine catheter-directed thrombolysis, early TOD in appropriate patients and physiotherapy and occupational therapy. Increasing awareness among primary care and emergency health care workers will ensure early recognition, timely thrombolysis, and prompt referral to a treatment options like thoracic or vascular surgeon. Future scientific research needs to focus on describing the benefit of thrombolytic therapy in patients presenting delayed, identifying factors that predict ineffectiveness of thrombolysis and need for surgical intervention. Other avenues for research include assessment of the need for and duration of anticoagulation following TOD, and cost benefit analysis of the various treatment modalities.

Ethical Clearance- This article is a purely a narrative review article hence it's not required an ethical clearance.

Source of Funding- Self (review article), No financial support was provided relevant to this article.

Conflict of Interest – Have no conflict of interest relevant to this article

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Determinants of Birth Weight of Meitei and Meitei Pangan Communities of Manipur

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Abstract

Background: Apart from various Fetomaternal factors Birth Weight also varies with Ethnic Groups. This study aims to find out various Fetomaternal, socioeconomic and behavioural factor which determines the Birth Weight of Meitei and Meitei Pangan Communities of Manipur, India.

Material and Methods: The present study being a retrospective study, cross sectional sample of 150 women belonging to Meitei community and 100 women from Meitei Pangan community were selected after fulfilling the inclusion and exclusion criteria. Data were collected in a pre-designed, pre-tested structured schedule. The collected data were then compiled, classified, tabulated and analysed using standard appropriate statistical methods.

Results: Meitei Pangan newborn had a lower mean Birth Weight of 2923 ±46 grams as against 3106 ±36 grams and mean age of mother 25.23± 0.40 against 29.66 ± 0.50 years respectively, but higher mean Parity (2.12 vs. 1.66) and Mean Gestational age (39.3 vs. 38.8 weeks) than their counterpart. Women with no education or lower level of education, non working mothers and Low Birth Weight Babies were more frequently observed with Meitei Pangan.

Conclusion: Women in Meitei Pangan community had a lower mean Birth Weight and they also had a higher mean Parity and a lower Mean Age of Mothers. Lower level of education or no education and non working mothers were also more frequently seen with Meitei Pangan.

Key words: *Ante natal, Caesarean section, Fetomaternal, Gestational age, Macrosomic, Parity, Ultrasonography.*

Introduction

Birth Weight is one of the important Determinants of Fetal Outcome. Optimal birth weight often means a mature and Health Baby. Birth Weight enables us to identify low birth weight or abnormal birth weight babies. A baby born with either low birth weight or high birth weight is associated with a poor outcome. A baby with birth weight less than 2500 gram is considered Low Birth Weight Baby, while a baby whose birth weight

is more than 4000 grams is considered as Macrosomic Baby¹. Though Birth Weight depends on duration of pregnancy, there are also various other Maternal and Fetal factors which determine the birth weight. Birth weight also varies among ethnic Groups which appear to be linked with socio-economic, maternal and behavioural factors^{1,2}.

Manipur having a population of 28.56 Lakhs is a State in the North eastern part of India inhabited by various major ethnic communities which include Meitei, Nagas, Kukis and Meitei – Pangan who are also called Pangan. Meiteis form the main bulk of the population (41.39%) who either follow Hinduism or traditional religion. Meitei Pangan are the Muslim population of Manipur which constitutes approximately 8.4% of

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the total population of Manipur as per 2011 Census³. Factors associated with ethnicity like age, parity, level of education, employment status and ante natal booking reflects the maternal and socio-economic status and appear to be important in determining birth weight of babies. This study was undertaken in order to examine the various factors which might have an influence in determining the birth Weight of these two Communities.

Materials and Methods

This present study is a retrospective cross sectional hospital based study carried out in Regional Institute of Medical Sciences, Imphal Manipur, a tertiary care Hospital in North Eastern part of India bordering Myanmar. The study period was from 1st January 2017 to 31st December 2019. Patients who are admitted in the ward and willing to participate in the study were included. After taking a thorough history Patients were examined. Inclusion criteria were women with Term Pregnancy of 37 Weeks of Gestation and only those cases delivered by Caesarean Section was included in the study. Only patients belonging to Meitei and Meitei Pangan ethnic community were included in the study. Exclusion criteria were uncertain gestational age, pregnancy of gestation less than 37 Weeks, stillbirths, major congenital malformations and those not willing to participate in the study. Women of mixed ethnicity were also excluded from the study in both the groups. Period of gestation was calculated from the first day of Last Menstrual Period (LMP). If the women are not sure of her last menstrual period then ultrasonography done in the first Trimester was used to calculate the period of

gestation. Ante natal check up was considered booked if they had a minimum of three check-ups in the same hospital. The birth weight of the new born was recorded just after the delivery. Patients were grouped into two. Group I consisted of Meitei and Group II consisted of Meitei Pangan. Sampling technique used was random sampling method. After confirmation of their willingness to participate in the study, informed written consent was taken. Confidentiality of the subjects was ensured. Due procedures were followed in accordance with the ethical standards. Altogether, 150 women from Meitei community and 100 women from Pangan community were included in the study. Data were collected using a pre-designed, pre-tested structured interview and review of records. All the Mothers were interviewed during their hospital stay and findings were recorded. The collected data were then compiled, tabulated and analysed using standard appropriate statistical methods. t test and chi square test were used. p values of less than 0.05 were considered significant.

Results and Discussion

Variation in birth weight of the fetus among different ethnic groups is an occurrence without a definite and clear reason. Ethnic Factors which might be operating includes Maternal factors like age, parity, antenatal care, socio-economic factors like level of education and maternal employment status, sex of the baby etc. probably are some of factors operating resulting in variation in birth weight of newborns of the two studied populations.

Table 1. Difference in Mean Age, Parity and Period of Gestation

Parameter	Popln	Mean ± SE	SD ± SE	Difference of mean	t	p value
Mean Gestational Age (in weeks)	Meitei	38.80 ± 0.08	0.97 ± 0.06	0.50	3.83	0.0002
	Pangan	39.3 ± 0.10	1.07 ± 0.08			
Mean Parity	Meitei	1.66 ± 0.06	0.68 ± 0.04	0.46	4.33	< 0.0001
	Pangan	2.12 ± 0.10	1 ± 0.07			
Mean Age of Patient (in years)	Meitei	29.66 ± 0.50	5.55 ± 0.50	4.43	6.699	< 0.0001
	Pangan	25.23 ± 0.40	4.40 ± 0.31			

Source: Authors Data
2017 - 2019

Survey Period: comparatively more number of children among the Meitei Pangan community. However, mean gestational age was lower in Meitei Community (38.80 ± 0.08 weeks) than Meitei Pangan (39.3 ± 0.10 weeks) as presented in Table 1. This finding of lower gestational age among Meitei community could be related to the tendency of these patients to opt for early delivery once fetal maturity is reached.

Meitei Pangan community had a significantly higher mean parity (2.12 ± 0.10) than the Meiteis (1.66 ± 0.06) and they also had a significantly lower mean age of the Mothers (25.23 ± 0.40 years) as compared to the Meiteis (29.66 ± 0.50 years). One reason for this finding could be early age at marriage along with a tendency to bear

Table 2. Period of Gestation and Birth Weight

Gestation in weeks	Popln	(n) Mean \pm SE (in grams)	SD \pm SE (in grams)	Difference of mean (in grams)	t	p	χ^2
37	Meitei	(13)2839 \pm 128	461 \pm 90.39	61	0.22	0.83	$\chi^2 = 14.18$ p 0.007
	Pangan	(3) 2900 \pm 177	300 \pm 122.45				
38	Meitei	(41) 3132 \pm 60	385 \pm 42.49	267	2.31	0.02	
	Pangan	(20) 2865 \pm 110	495 \pm 78.20				
39	Meitei	(66) 3047 \pm 55	449 \pm 39.08	63	0.66	0.51	
	Pangan	(37) 2984 \pm 78	478 \pm 55.58				
40	Meitei	(22) 3355 \pm 88	414 \pm 62.44	478	3.62	0.0007	
	Pangan	(26) 2877 \pm 96	488 \pm 67.68				
≥ 41	Meitei	(8) 3213 \pm 110	309 \pm 77.25	277	1.68	0.11	
	Pangan	(14) 2936 \pm 40	401 \pm 75.80				
Overall	Meitei	(150)3106 \pm 36	437 \pm 25.23	183	3.16	0.002	
	Pangan	(100)2923 \pm 46	464 \pm 32.81				

Source: Authors Data

Survey Period: 2017 - 2019

Table 2 reveals that, for all the term babies delivered by caesarean section, Meitei Pangan had a lower mean birth weight (2923 \pm 46 grams) than the Meitei (3106 \pm 36 grams). Also for each gestational age except at 37 weeks, the average birth weight in Meitei Pangan is lower. It is normally expected that birth weight increases with

increase in gestational age till delivery, however, birth weight in many studies have reported either a stagnant or declining trend after the Expected Date of Delivery. In both the populations mean birth weight increased gradually up to 39 weeks in Meitei Pangan and 40 weeks in Meitei, there after a decreasing trend was observed. These findings are in agreement with other workers^{4,5,6}

as they also reported similar findings. This could be due to the decrease in favourable environment of the Fetus inside uterus after maturity. Even though statistical significance was not observed uniformly, in all the period of Gestation except at 37 weeks the average birth weight in Meitei Pangan is lower which could be due to

difference in the ethnicity. Bigger babies in Meitei for all gestational age groups could be due to better nutrition and hygiene. Variation in fetal weight among different ethnic groups staying in the same geographical area was also reported by other researchers ².

Table 3. Parity and Birth Weight

Parity	Popln	(n) Mean ± SE (grams)	SD±SE (grams)	Difference of mean (grams)	t	p	χ ²
One	Meitei	(68)3069±56	455±39.02	210	2.22	0.03	χ ² = 14.38 p = .0008
	Pangan	(29)2859±65	350±45.93				
Two	Meitei	(66)3120±43	350±30.46	169	1.95	0.05	
	Pangan	(43)2951±84	554±59.76				
≥ Three	Meitei	(16)3206±163	652±115.19	260	1.6	0.12	
	Pangan	(28)2946±80	424±56.69				

Source: Authors Data Survey Period: 2017 - 2019

As seen in table 3, Birth weight increased with increase in parity which is also associated with increase in placental weight. Babies in Meitei population are seen heavier than their counterpart for all the subgroups. Mean birth weight of these two populations show statistically significant difference (χ²=14.38, p=0.0008, table 3) in those having only one child. Birth Weight of primiparas are less than multiparas in both the Groups.

Birth weight increased with increase in parity till third child in Meitei group and second child in Meitei Pangan Group, thereafter a decreasing trend in birth weight was observed. Such increasing trend is also reported by other workers ⁴. Meitei community have more number of women with fewer children while Meitei Pangan community have more number of children with fewer women among multiparas.

Table 4. Age of Mother and Birth Weight

Age in years	Popln	(n) mean ± SE (grams)	SD ± SE (grams)	Mean Difference (grams)	t	p	χ ²
≤ 19	Meitei	(6)2867±197	493±142.49	258	.99	0.35	χ ² = 38.8 p < 0.00001
	Pangan	(4)3125±75	150±53				
20-24	Meitei	(24)3113±115	561±80.95	308	2.48	0.02	
	Pangan	(41)2805±67	431±47.57				
25-29	Meitei	(38)3158±68	424±48.62	166	1.54	0.13	
	Pangan	(37)2992±83	507±58.95				
30-34	Meitei	(53)3151±52	383±37.19	144	1.21	0.23	
	Pangan	(15)3007±123	480±87.59				
≥ 35	Meitei	(29)3000±77	418±54.86	0	.00	1.0	
	Pangan	(3)3000±235	400±163.27				

Source: Authors Data Survey Period: 2017 - 2019

For each age group except in those below 20 years, the birth weight of babies in Meitei population are either more or similar to those in Meitei Pangan Group as seen in table 4. Young mothers having less than 20 years and older mothers aged 35 years and above tend to have slightly lighter babies in comparison to those between 20 to 34 years⁴. However, this tendency was not seen in this study among young mother. Because of fewer numbers of patients in these young groups drawing a conclusion may not be applicable. A tendency of increasing birth

weight with age was seen in both the groups which disappeared in older Mothers. Smaller babies in young mothers could be due to under utilization of ante natal care services and poor nutrition. For the older women, decrease in birth weight could be related to their more proneness to various medical and obstetric complications⁷. Though women in Meitei population have a tendency to have bigger babies, Statistical significance was seen only in the age group 20 to 24 years.

Table 5.Relation of Birth Weight with Ante-natal care, Literacy, Employment status and Sex of Baby.

Character	Popln	(n) Mean±SE (grams)	SD±SE (grams)	Difference of mean (grams)	t	p	χ ²
Ante-natal Care							
Booked	Meitei	(130)3116±38	431±26.72	218	3.58	0.0004	χ ² =0.0058 p 0.93
	Pangan	(87)2898±49	453±34.34				
Un Booked	Meitei	(20)3040±107	481±75.99	52	0.29	0.77	
	Pangan	(13)3092±145	520±101.96				
Literacy and Birth Weight							
Nil	Meitei	(6)2600±142	352±101.73	500	2.48	0.02	χ ² =10.54 p .005
	Pangan	(13)3100±120	430±84.31				
<Graduate	Meitei	(107)3164±40	411±28.09	295	4.56	< .0001	
	Pangan	(74)2869±53	452±37.14				
≥Graduate	Meitei	(37)3022±77	467±54.30	32	0.21	0.84	
	Pangan	(13)3054±147	529±107.73				
Employment status and Birth Weight							
Working	Meitei	(36)3025±74	441±51.95	258	1.31	0.197	χ ² =13.91 p .0002
	Pangan	(6)2767±192	480±138.73				
Non Working	Meitei	(114)3132±41	435±28.81	199	3.19	.0017	
	Pangan	(94)2933±48	465±33.84				
Sex and Birth Weight							
Male	Meitei	(80)3136±48	423±33.44	220	2.75	.0067	χ ² =0.172 p 0.68
	Pangan	(56)2916±67	505±47.69				
Female	Meitei	(70)3071±54	454±38.38	139	1.65	.10	
	Pangan	(44)2932±63	413±44.03				

The outcome of a pregnancy is closely linked to proper ante natal care and services. Birth weight of babies born by mothers who attended ante natal care were significantly more in Meitei Population (\bar{x} =3116±38 grams) in comparison to Meitei Pangan Population (\bar{x} = 2898±49 grams). As such babies are bigger in those with proper antenatal care^{8,9}. In subgroup wise analysis, statistically significant difference was not observed in the mean birth weight difference of booked and un-booked cases (χ^2 =.0058, p = 0.93). Contrary to expectation, the mean Birth Weight of babies born by ante nately booked Meitei Pangan women were lower (\bar{x} =2898±49 grams) in comparison to unbooked cases (\bar{x} =3092±145grsms) which could be due to late booking in first visit and half hearted ante natal care as also reported by other scholars¹⁰. Availing the antenatal care services is closely linked to traditional beliefs and educational levels also. Birth weight is closely linked with antenatal care ^{8,9}.

Level of education is linked with various outcomes. Mothers with higher education have better understanding of the facilities and has better pregnancy outcome. As level of education increases chances of having a low birth weight baby decreases. But, higher level of education is also associated with increased stress and strain which could be detrimental for the baby. More number of Meitei Pangan women are found to be either illiterate or having low level of education. Meitei Pangan women with lower level of Education had a very statistically significant lower birth weight than those with higher educational level. Among illiterates, contrary to the expectation birth weight was significantly lower in Meitei Population (2600±142 grams) than the Meitei Pangan population (3100±120 grams), but it

may be due to very low sample size, in short sampling fluctuation. Education is closely associated with better ante natal care and better decision making ¹¹. This earlier reported findings is also supplemented by the present findings wherein Meitei women are more educated than the Meitei Pangan women, and as such birth weight of babies of educated Meitei women are higher than those of Meitei Pangan women thereby revealing statistically significant difference (t =4.6, p <.0001)

Birth weight of babies born by Meitei women are higher for both working and non working mothers but statistical significance was seen only in mean Birth Weight of non working Mothers (t =3.19). The number of working mother was significantly more in Meitei Group. Babies of working mothers weigh less than non working mothers in both the groups. Smaller babies in working mothers could be related to stress and its effects on fetal growth ¹². Though employment is associated with lower chance of having a baby with low birth weight certain occupations (textile/ exposure to pesticides) are more prone to it ¹¹.

Table 5 also shows that the mean birth weight of both male and female babies of Meitei women are more than those in Meitei Pangan women but statistically significant difference was seen only for male babies (t =2.75). Generally male newborns are heavier than female at birth. In Meitei group male babies were heavier than female as expected. However, in Meitei Pangan group females were slightly heavier, such conflicting results are also reported by other researchers¹³. This may also be because of the very low birth weight reported among few male babies in Meitei Pangan group, thereby resulting to decrease in the mean value . Such variation in birth weight is also reported by other workers ⁴.

Table 6.Comparision of Birth Weight

Birth Weight in kg	Popln	(n) Mean±SE (grams)	SD±SE (grams)	Difference of Mean(grams)	t	p	χ^2
< 2.5	Meitei	(7)2071±55	150±40.11	79	0.7	0.5	χ^2 =3.55 p 0.17
	Pangan	(10)2150±84	268±59.96				
2.5-3.4	Meitei	(112)3008±25	260±17.37	139	3.62	.0004	
	Pangan	(75)2869±29	252±20.57				
≥ 3.5	Meitei	(31)3694±41	228±28.97	13	0.19	0.9	
	Pangan	(15)3707±53	205±37.41				

Low Birth Weight which is universally considered to be associated with risk of increased mortality and morbidity was seen in higher frequency among Meitei Pangan population. On the other hand babies weighing more than or equal to 3.5 kg was seen in higher frequency in Meitei population. However, the finding was not statistically significant ($\chi^2=3.55$, $p=0.17$). Significant difference was seen only in the mean Birth weight in the Group 2.5 kg to 3.4 kg (3008 ± 25 grams) in Meitei vs. (2869 ± 29 grams) in Meitei Pangan. Presence of low birth weight is influenced by maternal nutrition, age, education, religion, interval between pregnancies, antenatal care ^{7,8,13}. Association of low birth weight and religion is reported by some workers⁸ but it needs further study. When dealing with minority groups such relationships may be underestimated ¹⁴.

Conclusion

In both Meitei and Meitei Pangan groups, birth weight increases with period of gestation (up to 40 weeks) and parity (up to second Para). A tendency towards increasing birth weight with age was observed in those younger than 35 years. Mean Birth Weight were lower in Meitei Pangan which was associated with higher parity, lower mean age of the mother, and a lower level of education or no education. Birth weights in Meitei were relatively higher and it was associated with low parity and antenatal check up.

Acknowledgment: The Author thanks all the participants who willingly spared their time during data collection.

Ethical Clearance – Taken from Ethical Clearance Committee, Manipur University

Source of Funding – Self

Conflict of Interest - Nil

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Trends in Contraceptive Use in Manipur, India: A Review

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Abstract

Introduction: The present study analyses trends in contraceptive use among married women in Manipur. Contraceptive use occupies a substantial niche in delving with reproductive health and population studies. This paper traces into the insights of socio-demographic determinants of contraceptive use and the challenges associated with it.

Materials and Methods: This work is based on the report of the National Family Health Survey (NFHS) conducted by the International Institute for Population Science (IIPS), United Nation, unpublished theses from Shodhganga-Inflibnet, JSTOR, dash.Harvard.edu, EThOs (e-theses online service).

Conclusion: The review points out that there is a giant gap between the knowledge and the practice of contraception and fluctuation in preference of methods of contraceptive with an underlying varied reason for not adopting contraceptive methods. Manipur, being inhabited by diverse communities shows inconformity in using contraceptives. One analogous deterrent which seems to be common is a male-oriented patriarchal society.

Keywords: Contraception, National Family Health Survey (NFHS), Modern Contraceptive Methods, Traditional Contraceptive Methods, Manipur

Introduction

Declaring around reproductive health, contraception is an inescapable theme. It is an unnatural way of averting pregnancy as a consequence of sexual intercourse through a multifarious process like female sterilization, male sterilization, pills, Injection, condoms, withdrawal, periodic abstinence, intrauterine contraceptive device (IUD) and other traditional indigenous methods. In consonance with the report of United Nations, Department of Economic and Social Affairs, Population Division, the trends of contraceptive use almost doubled between 1970 to 2015 from 36 percent in 1970 to 64 percent in 2015,¹ thus resulting in a decrease of unmet needs of the family

planning in worldwide. One contributing factor could be the International Conference on Population and Development in 1994. The governments have agreed to link sustainable Development Goal and Family Planning 2020 to project the growth of contraceptive use in particular regions where less than half of married or in-union women of reproductive age currently use a contraceptive device.

India is one of the subcontinents experiencing the fastest growing population in the world, ranking second in the overall ranking of the world, just next to the Republic of China. Though India is presently experiencing a decline in the growth rate because of declining crude birth rate and total fertility rate, the overall population size is increasing from decade to decade as a result of a too large base population which finally results in a major hindrance towards the development of the nation. To combat the increasing population, India launched family planning programmed in 1951 with the major objective to balance the population with resources available.² Under the Ministry of Health and Family Welfare,

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Government of India conducted National Family Health Survey (NFHS) to access the knowledge and use of contraception so far the country had conducted Four-Nation Family Health Survey (NFHS), first, in 1992-1993, second in 1999-2000, third in 2005-2006 and the fourth in 2015-2016.

Manipur, a small State located in the north-eastern region of India bordered with Myanmar is at a latitude of 23° 83'N to 25° 68'N and longitude of 93° 03'E to 94° 78'E covering an area of 22,327 square kilometres. The State is a home for different ethnic groups: the Meiteis who mainly occupied the valley, the Kukis and the Nagas occupied the surrounding hills with a total population of 2,721,756 (male-1,369,764) and (female 1,351,992) according to 2011 census.⁴ As suggested by Hodson,³ 'Meitshei' is a combined appellation of Siamese 'Tai' and Kochin Chinese 'Moy' (Moy+Tai=Moytai=Moitai=Meitei) and the 'Meiteis' belonged to the 'Moi' section of the great 'Tai' race. The word Kuki is a generic term, which includes several tribes and clans. 'Kuki' refers to an ethnic entity spread out in a contiguous region in Northeast India, Northwest Burma, and the Chittagong hill tracts in Bangladesh. The origin of the word 'Kuki', is not known but it first appears in Bengal in the writing of Rawlins entitled "CuCis or mountaineers of Tipra" in Asiatic researches in 1792 as cited in Shaw.⁵ The origin of the word 'Naga' is unknown, but it is supposed to have been derived from the word Sanskrit *Nanga* and applied in derision to the people for their paucity of clothing. The British came to know for their famous headhunting practice.⁶ Other than the about mention communities different ethnic communities, from various part of the country resides in the State following kaleidoscopic religion and cultures.

Materials and Methods

Research articles, unpublished theses, Report of International and National Governments related to Contraceptive use were rummaged using JSTOR,

Shodhganga-Inflibnet, Google and Books available at University library. The search words include knowledge, Attitudes and Practices of Contraceptive use, Reproductive Health, Tribal Communities, Meiteis, Modern methods of contraception, Traditional methods of Contraception, religious beliefs, Manipur, etc. The review covers information available since 1992 to the present.

Results and Discussion

Knowledge on contraceptives: A comprehensive knowledge of the use of contraceptives is essential for healthy reproduction in order to avoid the negative effects of health. The provision of contraceptive information is fundamental to the ability of women and men (including adolescents) to make informed choices about reproductive health decisions.⁷ Contraceptive methods are broadly classified into modern methods and traditional methods. Modern methods include- male and female sterilization, injectables, intrauterine devices (IUDs/PPIUDs), contraceptive pills, implants, female and male condoms, diaphragm, foam/jelly, the standard day's method, the lactational amenorrhoea method, and emergency contraception, on the other hand, traditional methods comprise of rhythm, withdrawal, and other folk methods. In the case of Manipur, according to Devi,⁸ (2015), the *leikai mou* (locally married women) serve as major source of information for each other. There are good friendships and rapport among older *leikai mou* (local married women) compared to newly married women. The older married couple in the locality had overcome their initial inhibitions and hesitation in discussing sexuality and reproductive health matters with each other. They often used the local terms in communicating about birth control. It also holds true in the works of Devi⁹ and Vashum¹⁰ among the Aimol tribe and Tangkhul tribe respectively that as many as more than 35% received information about birth control measures from their group and neighbour.

Table 1: State- wise Percent Distribution of knowledge of Any Modern Method of Contraceptive Device according to Four NFHS Phase^{7,11-23,26}

State	India	Manipur	Arunachal Pradesh	Assam	Meghalaya	Mizoram	Nagaland	Tripura	Sikkim
NFHS 1	95.5	93	77.7	96.9	76.9	98.1	44.3	99.7	na
NFHS 2	98.9	94.9	98.1	98.3	87.9	97.8	87.5	97.6	99.4
NFHS 3	99.2	98.9	94.3	98.8	88.2	98	83.2	99.3	99.5
NFHS 4	99	98.5	94.2	99.4	95.9	98.9	96.2	99.9	99.7

Table 2: State -wise Percent Distribution of knowledge of Female Sterilization Method of Contraceptive Device according to Four NFHS Phase^{7,11-23,26}

State	India	Manipur	Arunachal Pradesh	Assam	Meghalaya	Mizoram	Nagaland	Tripura	Sikkim
NFHS 1	94.6	87.7	75.1	96.2	71.9	98	30.4	99.4	na
NFHS 2	98.2	93.4	96.9	96.3	78.6	96.8	83	94.8	98.4
NFHS 3	98.4	92.2	87.7	95.2	78	93.2	69.1	97.6	96.6
NFHS 4	97.7	77.6	82.3	95.4	75.4	90.2	77.1	98.3	94.6

Tailing on the report of National Family Health Survey from the year 1992-93 to 2015-16 along with published articles and unpublished theses, the knowledge of any modern contraceptive method among currently married women is almost universal (90 percent or more) in all northeastern states except Meghalaya and Nagaland in the first survey (1992-93), second survey (1998-99) and third survey (2005-06) albeit, there is an upward trend in the knowledge of any modern contraceptive method (Table No.1). Female sterilization is the most widely known method as compared to male sterilization in Manipur, which also holds true in other parts of the country. Injectables are the least known modern method. Traditional contraceptive knowledge seems to

be minimal. Periodic abstinence is a well-known method among other traditional methods. Based on Devi,⁸ all married adolescent girls have some idea about birth control, but only some (17.6) of them has sufficient knowledge about birth control. Notwithstanding, the educational status of the married adolescent girls seems to have no significant effect on their level of knowledge of birth control, the geographical location makes a difference in their level of knowledge about contraception as the urban respondents are more aware of it. In the works of Devi,⁹ 2013 among the Aimol tribe of Manipur, it reveals that as many as 35.69 percent of the informants acquired information about Birth Control Measures from peer groups which also hold true among

the Muslim adolescent girls.

Use of Contraceptive: Women's ability to choose when to become pregnant has a direct impact on her health and well-being. Family planning allows spacing

of pregnancies and can delay pregnancies in young women at increased risk of health problems and death from early childbearing, and can prevent pregnancies among older women who also faced increased risks as stated by Devi.²⁴

Table 3: State- wise Percent Distribution of Use of Any Method of Contraceptive Device according to Four NFHS Phase^{7,11-23,26}

State	India	Manipur	Arunachal Pradesh	Assam	Meghalaya	Mizoram	Nagaland	Tripura	Sikkim
NFHS 1	40.6	34.9	23.6	42.8	20.7	53.8	13	56.1	na
NFHS 2	48.2	38.7	35.4	43.3	20.2	57.7	30.3	55.5	53.8
NFHS 3	56.3	48.7	41.6	54.5	18.4	54.8	24.8	65.5	56.4
NFHS 4	53.5	23.6	31.6	52.4	24.3	35.3	26.5	64.1	46.7

Table 4: State- wise Percent Distribution of Use of Any Modern Method of Contraceptive Device according to Four NFHS Phase^{7,11-23,26}

State	India	Manipur	Arunachal Pradesh	Assam	Meghalaya	Mizoram	Nagaland	Tripura	Sikkim
NFHS 1	36.3	24.1	19.3	19.8	15.1	52.9	13	28.6	na
NFHS 2	42.8	25.9	32.8	26.6	15.5	57.1	24.2	43.5	41.4
NFHS 3	48.5	23.6	36.4	24.8	13	54.6	18.8	45	48
NFHS 4	47.7	12.7	26.6	37	21.9	35.2	21.2	42.8	45.9

Table 5: State- wise Percent Distribution of Any Traditional Method of Contraceptive Device according to Four NFHS Phase^{7,11-23,26}

State	India	Manipur	Arunachal Pradesh	Assam	Meghalaya	Mizoram	Nagaland	Tripura	Sikkim
NFHS 1	4.3	10.8	4.3	22.9	5.6	0.9	0	27.5	na
NFHS 2	5	12.7	2.4	15.8	4.2	0.7	5.9	11.8	12.3
NFHS 3	7.8	25.1	5.2	29.6	5.3	0.2	6	20.5	8.4
NFHS 4	5.8	10.9	5	15.4	2.4	0	5.3	21.3	0.8

Mapping the prevalence of particular methods has changed slowly at the global and regional levels. The prevalence of female sterilization worldwide has declined from 13.7 percent in 1994 to 11.5 percent in 2019.²⁵ The comparison of the use of different contraceptive methods in India from NFHS-1, NFHS-2, NFHS-3, and NFHS-4 and northeastern states level differentials in contraceptive use are shown in the tables. Over more than two decades in India there has been a steady increase in the use of contraceptive from 41 percent in NFHS-1(1992-93) to 48 percent in NFHS-2 (1998-99) and further to 56 percent in NFHS-3 and the figure dipped to 54 percent in NFHS-4¹⁷. Slightly lower than the previous survey. A similar curve pattern also conforms to one of the northeastern states that is, Manipur. In the first NFHS, 45 percent used contraceptives, and the figure rose to 49 percent in the second NFHS. Further, the increment reached a greater height in NFHS-3 to 54 percent and then leaps down to 24 percent in NFHS-4.²⁶ The average rate of modern contraceptive use in Manipur since NFHS-1(1992-93) to NFHS-4 (2015-16) is way lesser than the national average. In the first survey, 24.1 percent in Manipur used a modern contraceptive method which shows a difference in more than 10 percent with the national percent i.e. 36.2 percent. Likewise, 25.9 percent of the married women in Manipur resort to modern contraceptive method in the second survey and then reduced to 23.6 percent and 12.7 percent in NFHS-

3 and NFHS-4 respectively. While comparing with other northeastern states, the use of modern contraceptive methods in Manipur reduced sharply from NFHS-2 (1998-99). Traditional contraceptive methods occupy a pivotal role in meeting the unmet needs of family planning in Manipur since Manipur women choose traditional methods in high percent in relation to the national level and other northeastern states (Table, 5).

Reasons for not adopting contraceptive methods:

It is essential to trace reasons for not using contraceptive methods as this information is critical for understanding obstacles so that a suitable programme can be designed according to the needs of the individuals. As described by Devi²⁴ among the Meitei women in Phaknung, lack of awareness is not the sole reason for not adopting contraceptive rather due to fear of side effects of using it as 19.13 percent of the women reported about infertility problems. Glancing at the national report in the NFHS-3 nearly two-thirds of women who do not intend to use contraception in the future cited fertility-related reasons. As many as 52.63 percent of the Aimol tribe did not accept birth control measures with the attitude that childbirth is “after all nature”. The rural-urban location made a major difference in awareness, accessibility, attitude, and practices of family planning notwithstanding they belong to the same faith as stated by Devi,⁸ in her studies among Muslim adolescent girls

in Manipur. In one notable work, Heo et.²⁷ finds that—net of individual-level characteristics—the experience of unmet needs was higher in regions with the highest level of private hospital beds per 1,000 residents which is in contrast with Manipur condition. In the paper entitled “National demographic goals and fertility dynamics of Kuki tribes of Manipur” low level of education are detected to be the major cause of failure in national fertility goal.²⁹ Several factors contribute to the low rate of contraceptive use in Manipur. Sex preference (or son preference) is also one of the important factors as the rate of contraceptive use for the sex composition of children dominated by daughter and the high rate of its use for the sex composition of children dominated by sons at any parity confirm the presence of sex preference.³⁰ Patriarchal social-setting has an immense role in utilizing the available contraceptive measures (NFHS-1, NFHS-2, NFHS-3, and NFHS-4).

Conclusion

Notwithstanding, there is a decrease in population growth rate with the implementation of family planning, after analyzing the National Family Health Survey report from 1992-93 to 2014-15 we dredge out that there is a wide gap between knowledge and contraceptive use in Manipur. The trends in contraceptive use shows fluctuated curve despite accretion in awareness. Albeit, Manipur is a small state in the northeastern part of India, “one size fits all” designed would give minimal output due to its non-identical hurdles in adopting birth control measures. One common hindrance which seems to be common is a male-oriented patriarchal society. Owing to this social-setting women have a little role in deciding what, when, where, and how to family planning. Nevertheless, it is the sole responsibility of the women to avoid getting pregnant which is in symmetry with the finding of Scott et.al; On the other hand, it is the women who bear the burden of side effects of using various contraceptives. It also holds true in other parts of India. In Madhya Pradesh, only minuscule numbers of men opted for sterilization for fear of losing virility and working capacity.³¹ In the meantime, Beed, the drought-stricken district of Maharashtra reported a high rate of hysterectomies among sugarcane cutters due to early marriages and childbirth, fear of cancer, and loss of wages during menstruation.³²

Conflict of Interest: The authors declared that there is no conflict of interest in the publication of this manuscript.

Acknowledgement: The authors would like to thank the University Grant Commission for financial assistance through the Junior Research Fellowship. We are also truly indebted to the Teachers of the Department of Anthropology for their valuable inputs.

Ethical Clearance: Ethical approval for this work was obtained from Ethical Clearance Committee of the School of Human and Environmental Sciences of Manipur University.

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COVID -19: Impacts of Quarantine on Mental Health and Stress

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Abstract

Background: The explosion of coronavirus disease Covid-19 has created as a worldwide health crisis that has had a deep impact on the way we perceive our world and our everyday lives. Not only the Speed, but the security measures put in situ to contain the spread of the virus also require social distancing by refraining from doing what's inherently human, Quarantine keeps such people far away from others so that they don't unknowingly infect anyone in their vicinity. It's employed by Governments to stop the spread of communicable diseases. Such a survey would help me to understand the impact of psychological state and Stress during Quarantine to guard against (COVID-19).

Objective: To find out the impact of Quarantine on Mental Health and Stress to protect against the coronavirus (COVID-19).

Methods: 65 PEOPLE were asked by questionnaire to fill 20 different questions related to Social, distancing is a public health strategy to limit the spread of COVID-19.

Result: The result of this study supports that 65 people, who they are Quarantine. At least or more than 15 days, are suffering from moderate to high-level Stress.

Conclusion: The social isolation, quarantine, and lockdown can increase stress responses and generate more status of uncertainty.

Keywords: Novel Corona Virus 2019, Stress, Stigma, COVID 19, Stress Response, Stress Exposure, Social Isolation and Quarantine, Resilient Communities.

Introduction

The current outbreak of coronavirus disease 2019 (COVID-19), caused by the severe acute respiratory syndrome coronavirus (SARS-CoV-2), which was first detected in Wuhan, China, in December 2019, continues to spread affecting many countries and territories around the world, and WHO has declared it an epidemic on March 11, 2020 [1,2].

The explosion of coronavirus disease Covid-19 has created a worldwide health crisis that has had a deep impact on the way we perceive our world and our everyday lives. Not only the speed of contagion and patterns of transmission threatens our sense of agency, but the security measures put in situ to contain the spread of the virus also require social distancing by refraining from doing what's inherently human, which is to seek out solace within the company of others. Its figures are rapidly changing, and when this is often written, as of April 12, 2020, the pandemic has infected quite 1,800,000 people and killed quite 110,000 worldwide. So, the COVID-19 epidemic may be a public health emergency of international concern and poses a challenge to psychological resilience [3].

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The COVID-19 pandemic presents a replacement, unexpected and tremendous challenge to people's mental state, and an increase in incidence is predicted during the foremost acute phase of the outbreak, and an increase within the prevalence of mental state problems when society returns to social normality. With the increasing number of infected cases and deaths, any patient's experience physical suffering and great psychological distress [4]. However, people become more anxious and frightened of unknown threats like COVID-19. And thus the fear of the unknown leads to a way better level of hysteria in both healthy people and other people with pre-existing mental state problems. People's emotional responses are likely to include extreme fear and uncertainty, and negative social behaviours will often be driven by fear and distorted perceptions of risk [7, 9, 10, 11].

The news cycle the planet over is now entirely focussed on the coronavirus pandemic, the risks of COVID-19 and the importance of "social distancing" and why we should always do everything to "flatten the curve". It is a conscious effort to reduce contact between people to hamper the spread of the virus. Social distancing could even be a public health strategy to limit the spread of infectious diseases including COVID-19. Quarantine doesn't get to be scary rather it's an efficient acknowledgment to protecting the overall public. It's defined as separating and restricting the movement of people who are exposed or are potentially exposed to contagion. Quarantine keeps such people away from others so as that they're doing not unknowingly infect anyone in their vicinity. It's employed by Governments to prevent the spread of communicable diseases. Close contact with relations could even be another important route of transmission as has been shown in some studies. Thus, the familiar transmission could play a task in incidence increases during the house quarantine.

The world media, local and international health organizations, epidemiologists, virologists, opinion makers, telephone text messages, social networks, etc. publish information, recommendations, and minute-by-minute updates on the spread and lethality of COVID-19 [6]. Of course, anxiety can arise out of fear of contagion and around the patterns of social estrangement, but it's often worsened by the media, which increases confusion and fear-mongering. It's admitted that in each community crisis those subjects who received

contradictory information present much higher levels of acute stress [12, 13].

The lock-down social isolation, quarantine, and can increase stress and generate more status of precariousness. Confirmed and suspected patients with COVID-19 may experience fear from the results of the disease. Those patients having symptoms like difficulty breathing, cough, fever, and chills or experiencing insomnia triggered by corticosteroid treatment can develop anxiety and mental distress. Additionally, patients in quarantine or forced social isolation might feel frustrated, bored, and lonely. On the other hand, those which their job possesses to still mix with others might experience the emotions of guilt or have sustained hidden worries about being potential spreaders of infection around their families et al. , or got to manage the stigma on their families, Xiang et al. (2020)^[17, 21]. Previous studies on the physical and psychological effects of earlier outbreaks of great infectious diseases, like SARS, showed increased stress, anxiety, depression, and post-traumatic stress among survivors, Wu et al. (2005) ^[19]. The widespread social isolation, quarantine, and in certain countries the strict and long curfew measures, in an attempt to contain the worldwide pandemic, could also cause a high level of psychological distress, Hawryluck et al. (2004)^[20].

In one study, almost 35% of the respondents experienced psychological distress ^[14]. Other researchers have reported negative psychological effects, including symptoms of post-traumatic stress, confusion, and anger. Stressors included increased quarantine duration, fears of infection, frustration, boredom, inadequate supplies, inadequate information, financial losses, and stigma. Some experts have suggested long-lasting effects, and even three years after isolation episodes of post-traumatic stress have been reported ^[15, 18].

In recent pandemics, isolation and quarantine (more extreme forms of social estrangement) have precipitated depression and anxiety. We might expect to see similar effects as confined people separate from loved ones, are deprived of personal liberties, and are purposeless due to routine and altered livelihoods. This can contribute to frustration, boredom, low mood, and potentially depression ^[13].

According to treatment guidelines, patients with COVID-19 should be treated in isolated infectious

hospitals. In this way, due to social isolation, perceived danger, uncertainty, physical discomfort, drug side effects, fear of transmission of the virus to others, and overwhelming representation of negative news in media coverage, patients With COVID-19 they can experience loneliness, anger, anxiety, depression and insomnia and symptoms of post-traumatic stress that could negatively affect the social and occupational functioning of individuals and the quality of life [4]. Furthermore, in this entire context, psychological stress, especially indirect trauma caused by the COVID-19 pandemic, should not be ignored, all of which, together, strongly impact global health and mental health [6, 7].

Post-outbreak, negative emotions (for example, anxiety, depression, and outrage) and sensitivity to social risks have been reported to increase, while positive emotions (for example, happiness and life satisfaction) decreased. People were more concerned with their health and family, while less concerned with leisure and friends [8]. In this regard, a survey conducted March 25-30, 2020, 45% of Americans reported that the stress of the health crisis was hurting their mental health, compared to 32% just 2 weeks earlier [16].

The data from India, April-5 Quarantine was introduced as a means to control the transmission of the severe acute respiratory syndrome (SARS) and (MARS). While data to support its effectiveness were unavailable the lack of such basic information on the causative agent, mode of transmission, the period of communicability, and incubation period required public health and infectious disease experts to return to the first principles of infectious disease control. The outbreak of coronavirus disease 2019 (COVID-19) may be stressful for people.

In conclusion, the need for monitoring mental health information by public health authorities in the event such an actual pandemic is highly fundamental. Launching a 'psychological support strategy' to help those psychologically impacted by a pandemic as the COVID-19 outbreak is also essential. Governments and concerned health authorities need to invest in 'social capital' and develop a clear strategy on the best ways to using social media platforms more effectively, to compensate for the social isolation, as a key element to reduce psychological stress. At the same time,

government and healthcare leaders could optimize the people's capacity and foster 'psychological resilience' by focusing on changing the people's mind sets.

Social distancing and self-quarantine are, no doubt, the arrangements that cause stress to all people, especially for the children and elderly; however, they need to be followed. There may be a feeling of ostracism, abandonment, and being neglected in the elderly when they are isolated. This can make an already challenging situation far more difficult for elderly people particularly for those who are victims of depression or other mental health problems. Older adults, especially in isolation and those with cognitive decline or dementia may become more anxious, angry, stressed, agitated, and withdrawn during the outbreak or while in quarantine. These people need emotional support through families and health professionals.

Such a survey would help me to know the impact of Mental Health and Stress during Quarantine to protect against (COVID-19). This research focused on mental health and stress during the current health emergency and state of alarm derived from the pandemic declared by the COVID-19 outbreak. The consequences of mental health and stress were evaluated with questions on the self-reported impact on people's health. Responses to survey questions were analysed using descriptive analyses. The objectives of this study understand the impact of mental health and Stress during Quarantine to protect against the coronavirus (COVID-19).

The purpose of the Study: To find out the impact of QUARANTINE on Mental Health and Stress to protect against the coronavirus (COVID-19).

Methodology

In this study, the forms were sent to randomly 65 participant and were asked to fill answered to 20 items. Before conduct the study institutional of ethical approval and informed consent in written words obtained from all the participants. The General questionnaire contained demographic characteristics and Background Data such as gender, age height, weight, and marital status the specific questionnaire included questions regarding the awareness of preventive measures of coronavirus, mode of transmission of coronavirus, your family visit any country in the last few months, Having any disease,

(pneumonia, COPD, Immune-compromised condition, asthma), isolation is necessary to stop. Spreading of COVID-19, perceived stress scale. The validity and reliability of questionnaires were evidenced. Data were analysed using the window version 8pro. The one-way ANOVA analysis was used to test for statistical correlational <0.05 was considered non-significant.

Result Analysis

The result of this study supports that PERCEIVED

STRESS SCALE

23.6% score ranging 0-13 from would be considered mild stress

28.1% of people score ranging 14-26 from would be considered moderate stress

48.4% people score ranging 27-40 from would be considered high stress

Summary of Data						
	Treatments					
	1	2	3	4	5	Total
N	5	5	5			25
ΣX	65	65	65			325
Mean	13	13	13			13
ΣX ²	1297	1391	1237			7013
Std.Dev.	10.6301	11.6833	9.8995			10.7781
Result Details						
Source	SS	Df	MS			
Between-treatments	0	4	0	F = 0		
Within-treatments	2788	20	139.4			
Total	2788	24				

The f-ratio value is 0. The p-value is 1. The result is not significant at p < .05.

Discussion

According to our results, strict social distancing measures represent an impression on psychological state and stress level during COVID-19 epidemics. The COVID-19 have created a replacement pandemic accumulated stress, no matter the demographics, the symptoms, and therefore the sort of isolation, i.e. social isolation, quarantine, and lockdown; therefore, it must have a generic framework that helps people turn the negative daily exposure they’re browsing into a positive

visualized outcome. COVID-19 has become a stressor because it has affected people’s lives in several aspects. The result demonstrates that the quarantined impacts on psychological state and stress indicate the moderate to the high level of stress. In this regard, a survey conducted March 25-30, 2020, 45% of Americans reported that the stress of the health crisis was hurting their mental health, compared to 32% just 2 weeks earlier [21]. Also, all people are very nervous during the COVID-19 outbreak of coronavirus. Thus, there may be acts of violence

and stigmatization by accusing people from outside the community of having introduced the coronavirus in the neighbourhood or town. Neighbours can turn a resident “into a plague” and stigmatize his entire family, raising social alarm throughout the local community. We are collecting the data from India, where a multitude of weather conditions prevail, can significantly add to the knowledge of the virus⁽²⁾. The COVID 19 pandemic has challenges in all aspects of life for the entire human race. Of all these aspects. Mental health is a vital part of the situation.

In the disturbed times of this nature, the mental health care of people at different levels carries great importance: promotion, prevention, and clinical care. This is the time to bring to the attention of the general population the importance of mental health in our day to day life.

Conclusion

In conclusion, the need for monitoring mental health and stress in public in the events such as pandemics is highly fundamental brought the social isolation, quarantine, and lockdown can increase stress responses and generate more status of uncertainty. The main implication of this study could help the public health and mental wellness for the stress situation created the long term social distance, quarantine, lockdown, and the isolation for the event of pandemics.

Conflict of Interest: There were no conflicts of interest in this study.

Ethical Clearance: Patient consent was taken.

Source of Funding: Self.

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Psychosocial factors associated with patients with OCD

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Abstract

Background: Obsessive compulsive disorder is a disabling condition characterized by intrusive thoughts which are intrusive, recurrent and distressing in nature, leading to repetitive compulsive mental and physical acts. There are number of factors which play a significant role in OCD such as behavioral, cognitive, environmental and psychosocial factors. Keeping this in view the present study aims to explore the social support, coping and interpersonal behavior among the patients with Obsessive-Compulsive disorder. **Methodology:** A sample of 30 patients with OCD and 30 normal control matched on age, education and socio- economic status for which purposive sampling method was used. A Social Support Inventory to explore the perceived social support, Coping Style Questionnaire and Interpersonal Relationship Scale was administered on both the groups. **Results:** Result indicated that the group of patients with Obsessive-Compulsive disorder scored high on emotional coping and avoidant coping, score less on perceived social support and express less empathy as compared to normal controls. Results also revealed that emotional coping and self- disclosure are the predictors of OCD. On the basis of results of present study, it can be concluded that, Patients with OCD had poor coping, social support and perceived social support as compared to normal controls. The possible implication of the present study could be that Interpersonal behavior is associated with patient's social interaction so future intervention should investigate social cognition, interpersonal effectiveness therapy and training for resilience.

Keywords: Psychological Factors, Coping Style, Social Support, Interpersonal Behaviour and OCD.

Introduction

Obsessive compulsive disorder (OCD) is a disabling condition characterized by intrusive thoughts which are intrusive, recurrent and distressing in nature, leading to repetitive compulsive mental and physical acts. There are number of psychosocial factors which play a significant role in OCD such as behavioral, cognitive, and environmental factors.

Interpersonal factors are also one of the factors which are precipitative and maintaining factors for OCD. As per interpersonal theory, patients with OCD often think

and feel burdened to society as well themselves because of the awareness about their irrational behavior but at the same time not able to control their behaviors. As a result, patient with OCD blame themselves for every negative thing that happen in their life and this thought will have impact on their interpersonal behavior or relationship (Shapiro & Stewart, 2011)¹.

People with Obsessive compulsive disorder report to have low level of perceived social support because of their symptoms in comparison to the people with healthy control group. Previous researches also revealed that symptoms of OCD can be improved if the family, friends, and the other loved ones have healthy relationship and supportive communication with the patient (Steketee, 1997)².

It is also established fact that patients with OCD used maladaptive coping style such as isolation of affect and denial of the facts related with their obsessions.

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Researches suggests that coping mechanism used by the patients with OCD is predominantly lacks adaptive coping (Mortiz et al., 2018)³. Several researches identified thought suppression in patients with OCD and used emotional avoidance when exposed to the thoughts and feelings associated with their obsessions (Allen & Barlow, 2009)⁴.

The patients with OCD know about their irrational behaviour and because of this they keep on thinking about negativistic outcome for everything which lays impact on their interpersonal relationships. On the other hand, adequate social support and adaptive coping strategies used by patients with OCD will be helpful for them to maintain adequate interpersonal relationship. In contrary, inadequate level of coping and social support leads to disturbed or poor interpersonal relationship. There are various researches which have explored various psychosocial factors in patients with OCD but none of the research have explored social support, coping and interpersonal behavior in patients with OCD. Hence, present study is designed to fill the gap in the literature with the aim to explore the psychosocial factors such as social support, coping and interpersonal behavior in patients with OCD.

Materials and Methods

Socio Demographic and clinical Data Sheet: A semi structured socio- demographic and clinical data sheet was specially constructed for the current study. It consisted of various socio-demographic variables which included age in years, educational qualification, marital status, residential address, religion, income and clinical variables which included duration of illness, onset of illness, family history and treatment history.

General Health Questionnaire (GHQ-12; Goldberg, 1978)⁵: The scale is a self- report screening inventory which consists of 12 items. It helps in exploring the psychological distress in general population and it also helps in screening out the population with psychiatric blues among the healthy groups. It is a self-administered screening tool which helps in revealing the difference in clinical states and non- clinical group. 0.80 is the validity for the scale.

Yale Brown Obsessive Compulsive Scale (Y-BOCS; Goodman, 1989)⁶: This scale was designed

to remedy the problems of existing rating scales by providing a specific measure of the severity of symptoms of OCD that is not affected by the type of obsessive or compulsive traits present. The scale helps in providing the overall picture of past and current symptomatology, it also helps in knowing the severity of current symptoms. It is a scale which is rated by the clinician and provides separate scores for severity of obsessions and compulsions. The reliability of the scale is 0.98 and the validity is 0.89.

Hamilton Depression rating scale (HAM-D; Hamilton, 1950)⁷: This is a 21-item rating scale. It is considered to be a very important clinician rating scale which is used to measure the intensity and frequency of symptoms of Depression. The Cronbach alpha reliability for the scale is 0.77 and internal consistency is 0.82.

Coping style questionnaire (Roger et al., 1993)⁸: This is a 60-item scale. It investigates coping strategies used by the patient groups as well as the normal controls under four domains- Rational Coping (RATCOP), Detached Coping (DETCOP), Emotional Coping (EMCOP) and Avoidance Coping (AVCOP). The reliability for Rational Coping (RATCOP), Detached Coping (DETCOP), Emotional Coping (EMCOP) and Avoidance Coping (AVCOP) were 0.85, 0.79, 0.80 and 0.74 respectively.

Social Support Questionnaire (Nehra et al., 1996)⁹: This is 18 item scale in which seven items are positively worded and seven are negatively worded. It was used widely to assess the perceived social support in an individual. The reliability for the scale is 0.62.

Interpersonal Relationship Scale (Garthoeffner et al., 1993)¹⁰: It is a 49-item scale to assess the overall relationship quality. The scale has been widely used to study the effectiveness of relationship enhancement programs of premarital or marital couples (Gordon & Waldo, 1984)¹¹. The reliability for the scale is 0.77 and the validity is 0.94

The Present study was conducted at SGT Hospital & Medical College, Gurugram and Nur Manzil Psychiatric Center, Lucknow and Purposive sampling method was used in the present study. Sample size consists of 60 subjects, under which 30 patients with the diagnosis of Obsessive-Compulsive disorder and 30 Normal Controls

who scored less than 3 on GHQ-12 and matched with patients with OCD group on age, education and socio-economic status were taken. Patients with comorbid diagnosis of organicity, substance use disorder and severe depression were excluded from the present study.

Among the patient population there were both male and female participants and the mean age of patients were 33.83 + 10.06 years and mean years of education

of patients with OCD were 11.83 + 3.92 years. In the present study, most of the patients 60% were from middle from socio-economic status. The mean score of Y-BOCS was 28.27 + 9.67 which signifies that sample included in the present study were having severe level of obsessive-compulsive disorder and mean score of HAM-D was found to be 17.90 + 7.24 which indicates that the sample included in the present study was having moderate level of depression.

Results and Discussion

Table 1: Showing the Social support between patients with Obsessive Compulsive Disorder and Normal Control (Independent sample t- test).

VARIABLE	Patients with OCD N=30 MEAN + SD	NORMAL CONTROL N=30 MEAN + SD	t	df	p
PGI SSQ	42.53 + 8.40	47.80 + 6.86	-2.65	58	0.014**

**= p<0.01

Table 1 shows the social support between patients with Obsessive Compulsive disorder and Normal Control. It shows the patients with OCD have significantly lower perceived social support (p<0.01) as compared to Normal control.

Table 2: Showing the coping mechanism between patients with Obsessive Compulsive Disorder and Normal Control (Independent sample t- test).

VARIABLE	Patients with OCD N=30 MEAN + SD	NORMAL CONTROL N=30 MEAN + SD	t	df	P
RATCOP	28.13 + 7.00	30.00 + 7.51	-0.99	58	0.32
ENCOP	27.70 + 10.05	18.07 + 7.18	4.27	58	0.001**
DETCOP	20.56 + 5.74	21.20 + 6.24	-0.40	58	0.68
AVCOP	24.26 + 5.09	20.83 + 7.74	2.02	58	0.04*

*= p<0.05; **= p<0.01

Table 2 shows the coping mechanism between patients with Obsessive Compulsive Disorder and normal control. It shows that patients with OCD showed significantly more avoidant coping (p< 0.05) and emotional Coping (p<0.001) as compared to normal control whereas on rest of the domains i.e. rational coping, and detached coping both the groups were similar.

Table 3: Showing the interpersonal behaviour between patients with Obsessive Compulsive Disorder and Normal Control (Independent sample t- test).

VARIABLE	Patients with OCD N=30 MEAN + SD	NORMAL CONTROL N=30 MEAN + SD	t	df	p
TRUST	64.80 + 12.20	70.73 + 11.10	-1.97	58	0.05
SELF- DISCLOSURE	53.33 + 12.56	50.33 + 10.65	0.99	58	0.32
GENUINENESS	15.83 + 3.71	17.03 + 3.05	-1.36	58	0.17
EMPATHY	16.20 + 4.71	18.60 + 4.44	-2.03	58	0.04*
COMFORT	26.06 + 4.04	24.33 + 4.30	1.60	58	0.11
COMMUNICATION	8.83 + 1.46	8.50 + 1.99	0.73	58	0.46

*= p<0.05

Table 3 shows the interpersonal behaviour between patients with Obsessive Compulsive Disorder and Normal control. It shows that patients with OCD showed significantly express less empathy (p<0.05) as compared to normal control whereas on rest of the domains trust, self- disclosure, genuineness, comfort and communication both the groups were similar.

Table 4: Stepwise multiple regression of Y-BOCS total as dependent variable and interpersonal behaviour, coping and social support as independent variable.

MODEL	PREDICTOR	R	R Square	Unstandardized Coefficient		B	t	F	df	Significance
				B	Std. err					
1.	ENCOP	0.64	0.41	0.61	0.13	0.64	4.44	19.76	29	0.001
2.	IRS Self-Disclosure	0.75	0.57	-0.30	0.09	-0.40	-3.19	18.23	29	0.004

Table 4 shows the significance of Interpersonal Behavior, Coping and Social support was verified for YBOCS- total score in patients diagnosed as Obsessive-Compulsive Disorder (n = 30). The regression revealed that in interpersonal relationship Trust, Genuineness, Empathy, Comfort, and communication, in Coping

Rational adaptive style, detached adaptive style, and avoidance maladaptive coping style and perceived social support, did not satisfy the inclusion criteria and are hence excluded. Therefore, only two predictor variables i.e. Emotional maladaptive style and self-disclosure were accepted.

The model revealed that emotional maladaptive coping and self-disclosure was contributing significantly and positively towards Y-BOCS Scores. The regression coefficient for emotional maladaptive coping was 0.61 and for self-disclosure is -0.30. Emotional maladaptive coping and self-disclosure explains 0.57% of variance in the YBOCS- Total (Multiple R is 0.75). Finally, K was found to be 27.36 in the contribution of Y-BOCS scores.

The main aim for our study was to explore the social support, coping and Interpersonal behavior among the patients with Obsessive-Compulsive disorder and normal control. And the results of the present study indicated that patients with OCD have significantly lower perceived social support ($p < 0.01$), have significantly more avoidant coping ($p < 0.05$) and emotional coping ($p < 0.001$) and significantly express less empathy ($p < 0.05$) as compared to normal control.

The result of the present study was in the line of previous literature (Pino et al. 2016)¹² which revealed that patient with OCD were unable to understand the mental and emotional states of other people. The reason behind this is that most of the times patient with OCD remain preoccupied with their obsessions and never understand others perspective which leads towards poor interpersonal relationship and maladaptive coping style. At the same time patient with OCD had significantly less perceived social support as compared to normal controls. The reason behind this is that their family members try to console them or insist them not to perform their compulsions. As a result, patients with OCD perceive it negatively which results in less perceived social support.

The regression model revealed that emotional maladaptive coping and self-disclosure was contributing significantly and positively towards Y-BOCS Scores. The regression coefficient for emotional maladaptive coping was 0.61 and for self-disclosure is -0.30. Emotional maladaptive coping and self-disclosure explains 0.57% of variance in the YBOCS- Total (Multiple R is 0.75). Finally, K was found to be 27.36 in the contribution of Y-BOCS scores.

Therefore, the findings can be conceptualized in a way that emotional maladaptive coping and self-disclosure were found to be significant predictor of Y-BOCS scores. Patients with Obsessive Compulsive Disorder feels that no one understands their condition or

illness and because of this they are unable to trust others and they also face difficulty in disclosing their feelings. As a result, they use maladaptive emotional coping style to deal with their problems.

Previous literature also suggests that OCD is associated with several restrictions in their capacity with intimacy. These patients avoid people because they have fear of rejection and they also feel people might break their trust which reveals that they have less emotional and intellectual intimacy with the partners (Newth & Rachman, 2001)¹³.

Conclusion and Acknowledgement

As it is evident in the findings that interpersonal behavior is associated with patient's social interaction so future intervention can be devised by incorporating factors which are associated with social interaction of the patient. As the interpersonal domain of these patients is found to be impaired so it is important to include interpersonal effectiveness therapy especially focusing on the domains of emotional coping and self-disclosure. Various other programs can be devised to improve their coping such as – a framework for cognitive preventive treatment and training for resilience can be organized which can help them in dealing with their problems and challenging situations in their daily life. And subsequently that will prevent the vulnerability of Obsessive-compulsive disorder and other diseases.

The possible limitation of the present study is that the result of the present study cannot be generalized as the sample size was considerably small and the presence of a clinical control group such as depression could have given better understanding of the results.

Conflict of Interest: The authors declares no conflict of interest.

Ethical Clearance: Taken from ethical committee of Faculty of Behavioural Sciences SGT University, Gurugram.

Source of Funding: Self

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Knowledge and Practice Related to Menstrual Health and Hygiene in Female Athletes– A Cross-Sectional Study

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Abstract

Background: Female athletes have to manage regular training along with the pain and discomfort felt while they are having their menstruation. The study assesses level of menstrual health and hygiene knowledge and practice and it will help to take necessary steps for betterment of female athletes.

Objective: To assess the knowledge and practice of menstrual health and hygiene among female athletes.

Method: Cross sectional observational study; data were taken from various institutes and academies of Anand and Ahmedabad (Gujarat). A semi-structured validated questionnaire was used. Female athletes of age 15-21 are included in the study. Willing participants were given information about the study and obtained consent form. Descriptive statistics are used to summarize demographic variables. Results are represented as proportions.

Results: For the level of knowledge related to menstrual health and hygiene; more than 50% have good knowledge, about 3% participants have poor knowledge. Regarding the practice related to menstrual health and hygiene, majority of the participants use sanitary napkins as primary management material for menses and disposal is done majorly in dustbins.

Conclusion: Female athletes prefer to take part in sports even during their menses. Female athletes manage menses during sporting events by mind diverting, proper padding and taking pain killers.

Key Words: Female athlete triad, knowledge, menstrual health and hygiene, myths, practice

Introduction

Menstruation indicates the beginning of reproductive life in a female's life but it is considered as dirty in the Indian culture and various cultures worldwide.¹ It is important for females to have the knowledge, facilities and supporting cultural environment to cope up with their menstruation hygienically and with dignity.² The unhygienic practices during menstruation can lead to consequences like pelvic inflammatory diseases or even infertility.³ Majority of the female athletes do not know the consequences of menstrual problems.⁴ Cases of

markedly delayed menarche, and/or high prevalence of abnormal, irregular or absent menstrual cycles are seen in athletes (female athlete triad).⁵

Materials and Methods

Study design: Cross sectional observational study

Study setting: Various institutes and academies of Anand and Ahmedabad were approached for data collection.

Sampling Technique: Convenient sampling

Sample size collected: 61

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Eligibility Criteria:

• Inclusion criteria

- Age: 15-21 years
- Girls who have attended menarche.
- Who play any sport and participate at district / state / national level

Outcome measure:

A self-structured questionnaire was used to check knowledge and practice for menstrual hygiene management. The content validity of the questionnaire was found 0.908 after pilot testing with expert. The questionnaire is attached in the annexures.

Procedure:

ü The research proposal got permission from the scientific research committee and institutional ethical committee.

ü Prior permissions from the data collection sites were obtained. Consent was obtained from the participants whose age was above 18 years. Assent from

the participant and consent from one of their parents was obtained for participants whose age was below 18 years.

ü The willing participants were given the questionnaire of ‘knowledge and practice related to menstrual health and hygiene’.

ü Each of the participants was explained the purpose of study and then the data was collected.

Data analysis:

Descriptive statistics were used to summarize demographic variables. The knowledge and practice questionnaire is evaluated based on the answers of the questions and recorded answers are represented as percentage. Each question with correct answer was given 1 mark and with wrong answer 0 mark.

Results

Demographic details

As shown in the table 1, all the 61 participants were asked for their age, years since they achieved menarche, years since they play the sport/sports.

Table 1. demographic details

Variables in years	Mean ± S.D.
Age	19.93 ± 1.29
Years since onset of menarche	6.61 ± 2.42
Years since started playing sports	5.80 ± 3.24

Participants were asked about the sports they play and their level of participation. One or more of the various sports were played by the participants from which most of the participants were playing football, cricket, badminton (26.23%, 24.59% and 24.59% respectively), other sports played were kabaddi (16.39%), karate (16.39%), athletics (14.75%), basketball (13.11%)

followed by volleyball (6.56%), running (4.92%), swimming (4.92%), kho-kho (4.92%), tennis (3.28%), taekwondo (3.28%), long jump (3.28%) & hockey (1.64%). Also the level of their participation was asked. From total 61 participants 22 (36.07%) played at District level, 21 (34.43%) at State level and 18 (29.51%) at National level.

Details of menstruation

The participants were asked about their menstruation like regularity, missing any menstrual cycles in last 3 months, pain during menstrual cycle. The participants were also asked if they have any menstrual problem and

if so, have they ever consulted a doctor for the same or not. They were asked about any problem/diagnosis that they got to know after consultation. The details were mentioned in form of frequency and percentage in table 2.

Table 2. menstrual details of participants

Variable		Frequency (n=61)	Percentage
Regular	Yes	45	73.77 %
	No	16	26.23 %
Missed menses in last 3 months	Yes	7	11.48 %
	No	54	88.52 %
Menstruation	Painful	26	57.38 %
	Pain free	35	42.62 %
Have any menstrual problem	Yes	14	22.95 %
	No	47	77.05 %
Have consulted for the problem	Yes (11/14)	11	78.57 %
Problem/diagnosis	PCOD/Hormonal disturbance	4	36.36 %
	No abnormality detected	3	27.27 %
	Irregular menses	2	18.18 %
	Heavy flow	1	9.09 %
	Painful menstruation	1	9.09 %

Education of participants and their parents

Current education of participants, education qualification of their mother and father were asked. From total 61 participants 57 (93.44%) were undergraduate and only 4 (6.56%) were from higher secondary. Parents of the participants were Graduate and above (65% - 71%), Higher secondary (23% - 26%), primary (6.5% - 8%).

Myths regarding menstruation

The participants were asked if they knew any myths related to menstruation, if so, do they follow the same

or not and the description of myths. Surprisingly 25 (40.98%) out of 61 participants were not practicing any myths. 25 (40.98%) of them practiced not going to temple during menstruation. 4 (6.56%) practised not entering kitchen, 3 (4.91%) not washing hair, 3 (4.92%) not touching pickle, 1 (1.64%) not going to other’s home.

Primary source of information about menstruation

Participants were asked from whom they received primary information regarding menstruation. 87% of them received information from their mothers, followed

by Teacher, friends, grand-mother and internet.

Level of knowledge about menstrual health and hygiene among female athletes

For assessing level of knowledge about menstrual health and hygiene the questionnaire included questions

about physiology of menses. The questionnaire consisted questions about female athlete triad and its signs and symptoms also. The correct answers were given 1 point each and scoring was done on the basis of correct answers given. The knowledge level is divided in three levels: good, average and poor. The results are shown in table 3.

Table 3. level of knowledge

Level of knowledge	Frequency (N=61)	Percentage
Good (>75%)	32	52.46 %
Average (50%-75%)	27	44.26 %
Poor (<50%)	2	3.28 %

Practice regarding menstrual health and hygiene among female athletes

Participants were asked if they prefer to participate in the sports during menses. 38/61 (62%) prefer to take part in sports even during their menstruation, whereas 23/61 (38%) do not prefer to take part in sports during their menstruation.

Materials used for management of menstruation

All the participants were asked to rank the materials commonly used by them. All the participants answered

sanitary napkins as first material used for management and nine participants opted among new cloth, old cloth and tampon as second commonly used material by them.

Management of menses during competition and during training session

Participants were asked about how they manage their menstruation during their competition and during training respectively. Table 4 and 5 shows the results about how the participants manage their menstruation during their competition and during training respectively.

Table 4. management of menses during competition

Management of menses during competition	Frequency (n=61)	Percentage
Take pain killer	9	14.75 %
Avoid participation	15	24.59 %
Other	37	60.66 %
Take drug to delay menses	1	1.64 %
Use hot pack and take rest	1	1.64 %
Have chocolates, juices for energy	2	3.28 %
Proper padding	3	4.92 %
Mind diverting	8	13.11 %
Nothing	22	36.07 %

Table 5. management of menses during training session

Management of menses during training session	Frequency (n=61)	Percentage
Take pain killer	6	9.84 %
Skip training session	14	22.95 %
Other	41	67.21 %
Avoid high intensity training	2	3.28 %
Have chocolates, juices for energy	2	3.28 %
Mind diverting	3	4.92 %
Proper padding	4	6.56 %
Nothing	30	49.18 %

Method of cleaning genital area

The participants were asked what method they use to clean the genitalia. 50/61 (82%) participants use soap and 11/61 (18%) participants use only water to clean genitalia during menses.

Method of disposal of the used menstrual management materials

The participants were asked how they disposed the materials they used for their menstruation. 57/61 (93%) participants dispose used management materials in dustbin whereas only 4/61 (7%) participants burn the management material used during menses.

Discussion

Regarding level of knowledge about menstrual health and hygiene

More than half of the participants have scored > 75% marks in the knowledge section and achieved good level of knowledge and about 44% of participants have scored average level of knowledge with score between 50% to 75% and only about 3% participants have poor level of knowledge with score of < 50%. This contradicts with the findings of previous researches about menstruation where they showed lack of correct knowledge among adolescent girls of various rural and some of the urban areas. A study found that only about 43% females have good knowledge whereas 57% have poor knowledge.⁴ The athletes with average or poor knowledge score can be given reading materials, focused group discussion,

audio-visual aids etc for improving knowledge. This in turn will help in their performance in various sports they are participating and winning medals for their districts, states or nation at large.

Regarding practice related to menstrual health and hygiene

For practicing menstrual health & hygiene, primary management material for menstruation used by female athletes are sanitary napkins. Only few participants have opted for clothes and tampons as second option along sanitary napkins. Contrary to this results a study done in Nagpur district showed that about 49% adolescent girls use sanitary pad, 46% adolescent girls use old clothes and 5% use new cloth as management material for menses.⁸ This implies that most of the female athletes follow good practice for maintaining menstrual health & hygiene, which eventually prevent them to develop any reproductive tract infection (RTI) in future. While female athletes participating in events, few take pain killers or allied health measures like diversion therapy, hot packs etc... About 1/4th of female athletes either do not participate in events. The similar practice female athletes do while undergoing training during menses.⁷

Regarding source of information related to menstruation

Primary source of information about menstruation in majority of the female athletes is mother (n=53, 87%). Similar studies done previously also shows as mothers being the primary source of information

related to menstruation.⁶ Other than mother; teachers, grandmother, friends or even internet is found to be the source for providing information on this subject. So if we can improvise the knowledge about menstrual health & hygiene in totality among society, would be a great help to all of the female population at large.

Regarding the myths being practised

Results show that about 41% of female athletes do not follow any myths, which was quite surprising to the society we normally live in. About 41% do not go to temple and 6.5% females do not enter the kitchen. A similar study shows major difference in the results regarding myths that 86% do not go to religious places or attend religious function and 93% follow practice of not entering the kitchen. The separate facilities are being made and practiced as per many of the studies.⁴

Limitation

- The study has small sample size and various domains of knowledge have not been considered for the study

Future Recommendation

- Comparison between different groups of female athletes can be studied as the level of knowledge and practices may vary; the same can be explored.

- Knowledge and practice can be improvised by providing materials like booklets, audio-visual materials after assessing their knowledge and practice at the basic level. The efficacy of the same materials can be assessed after certain duration of time.

Ethical Clearance- Taken from ARIP-INSTITUTIONAL ETHICS COMMITTEE (2017-2019)

Source of Funding- Self

Conflict of Interest- Nil

Acknowledgement: I thank Almighty God and my parents who have been the foundation for knowledge, wisdom and source of strength, inspiration and patience. I sincerely thank the participants, my guide, friends and all the direct and indirect contributors for this study.

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Health Problems of International Travellers in States of Karnataka and Goa, India- A Cross Sectional Study

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Abstract

Background: International travel is undertaken by large, and increasing, numbers of people for professional, social, recreational and humanitarian purposes. Travellers are an epidemiologically important population because of their motility, potential for exposure to diseases outside their home country. According to Tourism statistics 2017, around 2,47,07,732 numbers of International travellers visited India in 2016. Hence, it is important to assess the health problems of travellers.

Objectives: 1. To assess the health problems of International Travelers in Karnataka and Goa, India.
2. To evaluate the relationship between the travel characteristics, individual behavior and travel health problems.

Methods: A Cross-sectional study was conducted for a duration of one year among 400 international travellers selected by convenience sampling at tourist places of states of Karnataka and Goa. A pretested, semi-structured questionnaire was administered to collect information about demographic and travel characteristics, individual behaviour and health problems during travel.

Results: Among 400 international travellers, 51.5% (206) were males and 48.5% (194) were females, with majority of the participants belonging to the age group of 25 to 45years. 41.5% of the participants reported health problems, most common being fever, upper respiratory symptoms and diarrhoea.

Conclusion: Nearly half of the participants reported health problems, 28% of them were relying on self-medication for the health problem(s) and majority of them were preventable. Hence it is important to consider the need of travel health clinics in places with high frequency of tourist arrivals.

Keywords: International travellers, travel characteristics, pretravel advise, health problems, vaccination, chemoprophylaxis

Introduction

Travel from one place to other started in olden days to find the source of livelihood and protection against the adverse environmental conditions due to

changing seasons, seeking for a safe habitat to lead life. Advancement in industrialisation, socialisation, technology and expanded knowledge about the geography of the earth has led to increased number of travellers across the world. Increasing number of travellers, has also increased the destinations and purpose of travel.

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International travel is undertaken by large, and increasing, numbers of people for professional, social, recreational and humanitarian purposes. ¹ International tourist are expected to increase by 3.3% a year between 2010 and 2030 to reach 1.8 billion by 2030, according to UNWTO's long-term forecast report Tourism Towards

2030. ² Annual pilgrimages to places like Lourdes, Mecca and to religious shrines throughout India account for the international movement of several million people. ³ According to Tourism statistics 2017, around 2,47,07,732 numbers of International travellers visited India in 2016. ⁴

Travellers are an epidemiologically important population because of their motility, their potential for exposure to diseases outside their home country, and the possibility that

they may carry non-endemic diseases between countries. ⁵ International travellers are of particular concern because they are at high risk due to the following reasons: a) they are exposed to disorders induced by rapid changes of the environment, b) in developing countries like India, they are exposed to certain infections, which may not exist in their country of residence, c) in the new destinations, they lack information about the accessible health care facilities for their health problems.

Travel medicine or Emporiatrics is the branch of medicine that deals with the prevention and management of health problems of international travellers. ⁶

To improve the health interventions targeted towards the population crossing international boundaries, an improved understanding of the nature of travel, individual behaviour during travel, health problems during travel and pretravel health preparations is necessary. Health problems are self-reported by 22% to 64% of travellers, travelling to the developing world. ^{7, 8} Hence, this study was undertaken to assess the health problems of international travellers.

Objectives:

1. To assess the health problems of International Travelers in Karnataka and Goa, India.
2. To evaluate the relationship between the travel characteristics, individual behavior and travel health problems.

Material and Methods

Type of study: A Cross-sectional study among international travellers in states of Karnataka and Goa.

Place of study: Tourist and transit places of

Karnataka and Goa states.

Duration of the study: 12months (June 2018 to May 2019).

Study participants: International Travelers visiting tourist places in states of Karnataka and

Goa, India.

Inclusion criteria:

1. International travellers over 18years of age.
2. International travellers who understood and spoke English.
3. International travellers who had stayed in India at least for 24hours.

Exclusion criteria:

1. International travellers of Indian origin.
2. International Travelers who did not give consent for the study.
3. International travellers who were staying in India for > 3months.

Sample size

Based on the previous study done in Agra by Amit Kumar Mehto et al, the proportion of the study participants having health problems was found to be 48.2% (p). ⁹ With absolute precision of 5%, the sample size (N) calculated was 384, which was rounded to a final sample size of 400. The study participants were selected by convenience sampling.

Method of collection of data: Approval was taken from the concerned authorities of Tourism Departments of Karnataka and Goa states. Ethical clearance was taken from Institute Ethics Committee of Karnataka Institute of Medical Sciences (KIMS), Hubballi and Directorate of Health Services (DHS), Government of Goa. The study was conducted among the International Travelers at various places (beaches, exit site of monuments, accommodation units and transit places) of Karnataka and Goa at the time of study.

Karnataka state included data collection in four regions (North Karnataka, South Karnataka, Hyderabad

Karnataka and Coastal Karnataka). Places with a greater number of foreign tourists were selected from each region of Karnataka mentioned above based on tourism statistics of Karnataka. Goa state was divided into two regions North Goa and South Goa and participants were interviewed in each of the region at beaches, restaurants and transit places.

International travellers in each of the above-mentioned place were explained about the research. After taking the written consent, participants were interviewed using a predesigned, semi-structured, pretested questionnaire containing information about sociodemographic characteristics, Individual behaviour and health problems in the current trip.

Pilot study: a pilot study was conducted before undertaking the actual research in North Goa,

a total of 21 participants were interviewed using the questionnaire. Necessary changes were

made in the questionnaire after the pilot study, and a final questionnaire was prepared.

Data processing and statistical analysis: Data was entered in Microsoft excel and analysed using Statistical Package for Social Sciences Version 21 (SPSS free version 21). Continuous data was expressed as mean and standard deviation and categorical data was expressed as proportions. Appropriate tests of significance were used. P value <0.05 was considered statistically significant.

Results

Sociodemographic profile of participants

Of 400 participants, 51.5% of the participants in the study were males. The mean age of the males and females in the study were 37years and 34years, with standard deviation of 9.5years and 9.9years respectively. Majority of them belonged to the age group of 25-45years. Nearly

half of the study participants were following Christianity (49.5%). Majority of the participants had completed their graduation (57.5%). Most of the participants (57.5%) were belonging to the countries of European continent, followed by Asian continent (21.8%). 13% of the participants mentioned having a pre-existing chronic health problem. The most common chronic health problems reported in the current study were Diabetes (3.5%), followed by Coronary artery Disease (3.3%).

Travel characteristics

The mean duration of trip among the participants was 30 days (SD 20.8days). Most of the participants were travelling to India for the purpose of pleasure and recreation (74%), followed by academic purpose (8.5%) and work (7.3%). 25.5% of the participants were travelling alone and 21.5% of the participants were travelling with their spouses in the current trip. The most common accommodation facilities used by travellers were hotels and lodges (78%), followed by paying guests (8.6%). 40% of the participants visited other countries before arriving to India during the current trip.

Individual behaviour

40% of the participants reported to have performed at least one adventure activity during the current trip which included trekking, hiking, water sports etc. 22.5% of the participants who performed adventure activity reported injuries while performing them. Majority of participants reported eating from multiple sources. (Figure 1). 69% of participants reported having at least one habit which included consumption of alcohol, smoking, use of smokeless tobacco and recreational drugs during the current trip (Table 1). The most common high-risk practice among the participants in the current trip was tattooing (29.5%), followed by use of Marijuana in any form (26.3%) (Table 2).

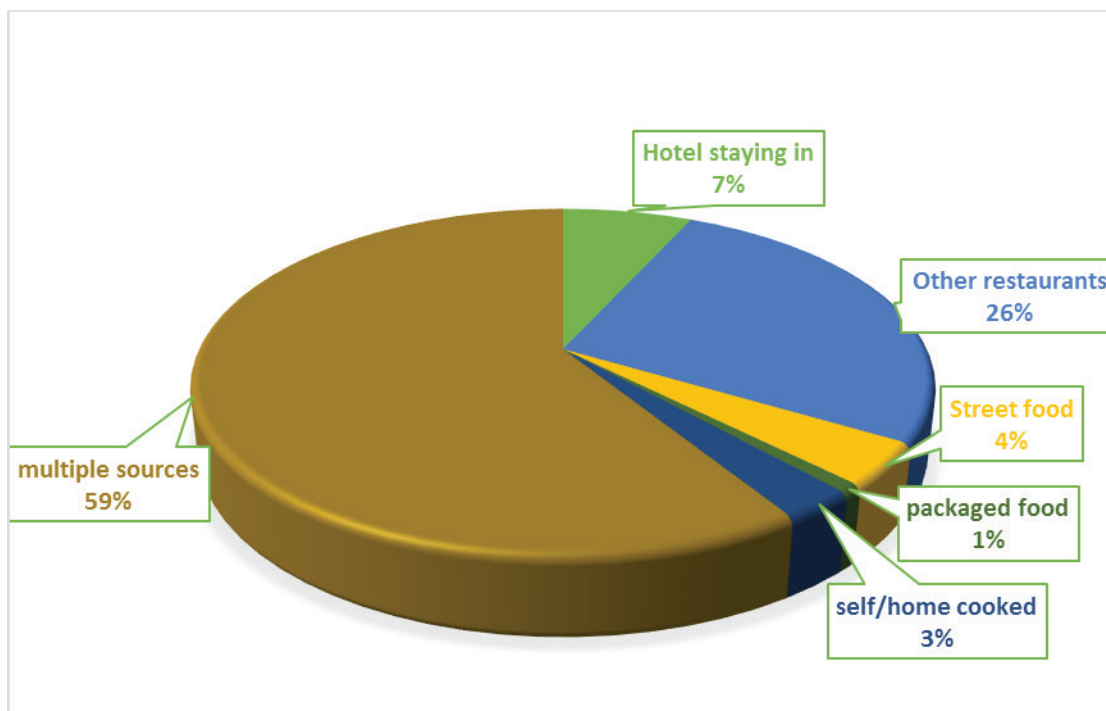


Figure 1: Distribution of the participants according to the source of food in the current trip.

Table 1: Habits during the current trip among participants.

Variables	Categories		Total n(%)
	Yes n(%)	No n(%)	
Alcohol consumption	260(65)	140(35)	400(100)
Smoking	140(35)	260(65)	400(100)
Smokeless Tobacco	11(2.8)	389(97.3)	400(100)
Recreational drugs	6(1.5)	394(98.5)	400(100)

Table 2: High risk practices during the current trip among participants.

High risk practices during trip	yes	no	Total N (%)
	N (%)	N (%)	
Unprotected sexual intercourse	10(2.5)	390(97.5)	400(100)
Tattooing	118(29.5)	282(70.5)	400(100)
Piercing	16(4)	384(96)	400(100)
Injection drug abuse	5(1.2)	395(98.8)	400(100)
Marijuana	105(26.3)	295(73.7)	400(100)

Heath problems

The prevalence of health problems during travel among the participants was 41.5%. Most of the participants faced health problems at Goa followed by Mysore and Udaipur. among 166 participants who reported health problem in the current trip, the most common health problem reported was fever (64.46%) followed by upper respiratory tract symptoms (57.23%) and diarrhoea (44.58%). A total of 67 participants had at least one episode of traveller’s diarrhea.

Off those who reported health problems 36% of the participants sought the treatment from a local doctor, 28% of them used self-medication, 22% of them were referred to higher centres in India for management of their health problems. 39.76% of the participants who had health problems during travel underwent biochemical/ microbiological investigation.

There was a significant difference in the prevalence of health problems of the people belonging to different continents and pre-existing disease (Table 3).

Table 3: Association between sociodemographic characteristics, pre-existing disease and health problems.

Variables	Categories	Health Problems		Chi square	p value
		Present	Absent		
Age	<25years	26(54.2%)	22(45.8%)	3.629	>0.05
	25-45years	116(39.6%)	177(60.4%)		
	>45years	24(40.7%)	35(59.3%)		
Gender	Male	85(41.3%)	121(58.7%)	0.01	>0.05
	Female	81(41.8%)	113(58.2%)		
Continent of residence	Asia	21(12.7%)	66(28.2%)	15.278 [^] (dof 5)	<0.05*
	Europe	109(65.7%)	121(51.7%)		
	Africa	4(2.4%)	9(3.8%)		
	South America	10(6%)	11(4.7%)		
	North America	19(11.4%)	23(9.8%)		
	Australia	3(1.8%)	4(1.7%)		
Pre-existing disease	Present	37(22.3%)	15(6.4%)	21.649	<0.001
	Absent	129(77.7%)	219(93.6%)		

*significant, [^]Monte Carlo Exact test, dof-degrees of freedom

Table 4: Association between sociodemographic characteristics, pre-existing disease and health problems.

Variables	Categories	Health Problems		Chi square	p value
		Present	Absent		
Visit to other country	Yes	78(47%)	82(35%)	5.774	<0.05*
	No	88(53%)	152(65%)		
Habits	Yes	130(78.3%)	146(62.4%)	11.507	<0.01*
	No	36(21.7%)	88(37.6%)		
Source of food	Staying Hotel	8(4.8%)	19(8.1%)	16.873 [^] (dof 5)	<0.01*
	Other Restaurant	39(23.5%)	68(29.1%)		
	Street Food	4(2.4%)	12(5.1%)		
	Packaged Food	1(0.6%)	2(0.9%)		
	Self/Home Cooked	0(0%)	11(4.7%)		
	Multiple Sources	114(68.7%)	122(52.1%)		

*significant, [^]Monte Carlo Exact test, dof-degrees of freedom

Visit to other countries during the current trip, presence of at least one habit and source of food were significantly associated with health problems (Table 4). Travellers diarrhea was significantly associated with consumption of street food (chi square-17.277, $p < 0.01$).

Discussion

The present study was conducted among 400 international travellers who visited Karnataka and Goa states of India. The prevalence of travel related health problems among the participants in the current study was 41.5%. All 166 participants who reported health problems were having multiple health problems. In a research conducted by Amit Kumar Mehto et al at Agra reported that the prevalence of health problems among international travelers was 48.2%.⁹ In a study conducted in Calcutta by Sanatanu Chatterjee reported a prevalence of 35%.¹⁰

In the current study, consumption alcohol during the trip was reported by 65% of the participants, smoking was reported by 35% of the participants, 2.8% reported the usage of tobacco in smokeless forms and 1.5% of them reported taking recreational drugs. A similar pattern of habits was found in a research conducted by Mark A Bellis et al.¹¹

The current study found that health seeking behaviour for travel health problems was not satisfactory, which provokes the idea for need of travel health programme.

Conclusion

Nearly half of the participants reported health problems, 28% of them were relying on self-medication for the health problem(s) and majority of them were preventable. Hence it is important to consider the need of travel health clinics in places with high frequency of tourist arrivals.

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A Cross Sectional Study to Assess Pretravel Health Preparation Among the International Travellers in States of Karnataka and Goa

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Abstract

Background: International travel is undertaken by large, and increasing, numbers of people for professional, social, recreational and humanitarian purposes. Travellers are an epidemiologically important population because of their motility, their potential for exposure to diseases outside their home country. Pretravel health preparation (vaccination and chemoprophylaxis) is effective to prevent health problems among travellers and spread of endemic diseases across international borders.

Objective: to assess the pretravel health preparation among the international travellers in Karnataka and Goa states of India.

Methods: A cross sectional study was conducted among 400 international travellers in tourist places of Karnataka and Goa states of India after approval by authorities, for a duration of 12 months from June 2018 to May 2019. International travellers at tourist destinations and transit sites were interviewed using self-administered pretested semi-structured questionnaire about pretravel health preparation.

Results: 51.5% participants in the study were males and majority (74%) of the participants were travelling for the purpose of pleasure and recreation. More than half of the participants were from European countries. 70.8% of the participants had received pretravel advise, 75.4% of the participants had received at least one vaccine prior to the current trip, most common being Yellow fever and Tetanus. 24.5% were taking malaria chemoprophylaxis.

Conclusion: Majority of the travellers in the current study had taken pre travel health advise and had received vaccination against various diseases. Chemoprophylaxis for prevention of malaria among the participants was not satisfactory.

Key words: International travellers, pretravel health advise, chemoprophylaxis, vaccination, travel

insurance

Introduction

International travel is undertaken by large, and increasing, numbers of people for professional, social, recreational and humanitarian purposes. ⁽¹⁾ International tourists are expected to increase by 3.3% a year between 2010 and 2030 to reach 1.8 billion by 2030, according to UNWTO's long-term forecast report Tourism Towards 2030. ⁽²⁾

Travellers are an epidemiologically important population because of their motility, their potential for exposure to diseases outside their home country. ⁽³⁾

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Travel medicine or Emporiatrics is the branch of medicine that deals with the prevention and management of health problems of international travellers. (4) The major content areas of travel medicine include the global epidemiology of the health risks to the traveller, vaccinology, prevention of disease and pretravel counselling. (5)

Pretravel health preparation (vaccination and chemoprophylaxis) is effective to prevent health problems among travellers. Every pretravel advise should be tailor made for each individual, including minimum necessary vaccinations and chemoprophylaxis with necessary prevention strategies specific to the particular destination, without unnecessary adverse effects, cost and inconvenience to the travellers. (6)

Pretravel health consultation should take place at least 4–8 weeks before the journey and preferably earlier if long-term travel or overseas work is envisaged. However, last-minute travellers can also benefit from a medical consultation, even as late as the day of travel. Not all the international travellers undertake pretravel consultation and those who undergo consultation are not found to be adhering to the standard preventive and protective measures recommended by the physician. (7) Hence this study was conducted with an objective to assess the pretravel health preparation among the international travellers in Karnataka and Goa states of India. This is a part of a larger study on Health Problems of international travellers, conducted in Karnataka and Goa, India.

Material and Methods

Type of study: A Cross-sectional study among international travellers visiting states of

Karnataka and Goa.

Place of study: Tourist and transit places of Karnataka and Goa states.

Duration of the study: 12months (June 2018 to May 2019).

Study participants: International Travelers visiting tourist places in states of Karnataka and

Goa, India.

Inclusion criteria:

1. International travellers over 18years of age.
2. International travellers who understood and spoke English.
3. International travellers who had stayed in India at least for 24hours.

Exclusion criteria:

1. International travellers of Indian origin.
2. International Travelers who did not give consent for the study.
3. International travellers who were staying in India for > 3months.

Sample size

Based on the previous study done in Agra by Amit Kumar Mehto et al, the proportion of the study participants having health problems was found to be 48.2% (p). (8) With absolute precision of 5%, the sample size (N) calculated was 384, which was rounded to a final sample size of 400. The study participants were selected by convenience sampling.

Method of collection of data: Approval was taken from the concerned authorities of Tourism Departments of Karnataka and Goa states. Ethical clearance was taken from Directorate of Health Services (DHS), Government of Goa. The study was conducted among the International Travelers at various places (beaches, exit site of monuments, accommodation units and transit places) of Karnataka and Goa at the time of study.

Karnataka state included data collection in four regions (North Karnataka, South Karnataka, Hyderabad Karnataka and Coastal Karnataka). Places with a greater number of foreign tourists were selected from each region of Karnataka mentioned above based on tourism statistics of Karnataka. Goa state was divided into two regions North Goa and South Goa and participants were interviewed in each of the region at beaches, restaurants and transit places.

International travellers in each of the above-mentioned place were explained about the research and written consent was taken and interviewed using

a predesigned, semi-structured, pretested questionnaire containing information about socio-demographic characteristics and pretravel health preparation.

Pilot study: a pilot study was conducted before undertaking the actual research in North Goa, a total of 21 participants were interviewed using the questionnaire. Necessary changes were made in the questionnaire after the pilot study, and a final questionnaire was prepared.

Data processing and statistical analysis: Data was entered in Microsoft excel and analysed using Statistical

Package for Social Sciences Version 21 (SPSS free version 21). Continuous data was expressed as mean and standard deviation and categorical data was expressed as proportions.

Results

Of 400 participants, 51.5% of the participants in the study were males. The mean age of the males and females in the study were 37years and 34years, with standard deviation of 9.5years and 9.9years respectively. Majority of them belonged to the age group of 25-45years. Nearly half of the study participants were following Christianity

(49.5%). Majority of the participants had completed their graduation (57.5%). Most of the participants (57.5%) were belonging to the countries of European continent, followed by Asian continent (21.8%). (Figure 1).

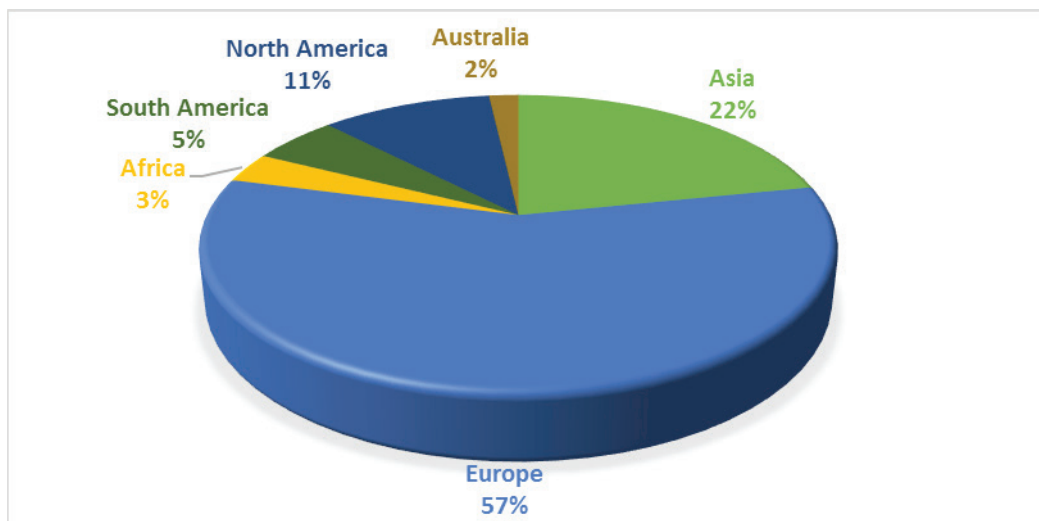


Figure 1: Continent wise distribution of international travellers in the study.

Most of the participants (57.5%) in the study were single. 13% of the participants mentioned having a pre-existing chronic health problem. The most common chronic health problems reported in the current study were Diabetes (3.5%), followed by Coronary artery Disease (3.3%).

More than half (68%) of the participants had pre-planned the trip 30-180days before beginning the trip. (table 1)

Table 1: Number of days of preplanning for the current trip among participants.

Days of preplanning	Frequency	Percent
<30days	107	26.8
30-180	272	68.0
>180	21	5.3
Total	400	100.0

Most of the participants were travelling to India for the purpose of pleasure and recreation (74%), followed

by academic purpose (8.5%) and work (7.3%). 25.5% of the participants were travelling alone and 21.5% of the participants were travelling with their spouses in the current trip. 72.5% of the participants had travel insurance for the current trip. 70.8% of the participants sought pretravel health advise from various sources. (table 2)

Table 2: Pretravel health seeking among the participants.

Pretravel health advise	Frequency	Percent
yes	283	70.8
no	117	29.3
Total	400	100.0

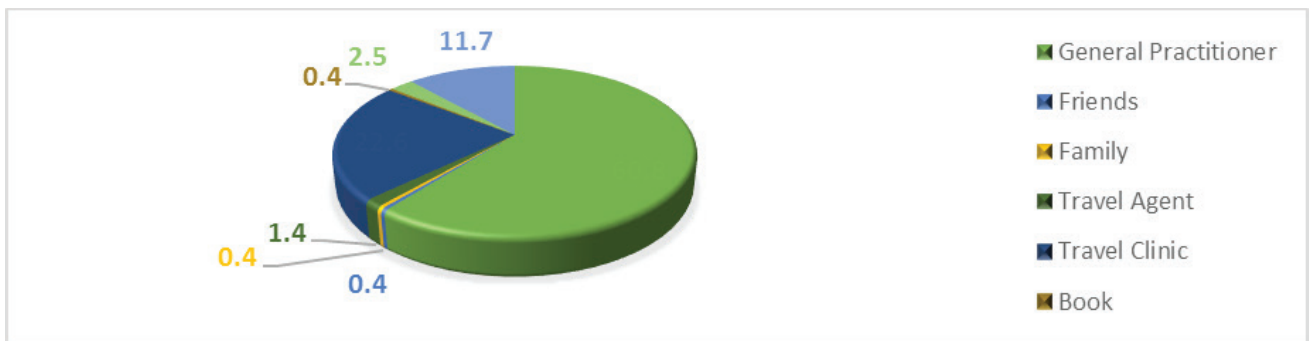


Figure 2: Source of pretravel health advise among the participants who sought pretravel health advice.

The most common source of pretravel health advise was from General practitioners. (figure 2). On interviewing about the content of the pretravel health advise, the most common advice was found to be regarding vaccination (94%). (table 3)

Table 3: Content of pretravel health advise among the participants who sought pretravel health advice.

Content of the pretravel Health Advise	Yes	No	Total
Preventive measures of various health problems	69(24.4)	214(75.6)	283(100)
Chemoprophylaxis	149(52.7)	134(47.3)	283(100)
Vaccination	268(94.7)	15(5.3)	283(100)

59.3% of the participants were aware about basic first aid and were carrying first aid kit during their current trip. 75.4% of the participants reported that they had received at least one vaccine prior to the current trip. Of 400 participants, majority of the participants were vaccinated against Yellow fever (65.5%) and tetanus (62.5%). (figure 3)

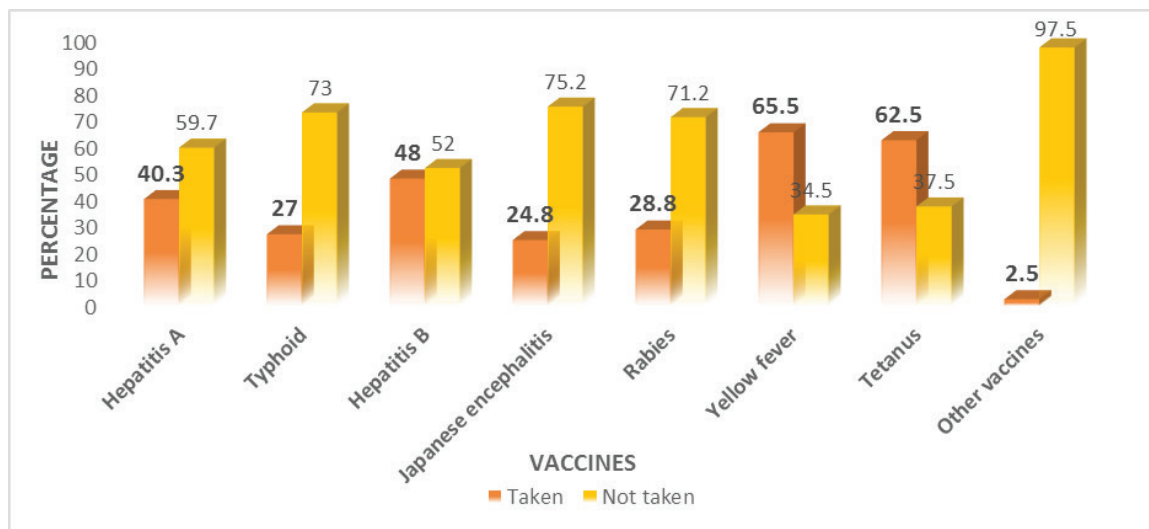


Figure 3: vaccines received by the participants prior to current trip.

24.5% of the travellers reported that they were taking chemoprophylaxis against malaria as advised, others reported using mosquito repellents, nets and other personal protection methods. On interviewing about the awareness about the health facilities available in the destination, 34.2% were knowing about the health facilities beforehand, most common reason for not being aware was easy availability of information through internet and having travel insurance.

Discussion

The present study was conducted among 400 international travellers who visited Karnataka and Goa states of India during the study period who met inclusion criteria, with an objective to assess the pretravel health preparation.

The study was conducted among 400 participants which included 206(51.5%) of male and 194(48.5%) female travellers, and majority of the participants (57.5%) in the current study were from countries of European continent, which was similar to the finding in the study conducted by Amit Kumar Mehto et al which had 52% male participants and 47.6% of the participants from European continent. ⁽⁸⁾

In the present study, it was found that 70.8% of the participants had sought pretravel health advise before beginning the current trip from various sources. In a study by Amit Kumar Mehto et al reported that three fourth of all participants (319, 75.6%) sought Pre-travel health advice, which was similar to the current study. ⁽⁸⁾ In a study by Santanu Chatterjee pretravel health advice was sought by 377 (83%) tourists, which was higher than the current study findings. ⁽⁹⁾

The most common vaccine received by the participants was yellow fever which was received by 65.5% of the participants in the current study. 62.5% of the participants were vaccinated against tetanus. 48% and 40.3% of the participants had received vaccines against Hepatitis B and Hepatitis A respectively. In a research by Amit Kumar Mehto et al in Agra reported that Hepatitis A was the most common (68.2%) followed by Hepatitis B (60.2%), Tetanus (59.5%) and Typhoid (53.3%), which was similar to the current study. Yellow fever vaccine was received by 38.5% of the participants, which was less compared to the current study. ⁽⁸⁾

Only 24.5% of the participants were taking chemoprophylaxis for malaria prevention in the current study, which was higher than the finding in a study

conducted by Amit Kumar Mehto et al in Agra and similar to similar (24%) to the finding in the study conducted by Santanu Chatterjee at Kolkata. ⁽⁸⁾⁽⁹⁾

The strength of this study is, it is the first research to be done on travel medicine in South India. Personal interviewing all the participants by the researcher has yielded good quality and quantity of information about pretravel health preparation.

The limitation of this study is the use of convenience sampling. Vaccination confirmation through certificates was not done, hence there could be possibility of recall bias.

The study concluded that majority of the travellers in the current study had taken pre travel health advise and had received vaccination against various diseases, however improvement is required in provision of pretravel preparation services. Chemoprophylaxis for prevention of malaria among the participants was not satisfactory. Further research in the field of travel medicine is recommended.

Conflicts of Interest: Nil

Source of Funding: Self

Ethical Clearance: Taken from Institute Ethics Committee of Karnataka Institute of Medical Sciences (KIMS), Hubballi and Directorate of Health Services (DHS), Government of Goa.

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Development and Validation of Jegadeesan and Maimoona Impulsivity Parent Rating Scale (Jam-Iprs) for Adhd Children

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Abstract

Aim: The aim of this study is to develop and validate the Jegadeesan and Maimoona Impulsivity Parent Rating Scale (JAM-IPRS) among ADHD Children.

Objectives

- Ø To generate the scale items through focus group discussion.
- Ø To identify the appropriateness and relevance of the items through subject matter Expert Rating.
- Ø To establish the psychometric properties of developed scale.
- Ø To develop norms for developed scale.
- Ø To translate the scale items in a two vernacular languages Tamil and Malayalam

Methodology: Formulation of 42 statements was done with focus group discussion. The statements are sent to 50 experts in the field of Occupational Therapy, Speech Therapy, Psychologist and Special Educator for validating the items. Total of 42 items are validated by the experts. A total of 60 samples (30 normal subjects and 30 impulsive subjects) were selected for the field trial/ main study those who were under occupational therapy management at the age range between 5 – 13 years residing Kerala (Malappuram and Thrissur) and Tamilnadu (Erode and Komarapalayam). Samples were selected by using convenient sampling method. Socio-demographic data sheet prepared by investigators were used for collecting information regarding the name of the child, number of siblings, birth order, type of family, parental occupation and parental education.

Conclusion: From the statistical analysis the assessment's Cronbach alpha value is $\alpha = 0.68$ to 0.72 which shows the assessment tool has good internal consistency, reliability. The expert validation was done and got good relevance or content validity for all the scale items. The Test-Retest Reliability of developed scale is 0.725 . Hence Jegadeesan and Maimoona Impulsivity Parent Rating Scale(JAM-IPRS) can be used to identify the level of impulsivity for ADHD children.

Key Words: ADHD, Impulsivity Parent Rating scale, Psychometric properties

Introduction

Impulsivity has been defined as a predisposition toward rapid, unplanned reactions to internal or external stimuli with diminished regard to the negative consequences of these reactions to the impulsive individual or others^[1]. In simplest terms, it is particularly broad and fragmented personality construct^[2]. Impulsivity can describe a person's tendency to give

into cravings, inability to plan or weigh options before deciding, seek out adventure or thrills, lack of patience, inability to appreciate consequences, and propensity for uninhibited inappropriate behaviours^[2]. These broad characterizations suggest the extent to which impulsivity is defined in everyday terms; ostensibly, impulsivity encompasses a wide range of daily events^[2].

The prevalence of ADHD appears to vary considerably throughout different region of the world. It is highest in south areas and lowest in east areas. This is thought to be due to environmental and behavioural changes, in addition to differences in diagnostic criteria used throughout the world. In DSM-IV criteria 6-7% of people under 18 affect ADHD. But in ICD-10 criteria the rate is 1-2% [3].

In 2010, at 7 years, the prevalence of hyperactivity was 7%, inattention 9.5%, impulsivity 7% [4]. In 2016, the estimated number of children and adolescents ever diagnosed with ADHD, according to parent report, was consistent with previous estimates from the National Survey of Children's Health. Approximately 9.4% (6.1 million) of children 2-17 years of age ever been diagnosed with ADHD-hyperactive impulsive, according to parent report (age2-5: 388,000 children, ages6-11: 2.4 million children, ages12-17: 3.3 children) [5].

Impulsivity in ADHD leads to emotional instability, lack of empathy, stress, sleep disorders, depression, eating disorders, memory problems, compulsive behaviour, self-harming behaviour and problem in body weight status [6].

Higher level of impulsivity leads to conduct disorder, oppositional behavioural disorder, personality disorder especially cluster B disorders (antisocial personality disorder and border line personality disorder) and risky behaviours like suicidal tendency [7].

In children, it leads to impairment in the development of child's social skills(verbal and non-verbal communication, eye contact, following cues, listening, controlling temper etc.) impairment in cognitive components like attention, concentration, creativity, isolation of the child, need for instant gratification, affecting the child's performance in academics, social participation in school like drama and speech [8].

In young people, it leads to increased risk of academic failure, dropping out of school/college, teenage pregnancy, criminal behaviour and traffic violation such as speeding violation, drunk driving, licence suspension, driver caused accidents [9].

As many as 60% of individuals with ADHD symptoms in childhood continues to have difficulties

in adult life. The impulsive behaviour in adult ADHD persons have to face many problems like dismissed from employment, interpersonal difficulties, lateness, absenteeism and excessive errors in work place, relationship difficulties, break-ups with spouse, poor parenting and increased the risk of drug and substance abuse [10].

This study research impulsivity rating scale to the children under 18 years of age, as important current issues within the scope of impulsivity rating based on the concept modelling, which was developed through the contributions of Ernest Barratt (1995), Dickman S.J (1990), Whiteside & Lynam D.R (2001), Eysenck(1978) [11].

Since 1978, 6 studies have rated impulsivity less than 18 years of age group. The BIS measuring trait impulsivity in attentional, motor and non-planning and most widely used instrument for assessment of impulsiveness [12]. The IVE designed to measure trait impulsivity across 3 factors: impulsivity, venturesomeness and empathy [13]. The DII measure impulsivity in 2 subscale: functional impulsivity (the tendency to act with relatively little forethought when this is optimal), dysfunctional impulsivity (the tendency to act with relatively little forethought) [14]. The UPPS examine 5 subscales: urgency, premeditation, perseverance, sensation seeking and positive urgency . The LHIB measures the incidence of impulsive behaviour [15]

Need for the Study

Numerous studies suggest that high levels of impulsivity are associated with deficits in regulating behavioural and physiological responses associated with reward, behavioural inhibition, and decision making processes. There is no one in India prepared a valid assessment tool to rate impulsivity for ADHD children. There is a need for the tool to assess impulsivity among Indian children into ADHD. Hence this study has been attempted to develop and validate Impulsivity Rating Scale.

Aim

The aim of this study is to develop and validate the Jegadeesan and Maimoona Impulsivity Parent Rating Scale (JAM-IPRS) among ADHD Children.

Objectives

- Ø To generate the scale items through focus group discussion.
- Ø To identify the appropriateness and relevance of the items through subject matter Expert Rating.
- Ø To establish the psychometric properties of developed scale.
- Ø To develop norms for developed scale.
- Ø To translate the scale items in a two vernacular languages Tamil and Malayalam.

Methodology

Research Design and Sampling

This was a quantitative research design. A total of 60 samples (30- normal subjects and 30- ADHD subjects) were selected for the present study those who were under occupational therapy management at the age range between 5 – 13 years residing Kerala (Malappuram and Thrissur) and Tamilnadu (Erode and Komarapalayam). Samples were selected by using convenient sampling method. Socio-demographic data sheet prepared by investigator were used for collecting information regarding the name of the child, number of siblings, birth order, type of family, parental occupation and parental education.

Inclusion Criteria

- Ø The child aged between 5 – 13 years
- Ø Both genders were selected.
- Ø Both the parents have knowledge and understanding to read English, Tamil and Malayalam.

Exclusion Criteria

- Ø The children aged above 14 and below 4 years were excluded.
- Ø Parents of child with neurological disorder, psychiatric problem and other problems which interferes the test have been excluded.

Tools

- Ø Socio Demographic Data Sheet

Ø Jegadeesan and Maimoona Impulsivity Parent Rating Scale (JAM-IPRS)

Description of tools

Socio-demographic data sheet

This proforma is intended to gather information regarding the name of the child, age, gender, education, family type, number of siblings, birth order, diagnosis,

Procedure

The present study was conducted in three phase are as follows:

Phase 1: Focus group discussion and item generation

Phase 2: Scale validation

Phase 1: Focus Group Discussion and Item Generation

Step 1: Item Generation and Focus group Discussion

In this phase, potential items were generated for parental assessment of impulsivity as well as its domain by the investigators. For the scale development, items were pooled through available tools/review of literature as well as through 2 Focus Group Discussion with 13 experts. Then 50 experts were asked to provide the item relevance and appropriateness. The experts are those who are working or having experience related to Mental health Professionals and or experience related to ADHD or impulsivity children, and professional from occupational therapy were included.

Phase 2: Scale Validation

Step 1: Face Validation and Expert Rating

The instrument with developed items was given to 50 professionals (Occupational therapist, Psychologist, Special educators or specialist in child psychiatry), in order to arrive at a set of items to be included in the scale. Expert rating was solicited for content appropriateness, difficulty level items on a scale and addition or deletion of items were considered.

Step 2: Data Collection

The developed screening scale was administered on 30 subjects having children with ADHD aged 5 – 13

years. The data obtained from convenient sample was subjected for item analysis of the test items.

60 subjects (30 normal children and 30 impulsive children) of both genders, the age group between 5-13 years, so meeting the inclusion and exclusion criteria were selected the subjects after obtaining the informed consent as well as from their registered clinic Ma'din

Lifeshore Advanced Paediatric and adult rehabilitative centre, Melmuri, Swalath nagar, Malappuram, Occupational Therapy Foundation, Thiruchengode. Written informed consent was obtained after the detailed explanation about the study from the samples. So, socio-demographic data and battery of impulsivity was administered on 60 samples.

Data Analysis and Results

Table – 1 shows the test retest reliability

	Mean	Standard Deviation	Test-Retest Reliability
Test	154.30	6.894	0.725**
Retest	162.0	7.2207	

Correlation is significant at the 0.01 level.

Table – 2 shows the Norms of the developed Jegadeesan and Maimoona Impulsivity Parent Rating Scale

S. No.	Range	Interpretation
1	0-42	Not significant
2	43 - 84	Mild level of Impulsivity
3	85 – 127	Moderate level of Impulsivity
4	128 and above	Severe level of Impulsivity

Discussion

The aim of the study was to develop and validate the psychometric properties of Jegadeesan and Maimoona Impulsivity Parent Rating Scale. This battery consists of 42 items for parents having children with ADHD impulsivity at the age of 5 to 13 years.

Data was recorded for computer analysis. Descriptive statistics such as frequencies and percentages examined the socio-demographic information as well as each statement. For the item difficulty in the final phase, factor analysis and internal consistency, reliability was established for the developed instrument. SPSS 23.0 (statistical package for social science) was used to analyse the obtained data. The mean value of each

selected item that consist of 42 mean value rated from 2.2 to 3.86. Factor analysis (extraction method) shows the Cronbach’s alpha of all 42 items and shows the internal consistency, reliability value from 0.68 to 0.72 and overall Cronbach’s α value is 0.710.

Table 1 shows the test retest reliability of Jegadeesan and Maimoona Impulsivity Parent Rating Scale. The mean value of the test is 154.30 and retest is 162.0. The standard deviation of test and retest are 6.894 and 7.2207 respectively. Test-Retest Reliability value of Jegadeesan and Maimoona Impulsivity Parent Rating Scale is 0.725. Correlation is significant at the 0.01 level.

Table 2 shows the norms of Jegadeesan and Maimoona Impulsivity Parent Rating Scale. The range

0-42 indicates not significant impulsivity; the range 43-84 indicates mild level of impulsivity; the range 85-127 indicates moderate level of impulsivity; the range 128 & above indicates severe level of impulsivity.

Hence it concludes that all 42 items of impulsivity rating scale are valid and reliable.

Summary

Ø All the 42 statements were generated through three focus group discussion.

Ø Identifying the appropriateness and relevance of the statements through expert rating.

Ø Total 50 experts were rated the 42 statements, the statements rated 0-4 (5 point rating).

Ø Initial data collection has been conducted for 30 ADHD peoples.

Ø After factory analysis all the statements were extracted or have consistence with each statement rating from 0.68-0.72, and overall Cronbach's α value is 0.710 indicates the scale has good internal consistency.

Ø Test-Retest Reliability has been done the reliability is 0.725.

Ø Norms were created for the developed scale.

Ø Translate the scale statements in two vernacular language Tamil and Malayalam.

Conclusion

From the statistical analysis the assessment's Cronbach alpha value is $\alpha = 0.68$ to 0.72 which shows the assessment tool has good internal consistency, reliability. The expert validation was done and got good relevance or content validity for all the scale items. The Test-Retest Reliability of developed scale is 0.725. Hence, Jegadeesan and Maimoona Impulsivity Parent Rating Scale(JAM-IPRS) can be used to identify the level of impulsivity for ADHD children.

Ethical Clearance : Taken from Institutional Ethical Committee Of JKK Munirajah Medical Research Foundation, Namakkal, Tamilnadu.

Source of Funding: Self

Conflict Of Interest: Nil

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Intradialytic Hypertension in Patients Undergoing Hemodialysis in Tertiary Care Hospital

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Abstract

Introduction: Hypertension: Hypertension is defined as an increase in blood pressure (BP). Hypertension is a common cause in patients undergoing hemodialysis.

Intradialytic hypertension (IDH): IDH is defined the BP values from pre to post dialysis session exceeding BP values during dialysis onset. An increase in systolic blood pressure >10mmHg is considered as IDH.

Aim ·To study the intradialytic hypertension in patients undergoing hemodialysis in Kasturba hospital Manipal.

Objective: · To determine the prevalence of intradialytic hypertension in patients undergoing hemodialysis in Kasturba hospital Manipal.

Methodology: ·Study area: Kasturba Hospital Manipal

· Study population: out patients undergoing hemodialysis

· Study duration: 3 months

· Study design: prospective

· Inclusion criteria:

Ø End Stage Renal Disease patients

Ø Age above 21 year

· Exclusion criteria:

Ø Acute Kidney Injury patients

Ø ICU patients

Ø Post transplant patients

Ø Catheter patients

· Sample size:

$n = Z^2 \cdot a/2pq$ Level of significance $a=0.005$

$(ep)^2$

$Z_{1-a/2} = 1.96$, $e(\text{relative precision}) = 0.10$

Anticipated proportion, $p = 0.7$, $q = 1 - p = 0.3$

Sample size: 165

Result: A study was conducted on 165 subjects who were undergoing hemodialysis. Out of 165 subjects 135 patients (81.8%) had intradialytic hypertension and 30 patients (18.2%) without intradialytic hypertension.

A study was conducted on 165 patients who were undergoing hemodialysis. Out of 165 subjects 2 female patients (4.9%), male 28 (22.6%) without intradialytic hypertension and 39 (95.1%), 96 (77.4%) males.

Conclusions: In this study the prevalence of IDH episodes was seen more in female patients (95.1%) than in male patients (77.4%) and out of 165 patients 135 patients had IDH and 30 patients without IDH

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Key Words: Intradialytic hypertension (IDH), Hemoglobin, Hemodialysis, Hypertension, Chronic kidney disease (CKD)

Hypertension

Hypertension is defined as an increase in blood pressure (BP). Hypertension is a common cause in patients undergoing hemodialysis.

Chronic Kidney disease (CKD)

CKD is defined as Kidney damage for ³ 3months with or without decrease in GFR, as manifested by either

- Pathological abnormalities
- Markers of kidney damage, including abnormalities in the composition of blood or urine, or abnormalities in imaging test

GFR < 60ml/min/1.73m² for ³ 3 months, with or without kidney damage

End-Stage Renal Disease (ESRD)

End-stage renal disease, also called end-stage kidney disease, occurs when chronic kidney disease — the gradual loss of kidney function — reaches an advanced state. In end-stage renal disease, the kidneys are no longer able to work as they should to meet the body's needs.

Intradialytic hypertension (IDH)

IDH is defined the BP values from pre to post dialysis session exceeding BP values during dialysis onset. An increase in systolic blood pressure >10mmHg is considered as IDH.

Causes of IDH

- Fluid overload
- Variation in the erythropoietin levels
- Variation in hemoglobin, calcium and PTH levels

A study Intradialytic hypertension: A less recognized cardiovascular complication of hemodialysis” conclude that the prevalence of intradialytic hypertension was up to 15% in hemodialysis patients. The study also stated that patients with blood pressure >130/80 mmHg is considered as intradialytic hypertension. ⁽¹⁾ A study Mechanism and treatment of intradialytic hypertension concluded that in hemodialysis patients intradialytic

hypertension is recognized as recurrent and persistent phenomenon and less dialyzable drugs should be managed for patients with intradialytic hypertension. ⁽²⁾

A study “Intradialytic hypertension during chronic hemodialysis and subclinical fluid overload assessed by bioimpedance spectroscopy” concluded that the prevalence of intradialytic hypertension in patients undergoing hemodialysis was high than reported previously and fluid overload was the major factor for intradialytic hypertension. ⁽³⁾ A study the prevalence of persistent intradialytic hypertension in a hemodialysis population with extended follow-up concluded that the intradialytic hypertension prevalence was 21.3 per 100 treatments and volume related variable was only differed in patients with intradialytic hypertension. ⁽⁶⁾ A study probing the mechanism of intradialytic hypertension. A pilot study targeting endothelin dysfunction concluded that the patients with intradialytic hypertension had the modest improvement in endothelial functions and the frequency of intradialytic hypertension was reduced. ⁽⁷⁾ A study Intradialytic hypertension is a marker of volume excess concluded that changes in dry weight in hemodialysis patients with intradialytic hypertension. ⁽⁸⁾ Blood pressure (BP) measurement is a fundamental part of hemodialysis (HD) administration with measurements taken before and after HD and at frequent intervals during treatments. It is well-recognized that these peridialytic and intradialytic BP measurements are poorly reflective of interdialytic BP behaviour and overall cardiovascular disease burden. However, such BP measurements are essential for monitoring patient safety during dialysis. Peridialytic BPs and adverse clinical outcomes have a well-described “U”-shaped association, but no prospective studies have established optimal intervention thresholds on either end of the BP spectrum. Overt intradialytic BP abnormalities such as hypotension in a pale, diaphoretic patient or hypertension in a patient with headache and vision change are impossible to ignore. Such drastic presentations spark immediate intervention, and elegant studies demonstrating harm are not needed. While these extreme BP events occur more often than desired, they are relatively infrequent in today's era of bicarbonate-based dialysate and volumetric ultrafiltration (UF). ⁽⁹⁾

The main cause for hypertension in dialysis where volume overload, Renin-angiotensin-aldosterone

system, Erythropoietin.

This study helps to know about the condition of the patient having intradialytic hypertension, also know the complications caused by intradialytic hypertension and what is the incidence of the condition also who are at better risk of getting intradialytic hypertension

Aim

To study the intradialytic hypertension in patients undergoing hemodialysis in Kasturba hospital Manipal.

Objective

To determine the prevalence of intradialytic hypertension in patients undergoing hemodialysis in Kasturba hospital Manipal.

Methodology

- Study area: Kasturba Hospital Manipal
- Study population: out patients undergoing hemodialysis
- Study duration: 3 months
- Study design: prospective
- Inclusion criteria:
 - Ø End Stage Renal Disease patients
 - Ø Age above 21 year
- Exclusion criteria:
 - Ø Acute Kidney Injury patients
 - Ø ICU patients
 - Ø Post transplant patients
 - Ø Catheter patients
- Sample size:
 - $n = Z^2 \cdot a / 2pq$ Level of significance $\alpha = 0.005$
 - $(ep)^2$
 - $Z_{1-\alpha/2} = 1.96$, $e(\text{relative precision}) = 0.10$
 - Anticipated proportion, $p = 0.7$, $q = 1 - p = 0.3$

Sample size: 165

Procedure

This is an observational study conducted in dialysis unit of Kasturba Hospital Manipal. Patients diagnosed to have chronic kidney disease and in maintenance hemodialysis if fulfilling the inclusion criteria were included in the study.

165 patients with chronic kidney disease undergoing hemodialysis were selected randomly. Blood pressure was checked for ever hour (5 hours) and was recorded or noted

Statistical Analysis

McNemar’s test was used to check the prevalence of IDH.

Result

A study was conducted on 165 subjects who were undergoing hemodialysis. Out of 165 subjects 135 patients (81.8%) had intradialytic hypertension and 30 patients (18.2%) without intradialytic hypertension.

Table 1: Patients with and without intradialytic hypertension.

		Frequency	Percent
IDH	Without IDH	30	18.2
	With IDH	135	81.8
	Total	165	100.0

A study was conducted on 165 patients who were undergoing hemodialysis. Out

of 165 subjects 2 female patients (4.9%) & 28 male patients (22.6%) without intradialytic hypertension and 39 female patients (95.1%) & 96 male patients (77.4%) with intradialytic hypertension.

Table 2: Sex distribution in patients with and without intradialytic hypertension.

SEX distribution * IDH					
			IDH		Total
			Without	With	
SEX	Female	Count	2	39	41
		% within SEX	4.9%	95.1%	100.0%
	Male	Count	28	96	124
		% within SEX	22.6%	77.4%	100.0%
Total		Count	30	135	165
		% within SEX	18.2%	81.8%	100.0%

Disussion

It was seen that the intradialytic hypertension was a common complication in patients undergoing hemodialysis. Intradialytic hypertension was noted with a >10 mmHg increase in systolic blood pressure. The study was done to reduce the effect of intradialytic hypertension in patients undergoing hemodialysis.

All readings of blood pressure were confirmed by the qualified dialysis technologist, pursuing renal replacement therapy and dialysis technology post graduation. Complete monitoring of the patients was done. Some of the changes in erythropoietin dosage were seen during the study

Jula.K. Inrig done a study was he found that the occurrence of increase in blood pressure form pre to post dialysis session was seen in up to 15% of patients undergoing hemodialysis. He conducted a retrospective study on 438 patients undergoing hemodialysis and he found that 13.2% patients had increase in systolic blood pressure of more than 10mmHg from pre to post dialysis, but our study conducted on 165 patients undergoing hemodialysis found that 81.8% of patients had increase in systolic blood pressure more than 10mmHg from pre to post dialysis.

Limitations

- Long term follow up
- Single center study
- BP was checked by different people so there may be some variation

Conclusions

In this study the prevalence of IDH episodes was seen more in female patients (95.1%) than in male patients (77.4%) and out of 165 patients 135 patients had IDH and 30 patients without IDH

In this study the possible reasons for higher incidence of IDH were variations in erythropoietin, hemoglobin, calcium and PTH levels

Acknoledgements: I would like to express my sincere gratitude to Mrs. Veena N K and Mrs. Megha Nagaraj Nayak, Assistant Professors, Renal Replacement Therapy and Dialysis Technology for their whole hearted encouragement and timely suggestions.

Conflict of Interest: NIL

Source of Funding: This study was not funded

Ethical Clearance: The study was approved by the

Institutional Ethics Committee (IEC203/2017), it was conducted in the Department of Nephrology, Kasturba Hospital, Manipal, Karnataka, India.

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Effect of Vestibular Stimulation on Language Skills of Children with Attention Deficit and Hyperactivity Disorder

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Abstract

Aim: The purpose of the study was to evaluate the effect of vestibular stimulation on language in children with Attention Deficit and Hyperactivity Disorder.

Methodology: Total of 30 subjects with Attention deficit and hyperactivity disorder, 15 in experimental group and 15 in control group with age of 4 to 6 years participated in this study. Both control and experimental groups were assessed using The Bzoch-League Receptive-Expressive Emergent Language Scale (Reels) for the measurement of language skills in children.

Result : Statistical significant is present ($t = 3.8$) in the experimental group with regard to effectiveness of vestibular stimulation on language skills among ADHD children.

Conclusion: The conclusion of this study indicates that the vestibular stimulation activities are effective in improving language skills in ADHD children.

Keyword: ADHD, Vestibular Stimulation activities, Language skills, Occupational Therapy.

Introduction

Attention deficit hyper activity disorder (ADHD)¹ is a developmental disorder characterized by persistent hyperactivity, inattention and impulsivity that significantly impairs educational achievement as functioning. According to the Diagnostic and statistical manual of mental disorders criteria published by the American Psychological Association (ADA) symptoms must be displayed before the child reached 7 years as behavior that are indicator of the disorder must be seen at least through two different fields and destruct considerably social, occupational or educational performance of the patient. The symptom varies among patients and include behavior problems such as inattention, hyperactivity,

impulsivity.

Research has reported ADHD prevalence estimate of approximately 5.9%-7.1% in children and adolescence with a male and female ratio of approximately 3:1 in population sample².

Many children with ADHD may have various kind of communication difficulties³ even if they do not have a diagnosed language disorder symptoms of inattention and hyperactivity frequently co-occur with language difficulties⁴. Impairments in executive function give rise to both behavioral and social communication problem and additional or alternative deficits in other cognitive abilities⁵.

Early identification and treatment prevents or minimize many of the negative effects of the disorder. The evaluation and management of a child with ADHD involves a multi-disciplinary effort. The vestibular stimulation can be of value in improving balance in children with hemiplegic cerebral palsy⁶.

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Vestibular stimulation separately or in combination with other forms of sensory stimulation applied to infant as children's has been reported to effect several behavior issues. The vestibular stimulation that work best to improve language in the type of ADHD. The vestibular activities such as climbing, trampoline, ladder climbing, balance board activities can be given.

Barbara Bruce⁷ Conducted study to evaluate ADHD and language impairment. The parental questioner FTF was given to parents of 76 children (mean age 11 Years) diagnosed with ADHD about half and the children heal at least once been referred to a speech and language pathologist measurement by the FTF questioner most of them have not received any interventions or follow up. A factor analysis identified problem areas. Which explain close to 75% of the total variation. Communication and language comprehension caused these children many more problems of reading and writing are very frequent. IQ score was associated with maths and reading writing. Additional item reflecting language skill, in particular language comprehension and pragmatic were also found in other domains in FTF problem with language this seem to be associated with the typical problems.

Nancy J. Cohen⁸ evaluated the interface between ADHD and language impairment, an examination of language achievement and cognitive processing data for this study were collected as part of a larger research project examining 20 subjects with, the kaufman test of educational achievement (KTEA) was administered to obtain standardized scores on subscales that measured reading decoding. It was concluded that caution must be exercised in attributing to children with ADHD what might be reflection of problem for children with language impairment generally.

Charul A. Dave⁹ suggested vestibular stimulation would produce both short and long term decreases in stereotypic behavior in the subjects. Intervention given for 3 consecutive days during each week of the treatment phase. Immediately after intervention, post treatment data on body rocking was recorded for 5 min with procedures similar to those used in base lines. Results shows that significant reduction on body rocking behavior in mentally retarded.

Julie Brocklhurst¹⁰ evaluated the use of tactile and vestibular stimulation to reduce stereotypic behavior in 2

adults with mental retardation and concluded that tactile vestibular stimulation are adequate for the reduction of stereotypic behavior. In this study the researcher intend to find out the effectiveness of vestibular stimulation on language skills of children with ADHD.

Aim

The Aim of the study is to find out the effect of vestibular stimulation on language skills among children with ADHD.

Objectives

Ø To assess the language skills of children with Attention Deficit and Hyperactivity Disorder.

Ø To Evaluate the effect of Vestibular stimulation on language skills of children with Attention Deficit and hyperactivity Disorder.

Materials and Methods

The purpose of the study is to determine effectiveness of vestibular stimulation on language skills among ADHD children.

Research Design: The present study was two groups, *pre test and post test quasi-experimental design.*

Study Setting : *Occupational Therapy Foundation, Thiruchengode.*

Population and Sampling : *A Total of 30 Subjects were selected based on Convenient sampling method and divided into Control and experimental group with 15 subjects in each.*

Selection Criteria

Inclusion criteria:-

1. *Children diagnosed as ADHD by paediatrician or clinical psychologist*
2. *ADHD children with the age range of 4-6 years.*
3. *Both genders were included.*

Exclusion criteria:-

1. *Children with seizure episodes.*
2. *Children below 4 years and above 6 years.*

3. ADHD children with any other associated medical conditions. Ø Therapy Ball

Variables

Independent Variable: Vestibular stimulation

Dependent Variable: Language skills of ADHD Children.

Measurement Of Tool And Meterials Used

The Bzoch-League Receptive- Expressive Emergent Language Scale (REELS).

Test Material

- Ø Trampoline
- Ø Swing
- Ø Balance board
- Ø Ladder climbing
- Ø Jumping rope

Procedure

Totally 30 subjects who met the selection criteria have been included in this study, they are equally divided into control and experimental group by convenient sampling method. Both control and experimental group was assessed using receptive-expressive emergent language scale (REELS). Pre test data was obtained. The control group received Occupational Therapy treatment, where as the experimental group received both the occupational therapy and vestibular stimulation Activities such as swinging in Bolster, T swing, Disc swing and Platform swings. Activities such as jumping on trampoline, Overhead activities while standing on balance board, ladder climbing, rocking horse, somer saults, obstacle course and sliding were given in a therapy session for 6 weeks and in an alternative days for 1 hour sessions. After the intervention period the post test data was obtained with the same tool . sores are tabulated and statistically treated with “t” test.

Results

Table 1 : Comparison of pre test scores between control group and experimental group

Group	Test	Mean	S D	“t” value	“p” value
Control group	pre-test	4.000	0.802	1.2444	0.2237
Experimental group	Pre-test	4.367	0.812		

TABLE 2 : Comparison between pre test and post test value of control group

Group	Test	Mean	S D	“t” value	“p”value
Control group	Pre-test	4.000	0.802	0.1280	0.8999
Control group	Post-test	3.967	0.834		

TABLE 3 : Comparison between pre and post test values of experimental group.

Group	Test	Mean	S D	“t” value	“p” value
Experimental group	Pre-test	4.367	0.812	3.8258	0.0019
Experimental group	Post-test	5.133	0.550		

TABLE 4 : Comparison of post test scores between control group and experimental group

Group	Test	Mean	S D value	“t” value	“p” value
Control group	Post test	3.967	0.834	4.5239	0.0001
Experimental group	Post test	5.133	0.550		

Discussion

The purpose of the study is to determine the effectiveness of vestibular stimulation on language skills among children with ADHD. The subjects were selected using convenient sampling method. In this study 30 subjects were involved, out of which 15 subjects were under experimental group and 15 subjects under control group. REELS test has been used to assess the language skills of ADHD Children. The duration of the intervention was 6 month, session were given one hour per day in alternative days, total of 18 sessions of vestibular stimulation activities were administers for experimental group along with regular occupational therapy whereas control group received only regular Occupational therapy. Pre and post test scores of REELS were statistically analyzed with “t” test.

Table 1 The unpaired ‘t’ test was done between control group and experimental groups, the mean values are 4.00 and 4.36 respectively, “t” values is 1.244 . This indicates the experimental group and control group were homogenous and can be compared for the study. In table 2 the paired ‘t’ test was done in control group, the result signifies that the control group has no significant difference in the pre-test and post-test scores, the mean is 4.000 and 3.963 respectively, ‘t’ value is 0.1280 and

‘p’ value is 0.8999. It indicates that there is no difference in the language skills of ADHD children in the control group.

Table 3 the paired ‘t’ test was done in experimental group, mean values are 4.367 and 5.133, “t” value is 3.825, its shows the significant difference between pre and post test of experimental group. This findings suggests that the vestibular stimulation improved language skill in children with ADHD. These findings are also supported by W.Michel Magrun¹¹. In their study effect of the vestibular stimulation on improving language skill in developmentally delayed children. In a group of 5 primary trainable mentally deficient and 5 developmentally retarded pre schools was studied. Subjects received vestibular stimulation prior to a free play situation and were monitored for spontaneous recognizable language use. Result indicated an increase in spontaneous verbal language used for both groups.

Table 4 the unpaired ‘t’ test was done between control group and experimental group the mean values are 3.964 and 5.133 respectively and “t” value is 4.5, it shows there is significant difference is present. While comparing the pre test scores between the groups there was no significant difference, whereas in post test comparison there is significant difference between

groups. These findings are also supported by Robert M. Kanter¹².

Conclusion

The conclusion of this study indicates that the vestibular stimulation activities are effective in improving the language among ADHD children.

Ethical Clearance : Taken from Institutional ethical Committee of JKK Munirajah Medical research Foundation, Namakkal, Tamilnadu.

Source of Funding: Self

Conflict of Interest : Nil

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Effect of Sensory Integration Approach on Children with Dyspraxia

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Abstract

Aim: The purpose of this study is to evaluate the effect of sensory integration approach on children with Dyspraxia.

Methods: Totally 30 subjects (15 in experimental group and 15 in control group) of the age group 6-9 years, participated in the current study. The experimental group underwent sensory integration intervention for twenty eight sessions, whereas control group with no intervention. Statistical “t” test give us the processed results.

Results: Statistical calculated scores shows improvement in praxis through sensory integration among learning disabled children.

Conclusion: There is significant effect in using sensory integration in improving praxis among learning disabled children.

Key Words: *Dyspraxia, Sensory Integration, Learning Disability, Occupational Therapy.*

Introduction

Learning disability is a generic term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning or mathematical abilities¹. In India around 13-14% of all school children suffer from learning disorders. Unfortunately most children go unnoticed. However the past decade has witnessed a sudden spurt in the recognition of learning disabilities. This sensitivity has benefited some children who have to cope with the invisible learning disability. Learning disabilities are heterogeneous with different manifestations.

According to Jean Ayres, learning disabled children with motor planning problems come under the category of dyspraxia³. In her earlier writings, Ayres used the term apraxia to refer to developmental dyspraxia. She believes the term dyspraxia is better suited for the child who can formulate motor plans but who is slow & inefficient in doing so.

Sensory integration intervention on the ability of children with difficulty processing and integrating sensory information to engage in desired occupations will result in positive outcomes in sensory motor skills and praxis³.

Sensory integration techniques which follow the theory outlined by Ayres (1972) are widely used by occupational therapists as an intervention for children and young adults with learning disabilities, but their efficacy is unclear. Research studies have suggested increased levels of participation and other positive behavioral changes following group sessions using sensory integration techniques, but literature reviews

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have highlighted a scarcity of evidence supporting their use. Groups involving sensory integration techniques were perceived to have a positive effect on the abilities and participation (in both the group itself and subsequent learning and other activities) of children and young adults with learning disabilities and other complex needs in educational settings⁴.

Developmental co-ordination disorder (DCD) or developmental dyspraxia occurs when a delay in the development of motor skills or difficulty coordinating movements results in a child being unable to perform everyday tasks⁵. DCD is believed to affect 6-13% of school-aged children⁶. When dyspraxia is associated with learning disability, the children may have weaknesses in comprehension, information processing and listening. As a result they will have low self-esteem, depression and other emotional and behavioral issues.

Occupational therapists have a major role to play in the treatment of dyspraxia⁷. Numerous interventions were reported in the studies. The most commonly investigated approaches were perceptual motor therapy, sensory- integration therapy and kinesthetic training⁸. The short form of Bruininks-Oseretsky test of motor proficiency was used to identify children with Developmental coordination Disorder⁹. The purpose of the study is to examine the effectiveness of sensory integration on dyspraxia. The study clearly reveals the investigator's interest in the field of sensory integration.

Aim: To Find the effect of sensory integration approach on children with dyspraxia.

Objectives

- To screen learning disabled children using "Teacher's questionnaire about children with learning problems".
- To assess dyspraxia among those children using "Bruininks Test Of Motor Proficiency- Brief Form"
- To evaluate the effectiveness of sensory integration for dyspraxia.

Material and Methods

Research Design: Quasi experimental design.

Population and Samples : 30 children of age group between 6 to 9 years, both male and female were selected by convenient sampling procedure. Each Control and experimental groups were placed with 15 samples. Samples were selected from government and private schools and out patient department of JKK Munirajah medical research Foundation, komarapalayam.

Selection Criteria

Inclusion criteria

- *Children with learning disability in the age group of 6 to 9 years*
- Children who are in the below average level according to the descriptive category as in BOT - 2 (for assessing dyspraxia)
- Children with IQ of 90 to 110
- Both male and female children with learning disability

Exclusion criteria

- *Children with physical limitations*
- Autism spectrum disorders
- ADHD
- Children with Iq below 80

Measurement tools

1. *Teacher's questionnaire about children with learning problems*
2. *Bruininks - oseretsky test of motor proficiency - brief form*

Brief Form Item Content

Brief Form Item	Brief Form Item Name	BOT-2 Subtest	BOT-2 Number
1	Filling in a star	Fine motor precision	2
2	Drawing a line Through a path	Fine motor precision	4
3	Copying overlapping circles	Fine motor integration	3
4	Copying a Diamond	Fine motor integration	6
5	Stringing blocks	Manual dexterity	5
6	Touching nose with index fingers- eyes closed	Bilateral Coordination	1
7	Pivoting thumbs and Index fingers	Bilateral Coordination	5
8	Walking forward heel to toe on a line	Balance	5
9	One-legged side hop	Running speed and Agility	4
10	Catching a tossed ball - one hand	Upper - limb coordination	4
11	Dribbling a ball - alternating hands	Upper - limb coordination	6
12a or 12b	Knee push-ups or Full push - ups	Strength	2a or 2b

Test materials and Equipment

Each test kits contains the following materials needed to administer, score and interpret the BOT - 2 brief form.

- Manual / administration easel
- Blocks (15) and string
- Knee pad
- Tennis ball

Method of Administration:

- Initially the researcher selected 30 children based on the inclusion criteria by convenient sampling .
- Then the BOT - 2 brief form was administered

to the samples to evaluate the motor praxis by dividing them into two groups, 15 samples in the experimental group and 15 samples in the control group.

- Sensory integrative therapy was given to the experimental group in the form of games. The experimental group was divided into small groups-each group consisting of 3 children. . This group underwent SI treatment for two sessions per week.

- After the intervention period was over, the BOT- 2 brief form was once again administered to both control and experimental groups.

- Results have been compared with statistical techniques. ‘t ‘ value was calculated to attain results.

Intervention Procedures

SI therapy was given for 3 and a half month on the basis of 2 sessions / week. Totally there were 28 sessions. One session lasted for 45 minutes. Hop scotch game, Jumping above a tied rope (running on a tactile path), Sac race were given in first session. Musical chair (on a tactile path), Throwing ball at a target (jumping on the trampoline), Monkey in the middle (on a tactile path), Filling in a bottle (running on a tactile path), Jumping over the obstacles & throwing ball inside the bucket, Bouncing the ball on the wall & catching it on the rebound (jumping on the trampoline), Rolling a ball, retrieving it and throwing at a target (on a tactile path), Criss- cross walking on a rope placed on a tactile path (throwing ball at a target), Kneel- walking on a tactile path, Clay activity (on a tactile path), Tug of war (on a tactile path), Passing the ball (one person jumping on the trampoline) activities were given in session two to five.

Jumping above a tied rope and throwing ball to someone or at a target, Dash & freeze, Frog leap on a tactile path (transferring balls from one basket to another), Sweets in a jar (running on a tactile path), Lemon on the spoon (on a tactile path), Land, sea, air (on a tactile path), Child in kneeling with one arm support and rolling ball to a target with the other hand (on a tactile path), Penny toss (jumping on the trampoline), Potato on the spoon (on a tactile path), Hopping along the rope on the floor & throwing ball at a target, Passing the ball (one person jumping on the trampoline), Monkey game (on a tactile path), Musical chair running in between the chairs (in a zig- zag fashion), Catching the ball (one person

jumping on the trampoline) are the activities given from five to ten session.

Activities such as Dash and freeze, Criss cross walking on a rope placed on a tactile path, jumping above a tied rope (distance decreased), throwing ball at a target- jumping on the trampoline (distance increased), filling in a bottle running on a tactile path (size of the lid decreased), jumping over the obstacles & throwing ball inside a bucket (stop- watch used), Child in kneeling with one arm support and rolling ball to a target with the other hand (on a tactile path), bouncing the ball on the wall & catching at on the rebound (after one bounce) - jumping on the trampoline, rolling a ball, retrieving it before it reaches the goal & throwing ball at a target (stop- watch set) - using tactile path of different textures, Tug of war (thickness of the rope increased), Tandem walking on a tactile path and throwing ball at a target, walking on toes (on a tactile path), Jumping above a tied rope & throwing ball at a target immediately after jumping (time lapse noted) were given in eleven to twenty sessions.

Kneel- walking on a rope placed on a tactile path, rolling a ball, retrieving it and throwing ball inside a bucket (stop-watch used), jumping above a tied rope (distance decreased), penny toss (jumping on the trampoline, musical chair (on a tactile path), bunny hopping on a tactile path, passing a ball (one person jumping on the trampoline on one- leg), tug of war (on a tactile path), kneel walking on a tactile path (pushing a ball with the knee to a target) were given on session twenty one to twenty eight. After intervention post data were collected, scores are tabulated and treated statistically.

Results

COMPARISON OF PRAXIS BETWEEN CONTROL AND EXPERIMENTAL GROUP IN PRE TEST

Table - 1

S.No.	Group	Mean	SD	“t” value	“p” value
1	Control	18.86	8.83	0.063	0.47
2	Experimental	18.93	8.21		

TABLE - 2: COMPARISON OF PRAXIS BETWEEN CONTROL AND EXPERIMENTAL GROUP IN POST TEST

S.No.	Group	Mean	SD	“t” value	“p” value
1	Control	19.33	8.85	2.38	0.012
2	Experimental	25.8	5.63		

TABLE - 3: COMPARISON OF PRAXIS IN CONTROL GROUP BETWEEN PRE TEST AND POST TESTS.

S.No.	Control Group	Mean	SD	“t” value	“p” value
1	Pre test	18.86	8.83	0.14	0.44
2	Post test	19.33	8.85		

TABLE - 4 : COMPARISON OF PRAXIS IN EXPERIMENTAL GROUP BETWEEN PRE TEST AND POST TESTS.

<i>S.No.</i>	<i>Experimental Group</i>	<i>Mean</i>	<i>SD</i>	<i>“t” value</i>	<i>“p” value</i>
<i>1</i>	<i>Pre test</i>	<i>18.93</i>	<i>8.21</i>	<i>2.66</i>	<i>0.00624</i>
<i>2</i>	<i>Post test</i>	<i>25.8</i>	<i>5.63</i>		

Discussion

The aim of the study was to determine the effectiveness of sensory integration in dyspraxia among learning disabled children. The present study was done with two groups - experimental and control group. 30 children of age group 6 to 9 years, both male and female were selected by convenient sampling procedure. Teacher’s questionnaire about children with learning problems was administered to screen children with learning disability. Then BOT MP-SF was administered to assess dyspraxia.

The experimental group underwent treatment for two sessions per week for 14 weeks. Sensory integration

therapy was given to children with dyspraxia. Treatment included 28 sessions which was given in the form of competitive games. After the intervention period was over, the BOT MP -SF was once again administered to both control and experimental groups. Results were compared with statistical technique “t” test.

Table 1 and Graph 1 shows the comparison of praxis between control and experimental group - pre test values. The mean values are 18.86 & 18.93 with a “t” value .063, “p” value is 0.47. (P > 0.05) The table value of “t” is 2.05. The calculated value is less than the table value which shows there is no significant difference between the pre test values of praxis between control and experimental group.

Table 2 and Graph 2 shows the comparison of praxis between control and experimental group - post test values. The mean values are 19.33 & 25.8, “t” value is 2.38, “p” value is 0.012 ($P < 0.05$). The table value of “t” is 2.05. The calculated value of “t” is greater than the table value. It shows that there is significant difference between the post test values of praxis between control and experimental group.

This is in congruence with the study conducted by Bullock & Watter¹⁰ who found that the incidence of symptoms of dyspraxia and the level of severity of dysfunction of gross motor abilities decreased markedly after 6 months of intervention using the SI approach. In this study, 86% of school - aged children and 75% of preschool children in the experimental group demonstrated a decrease in the total number of symptoms of dyspraxia compared to 7% of school aged & 14% of preschool aged children in the control group.

Table 3 and Graph 3 shows the comparison of praxis in control group - pre test vs post test values. The mean values are 18.86 & 19.33, “t” value is 0.14, “p” value is 0.44 ($P > 0.05$). The table value of “t” is 2.15. The calculated value is less than the table value which shows there is no significant difference between the pre test and post test values of praxis in control group.

This is in congruence with the study conducted by Humphries, Wright & Mc Dougall whose study was about Efficacy of Sensory Integration therapy for children with learning disability. In this study, the control group which received no treatment showed negative score changes in praxis¹¹.

Table 4 and Graph 4 shows the comparison of praxis in experimental group - pre test vs post test values. The mean values are 18.93 & 25.8, “t” value is 2.66, “p” value is 0.00624 ($P < 0.05$). The table value of “t” is 2.15. The calculated value of “t” is greater than the table value which shows there is significant difference between the pre test and post test values of praxis in experimental group.

This is in congruence with the study conducted by Humphries, Wright, Snider & Mc Dougall. In this study, SI treatment was given for six months to LD children (4 to 9 years of age) and it was concluded that SI group showed improvement in gross motor and motor

planning (praxis) measures¹¹.

Hence sensory integration is effective for dyspraxia among learning disabled children which in turn paves the way for rejection of null hypothesis and acceptance of alternate hypothesis.

Conclusion

The experimental group which received sensory integration therapy showed significant improvement in praxis among learning disabled children as compared to control group. Hence it shows that dyspraxic symptoms have reduced after SI therapy.

Ethical Clearance : Taken from Institutional Ethical Committee Of JKK Munirajah Medical Research Foundation, Namakkal, Tamilnadu.

Source of Funding: Self

Conflict of Interest: Nil

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Perception of Students Towards Anatomy Internal Assessment in Competency based Undergraduate Curriculum

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Abstract

Introduction: Many changes have taken place in the field of education to improve the standards of professional course. A new competency based UG curriculum developed from 2020 in response to improve knowledge & skills in medical students. Assessment is the essential key to judge the students knowledge. Students feedback about new curriculum is a useful tool to identify strength and weakness of the new curriculum.

Objective: To assess the perception of under graduate medical students towards assessment in anatomy in competency based curriculum. To identify challenges and obstacles faced during competency based curriculum.

Materials & Methods: 135 first year undergraduate Medical students studying in A.C.S medical college were selected for the study. A questionnaire that includes questions relating to new curriculum, teaching methodology and assessment techniques were prepared and circulated among the students using google form.

Results: Most of the students felt that the Assessment should be conducted once in a month. Students favoured examination pattern was clinical based & multiple choice questions. Majority of the students felt that internal assessment should be the criteria for allowing students to appear for the University examinations. Students feedback was affirmative for histology discussion. Many of the students agreed that they had enough time to prepare for the Internal Assessment in covid -19 lock down period.

Conclusion: The study concluded that the students were favoured towards Anatomy Internal Assessment in competency based UG curriculum.

Key words: Internal assessment, curriculum, competency.

Introduction

Assessment is a constant cycle of improvement. The goal of assessment is to provide a clear concept of students

learning outcome. Assessment or examination is defined as a systematic process of collecting, analysing and interpreting data in order to validate or judge students. Evaluation of students is considered one of the most important aspects of teaching, and it induces motivation for learning and provides educational feedback for teachers [1]. Traditionally assessment was done at the end of the term or the academic year. Later internal assessment was introduced in medical curriculum [2]. The role of the faculty member in the modern concept of medical education is to facilitate the learning process. It is important to use multiple techniques in order to reach

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as many different types of learners as possible. It is observed that curriculum review, teaching methodology, evaluation at institutional level is done by the senior faculty members & by Medical council of India.^[3] .Teaching and learning have become more scientific and rigorous, Curricula are based on sound pedagogical principles, and Problem based and other forms of active and self-directed learning have become the mainstream.^[4]

The written assessments are done with the help of multiple choice questions (MCQ) and subjective or descriptive open-ended questions^[4]. The descriptive, structured, and essay questions are considered useful in testing the higher-order thought process and interpretation skills^[5].

Learning and progress of medical students is assessed worldwide by using theory, practical, and clinical examinations including written papers as well as objective structured practical examinations (OSPE), case studies, and viva voce examinations^[5].The aim of the modified clinical based essay question is to broadly measure both the absolute amount of knowledge retained by the candidate and the ability of the candidate to use that knowledge to reason through and evaluate clinical problems^[6].Modified essay questions consist of a case followed by a series of questions that relate to the case and must be answered in the sequence asked. This leads to question inter-dependency and a student answering the first question incorrectly is likely to answer the subsequent questions incorrectly too. A well written modified questions assess the approach of students in solving a problem, their reasoning skills and their understanding of concepts, rather than recall of actual knowledge^[7].

Multiple choice questions have the capacity to assess the higher orders skills^[8]. On the otherhand during covid-19 lockdown period online learning has many challenges that can stimulate students motivation towards learning . Hence the assessment of anatomy subjects through online can be saved and it can be checked by the student anytime. Moreover faculty cannot miss any students marks and works.

From 2020, Medical council of India revised the MBBS curriculum.The students are usually never involved in the planning or revising the curriculum. It

is necessary to know the views of the students while revising the curriculum and to know the best teaching methodology that will facilitate the learning process. It is also important to know the opinion of the students regarding the best assessment (formative and summative) techniques to measure their knowledge and skills^[3].The first year MBBS students as they walk into the medical colleges face multiple challenges in the first few months of their course. The subject of Medical Anatomy and its subdivisions forms a vast portion of their overall curriculum in first year MBBS with maximum teaching hours^[9].

With this background, the following study was undertaken to assess the attitude, perception as well as the preference of assessment methods among the undergraduate medical students in the study setting. The questionnaire was collected back from the students and analysis of each question of the questionnaire was performed.

Methodology

The study was done among the I-M.B.B.S students (2019-2020) Batch of A.C.S. medical college and hospital, Chennai.We conducted four internal examinations for theory & practical according to the competency based curriculum. A well designed questionnaire was developed relating to various assessment techniques for theory & practical internal exams in anatomy. The questionnaire was prepared with reference to Swapnali Shamkuwar^[11]& Naiketa^[12]. The purpose of the study was explained in detail to the students and informed consent was taken.They were asked not to reveal their identity while answering the questionnaire. Data thus obtained was analysed considering each question of the questionnaire. Then the data entered was statistically analysed.

Results

About 135 students of I year undergraduate medical students of ACS Medical college responded to the questionnaire shared in google form for about five days .Out of 150 students ,135 students participated in the study.

In the present study out of 150 MBBS students 46.7% students were male and 53.3% were females. Many students intention was to conduct the internal examination

once in a month for both theory & practical examination. In the present study many of the students felt that a theory paper should carry maximum of 50 marks. 68.1% students strongly agreed that clinical based essay question in IA is necessary in competency based UG Curriculum. 82.2% students agreed that Multiple choice question (MCQ) in IA is necessary in competency based UG curriculum & MCQ was considered as the best form of assessment in theory by 45.9 % of students. Most of the students favoured multiple choice questions (MCQ) followed by short notes was easier to answer, time saving & fetches more marks than other two formats. With regard to a method to test the knowledge of the topic, MCQ was preferred by 69.6% students. Further analysis of data revealed that 57.8% students agreed that the questions asked are relevant in Internal Assessment in accordance with the present curriculum. Majority of the students (33.3%) felt that time allotted for writing the theory paper was adequate. Most of students agreed that internal examination is stressful & causes absentees in the class. Best assessment technique for osteology practical exam should be viva- voce on true bones (76.3%). In the present study (35.6%) students felt that internal assessment should be the criteria for allowing students to appear in university examinations. 28.1% of students agreed to add the internal assessment marks in university exams.

In terms of relevant questions asked in accordance with the present curriculum, 57% of students answered in the affirmative. With regard to daily class assessment after every topic was useful by 36.3% students. Majority of students (32.6%) felt that there was enough time to prepare for IA during lock down period. Most of the students (34.1%) preferred charts for embryology practical assessment, some of them (27.4%) voted for 3-D images, 21.5% students prefer videos & 17% students prefer models. 37.8% students agreed for histology slide discussion in practicals and realized the necessity in competency based curriculum. There was a disparity among students in writing speed while writing internal assessment in this lock down period. The speed was moderately affected in 27.4 % students and slightly affected in 19.35% students.

Discussion

In our study, majority of students preferred internal

assessment should be conducted for both theory & practical examination. Considering the interval of internal assessment about 60% students preferred test once in a month. In study by Chakrabarti S et al.^[9] 55% students preferred monthly assessment. In our study many students felt that a theory paper should carry maximum 100 marks. Majority of students preferred clinical based essay question in IA is necessary in competency based curriculum which is similar to study conducted by Naik et al.^[10] 82% students prefer multiple choice questions are necessary in competency based curriculum. Best form of assessment in theory Multiple choice question was preferred by 45.9% students and Majority of students in the present study favoured multiple choice question over other three formats as it was easier to answer, time saving as well as test the knowledge which is similar to study done by Sharma HS et. al.^[5] who stated that the MCQ scores were significantly higher than Short essay question scores. Short notes questions was considered to fetch more marks by 34.1% students. A study done by Naik et al.^[10] revealed that SEQ helps to fetch more marks

In present study 57.8% students accepted that the questions asked are relevant in the internal assessment in accordance with present curriculum. In certain Universities a combination of Clinical based questions & multiple choice questions are presently used for assessment of theory. 35.6% of students felt that internal assessment should be the eligibility criteria to allow students for the university examinations whereas in study done by Jaiswal et al.^[3] 29.4% students agreed to consider the performance in the internal assessment. In the present study best assessment technique for conducting osteology practical examination was viva- voce on true bones (76.3%) and 37.8% students agreed that histology slide discussion is necessary in competency based curriculum which is similar to study done by Jaiswal R et al.^[3] I

In the study conducted by Chakrabarti et al.^[9] students preferred combination of spotter, discussion on gross specimen & discussion on histology.

Conclusion

An opinion regarding competency based curriculum, teaching methodology & assessment techniques in Anatomy was taken from the first year MBBS students at

A.C.S Medical College, Chennai with specially framed questionnaire. Majority of students favoured towards clinical based questions with Multiple choice questions as a pattern of examination. Majority of the students felt that the curriculum can be taught in one year duration with present system of lecture and practical timetable. Students agreed for competency based curriculum as it relies on scientific content and was able to understand better. Majority of the students viewed positively that the best method of assessment to assess knowledge in theory was multiple choice questions, the best assessment technique for practical examination should be osteology viva- voce using true bones and the internal assessment must be conducted once in a month. It is important to obtain more frequent feedback from the students which will help teachers to modify the assessment methods and improve the standards of medical education in future.

Ethical Clearance: Institutional ethical committee(A.C.S medical college & hospital)

Source Of Funding: Self Funding

Conflict of Interest: Nil

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Factors Influencing Attitude and Behaviour Concerning Waste Management in Riverbank Villages of Ganga: A Cross-Sectional Study

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Abstract

The Ganga, most holy river in the Indian sub-continent crosses from the Himalayas to the Indian Ocean, source for endurance for many individuals, serve water to 40% of the country's population of 11 Indian states. This study was done with the support of United Nations Development Program with the objectives of understanding the factors influencing attitude and behaviour of the community concerning waste management by studying 78 riverbank villages of Ganga at Shaibganj, Jharkhand.

The study revealed that more than three-fifth of the family dumped their waste in open space, one-fourth burn the waste openly, one of ten households throw the waste directly into the river and dumped the waste near the river, only few of the families were availing door to door collection/common bin facilities.

Chi-Square test indicates a significant association between waste management with religion, caste, type of family, age at marriage and SLI of the respondents. The study revealed that in comparison to Hindus, other are significantly more likely to dispose wastewater to the river. Odds Ratio of General Caste, Scheduled Tribe, Other Backward Caste are significantly more likely to have waste disposal system at place compare to Scheduled Caste community. Regression analysis showed people from joint family are more likely to have proper waste disposal system than nuclear family.

Finding suggests relation among information, knowledge, and proper waste management, hence relevant knowledge will lead to positive attitude and actions of the community towards proper waste management for creating a safe environment and better health.

Key words: Attitude, behaviour Namami-Gange, river Ganga, waste management.

Introduction

The Ganges water catchment area is third biggest tributary across the world, covering 1.75 million km surface area and the world largest water channel of 105,000 square km¹. Contamination of the Ganges (or Ganga), the biggest waterway in India, causes substantial

risks against human health and the environment at large. Severely contaminated with household waste and the industrial pollutants to the river, which serve water to 40% of the country's population of 11 states. With confluence of spirituality, sheer magnitude of size, and socio-political disparity, it seems that the Ganges won't be restrained anytime due to its inherent dissonance that occurs between the social and the developmental need for water unless community living in the coastal region of river change their attitude and behaviour regarding disposal of waste properly². The basic objectives of Namami Gange programme is conservation of river Ganga and to enhance the health status and quality of life of the community situated at riverbank villages of

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the Ganga.

Objective of the Study

The specific objectives of the study are to know the status of the waste management and the factors influencing waste management in 78 riverbank villages of Ganga at Sahibganj, Jharkhand. The study was carried out by the IIHMR with the support from UNDP, New Delhi.

Methods and Materials

The sample of the study was developed with the help of sample size determination formula (95% CI), using a random sampling method using house listing as sampling frame. The study covered 5366 households covered around 28123 population having representation from all 78 villages of six blocks in Sahibganj district of Jharkhand. Quantitative data analyzed with the help of the SPSS 21.0 version. Chi-square and logit regression were conducted to comprehend the socio-demographic characteristics that influence attitude and behaviour concerning waste management. An index pertaining to waste management was developed showing improper, partial, and proper waste management. The reliability

test showed the value of cronbach's alpha was 0.75, suggesting the scale was reliable.

Results

Socio-Demographic Profile

The demographic distribution of the surveyed households in 78 riverbank villages of Ganga at Sahibganj area showed that more than half of the households (54 percent) in the district were following Hinduism, whereas 43 percent were the followers of Islam, remaining three percent households in the studied population was from Christians and other religion. Nearly three-fifth (61 percent) of the families were nuclear, remaining were joint families with the average household size of 5.3. The sex ratio was very low 897 females per 1000 males.

Around two-third (64 percent) households were from low Standard of Living Index (SLI), one fourth (24 percent) from medium, and remaining in the high SLI category. Results related to age during marriage revealed that 78 percent women married after acquiring legal age of 18 years. The median income of households was Rs 5000/- per month while their monthly expenditure was Rs 4000/-.

Table 1: Socio-economic Attributes of the Respondents (N = 5366)

Characteristics	Percent
Religion	
Hindu	54.3
Muslim	42.7
Christians and others	3.0
Caste	
Others	16.5
Scheduled Caste	6.8
Scheduled Tribe	9.3
OBC	67.4
Type of Family	
Nuclear	61.2
Joint	38.8
Average household size	5.3
Sex Ratio	897: 1000 male
Standard of Living Index	
Low	64.3
Medium	23.5
High	12.2
Age	

Cont... Table 1: Socio-economic Attributes of the Respondents (N = 5366)

Characteristics	Percent
<=25	22.6
26-35	31.1
36-49	23.7
>=50	22.6
Marital Status	
Unmarried	9.4
Married	85.3
Widow/Divorced/ Separated	5.3
Age at Marriage	
<18	22.2
>=18	77.8
Average Monthly Income*	5000
Average Monthly Expenditure*	4000

* Median income and expenditure per family per month

Waste Management Practices

Waste management is the collection, transport, processing, reusing, removal, and supervising of waste materials. Residential wastewater comprises of Blackwater (excreta, pee, and fecal ooze) and greywater (kitchen and washing wastewater). The blend and arrangement depend upon the water supply, toilet facilities available, water use practices, attitude and behaviour regarding waste management.

Further, data was analyzed pertaining to functionality of facilities for solid and liquid waste and the results of the same suggested that more than three-fifth of the

family (62 per cent) dumped their waste in open space and around one-fourth (24%) stated that they burnt the waste openly, 8 percent throw waste directly into the river while 11 percent dumped the solid waste near the Ganga, only 5 percent of the family were availing door to door collection facilities and/or using the common bin containers placed in the community. It was surprising to note that seven of ten household were neither aware nor concern about the facility for solid waste management at community/market, though around one of the ten respondents were aware that waste was collected by the local panchayat and there were common bins in the market for throwing waste (Table-2).

Table 2: Waste Management Practices according to the Respondents (N = 5366)

Wastewater management for Household	Percent
Common sewerage system	17.6
Septic tank regularly disposed by village/by self / members of household	6.1
Pit within the household	61.1
Discharged directly into the river	4.7
Other	6.4
Do not know/Cannot Say	4.1
Functional Liquid waste management facility in village	2.2
Solid waste management for Household	
Door to door collection	2.7

Cont... Table 2: Waste Management Practices according to the Respondents (N = 5366)

Common bin/container in community	2.0
Into sanitary landfill facility	0.9
Open dumping	62.4
Open burning	23.9
Dumping along the river	8.1
Solid waste management for Community/Market	
Panchayat Collect	9.6
Common bin/container in community	7.8
Into sanitary landfill facility	2.1
Dumping along the river	11.0
Do not know/Cannot Say	69.5

Factors Associated with Waste Management

To understand the factor associated between “waste management” with different socio-demographic variables, chi-Square test was accomplished separately. From the investigations, the $p < .05$ indicates that there was a **significant association between waste management with religion, caste, type of family, age of the respondents, age at marriage and standard of living index of the respondents**, though marital status did not show significant relation with waste management (Table 3).

Table 3: Factors Associated with Waste Management						
Socio-economic and demographic characteristics	Improper Waste Management	Partial Waste Management	Proper Waste Management	Total	Chi Square	P value
Religion*						
Hindu	963	1526	427	2916	6.14	0.012
Others	817	1438	195	2450		
Caste*						
Others	348	478	55	881	6.09	0.027
SC	127	181	57	365		
ST	163	252	86	501		
OBC	1142	2053	424	3619		
Type of Family*						
Nuclear	1162	1853	355	3370	3.895	0.003
Joint	618	1111	267	1996		
SLI*						
Low	1137	1905	411	3453	3.059	0.018
Medium	451	685	123	1259		
High	192	374	88	654		

Cont... Table 3: Factors Associated with Waste Management

Age*						
<=25	358	670	183	1211	4.702	0.000
26-35	559	922	186	1667		
36-49	449	693	132	1274		
>=50	414	679	121	1214		
Marital Status						
Unmarried	154	288	61	503	1.515	0.111
Married	1513	2527	536	4576		
Widow/Divorced	113	149	25	287		
Age at Marriage*						
<18	443	651	95	1189	4.847	0.000
>=18	1337	2313	527	4177		

* p < .05

Determinants of Proper Waste Management

An attempt was made to find out the determinants of waste management practices in study area. A binary logit regression analysis was carried out with proper waste management practice = 1 and improper waste management practice = 0. The analysis suggests that predictors namely, **type of family, religion of the respondents, their caste, age, and age at marriage had emerged out as statistically significant determinants for proper waste management** (Table 4). The value of R square suggests that the model could explain 18 percent of variability for proper waste management practices (R square = 0.184).

Table 4: Determinants of Proper Waste Management			
Determinants	Exp (B)	CI (lower)	CI (upper)
Religion*			
Hindu@			
Others	0.532	0.439	0.644
Caste*			
SC@			
ST	1.732	1.283	2.339
OBC	1.987	1.359	2.906
Others	2.067	1.367	3.124
Type of Family*			
Nuclear@			
Joint	2.490	2.092	2.964

Cont.. Table 4: Determinants of Proper Waste Management

SLI			
Low@			
Medium	0.927	0.745	1.155
High	1.071	0.830	1.378
Age*			
<=25@			
26-35	0.664	0.525	0.839
36-49	0.599	0.464	0.773
>=50	0.597	0.460	0.780
Marital Status			
Unmarried@			
Married	0.821	0.596	1.131
Widow/Divorced	0.753	0.445	1.274
Age at Marriage*			
<18@			
>=18	1.785	1.390	2.293

* p < .05 @ Reference Category

Discussion

The results revealed that in comparison to Hindus, Muslims/Christians are significantly more likely to dispose waste to the river. Among the caste, general caste (Odds ratio: 2.067), ST (Odds ratio: 1.732), OBC (Odds ratio: 1.987) are significantly more likely to have waste disposal system at place than the SC community. In addition, regression analysis showed that people living in joint family are 2.5 times more likely to have proper disposal system in comparison to those from nuclear family and the women whose age at marriage was more than 18 years was 1.8 times more likely to have proper waste disposal in comparison to the women who married before 18 years of age. The finding that minority, people from nuclear family, SC community is less likely to have proper waste disposal system at place, suggested that providing the knowledge and creating awareness are prerequisite for proper waste disposal system to have healthy attitude and behaviour.

Further, investigation illustrated that improper behaviour of waste disposal in households and community is influenced by various factors namely, information, SLI, and caste. The research additionally pointed that information is the result of knowledge and awareness which can impact the community in better waste management. A significant connection found among information, knowledge, and proper waste management³. The degree of knowledge is inversely related to unhealthy attitudes, and behaviour, suggesting healthy attitude and behaviour will lead proper waste management. Another study also mentioned a significant association between attitude and household waste management⁴. Hence the findings of the study are significant and suggesting educating respondents to change their attitude and behaviour to keep Ganga basin clean.

The study shows that more than three-fifth of the family dumped their waste in open space and another one-fourth burned the waste openly, rest threw the waste directly into the river or dumped the solid waste near

river Ganga, only few of the families found using door to door collection facilities and/or the common bin containers placed in the community.

A similar study with the study findings which indicated that the majority of the respondents either burned the waste in their house yard or disposed of waste on the stream which could cause health problems for the respondents⁴. The same might harm or contaminate the environment.

Other studies to understand the relative disease risk to the exposure revealed “no sewerage as a mystic for cholera, AGI, and all water-borne/enteric disease. Since the incidence of cholera was low among inhabitants approaching sewerage, the determined qualities for relative infection chance (7.35) or potentially (8.30) would have been expected to be close. The relative disease hazard esteems determined for AGI (1.87) and all water-borne/enteric disease (1.85) are lower than their related OR estimations of 8.81 and 13.37, separately”⁵.

In depicting the statistical relationship between different hazard variables and disease outcome, and in recognizing specific risk factors namely, use of the Ganga river for bathing, washing clothes and other, absence of sewerage connections or septic tanks, and social practices in absence of washroom and latrines in their premises, lead to contamination. To presume that one of these components is more important indicator than risks ignoring the interrelatedness of all these factors⁶. However, the study stated that waste collection and proper waste disposal have a critical role pertaining to the clean Ganga campaign.

Conclusion

The study findings suggest a **significant relationship between religion, caste, SLI and other social determinants with proper waste management practices, that impact the behaviour of the community identified with appropriate waste administration.** Henceforth, the study recommends that policymakers and experts while structuring the strategies and intercession plans regarding the Ganga, the variables recorded in the investigation ought to be considered to keep Ganga basin clean and to make a protected environment for better health of the community.

Author Contribution

Both the authors contributed for the research study. Dr Goutam Sadhu, who was the principal investigator of the study contributed to research design, sampling, literature review and interpretation. Dr Arindam Das contributed towards, data cleaning, analysis, statistical tests, interpretation and critically reviewing the article for intellectual content.

Acknowledgement and Source of Funding

The study was carried out by the IIMR, Jaipur with the support of UNDP, New Delhi. Acknowledgments also conveyed to the District Collector and other Government officials of Sahibganj, Jharkhand and to the UNDP officials for their all-round support and to the respondents in this study of 78 villages of the coastal region of Ganga at Sahibganj.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript.

Ethical Clearance

Informed consent was taken from each of the respondents pertaining to their voluntary participation, right to withdraw from interview at any point of time during interview, confidentiality, and privacy of collected information tools used in the study and the report of the study was approved by United National Development Programme (UNDP).

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Allergic Fungal Rhinosinusitis: A Study in a Tertiary Care Hospital in Malwa region of Punjab

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Abstract

The study was conducted to study the occurrence and clinical presentation of allergic fungal rhinosinusitis (AFRS), characterize the same, and correlate with the microbiological profile. Clinically suspected cases of fungal rhinosinusitis (FRS) depending upon their clinical presentation, nasal endoscopy, and radiological evidences were included. Relevant clinical samples were collected and subjected to direct microscopy and culture and histopathological examination. 35 patients were diagnosed to have AFRS. The average age was 28.4 years with a range of 18–48 years. Allergic mucin was seen in all the AFRS patients but fungal hyphae were detected in only 20%. 80% of cases were positive for IgE. All the patients had nasal obstruction followed by nasal discharge (62.8%). Polyps were seen in 95% (unilateral (48.57%) and bilateral (45.71%)), deviated nasal septum was seen in 28.57%, and greenish yellow secretion was seen in 17.14%. Direct microscopy and septate hyphae were positive in 71.42% of cases. 91.4% of cases were positive by culture. 5.7% yielded mixed growth of *A. flavus* and *A. niger*. Prompt clinical suspicion with specific signs and symptoms along with timely sampling of the adequate patient specimens and the optimal and timely processing by microscopy and culture and histopathological examination is a must for early diagnosis and management.

Key words: rhinosinusitis;hyphae;microbiological;microscopy

Introduction

Allergic fungal rhinosinusitis (AFRS), a subset of polypoid chronic rhinosinusitis, is characterized by the presence of eosinophilic mucin with fungal hyphae within the sinuses and a type I hypersensitivity to fungi [1]. Allergic fungal sinusitis is seen to range in a wide percentage of patients with chronic rhinosinusitis from 5 to 10% in some studies [2, 3] to a much higher percentage in others [4]. The disease was initially considered to be prevalent only in northern regions of India but is now reported from other parts of the country also [5].

It is believed that fungal allergens elicit immunoglobulin E- (IgE-) mediated allergic and possibly type III (immune complex) mediated mucosal inflammation in the absence of invasion, in an atopic host [6, 7]. Moreover, when the sensitized individuals are exposed to an environment of high fungal content, symptoms of upper and/or lower airway hyperresponsiveness increase significantly [8]. Generalized sinonasal inflammation in combination with viscid allergic mucin effectively obstructs the normal drainage pathway. Fungi persist locally, stimulating locally destructive immune responses. The process then may expand to involve adjacent sinuses and may produce sinus expansion and bony erosion [9, 10].

To diagnose AFRS, Bent III and Kuhn in 1994 [3] proposed five diagnostic criteria: type I hypersensitivity, nasal polyposis, characteristic findings on CT scan, presence of fungi on direct microscopy or culture, and allergic mucin containing fungal elements without tissue

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invasion. But in 1994, Cody II et al. [11] reported the Mayo Clinic experience and suggested that diagnostic criteria comprise only the presence of allergic mucin and fungal hyphae or a positive fungal culture.

The criteria for diagnosis of AFRS have undergone numerous revisions; however, most authors agree on the following: the presence in patients with chronic rhinosinusitis (confirmed by CT scan) of characteristic “allergic” mucin containing clusters of eosinophils and their byproducts and the presence of noninvasive fungal elements within that mucin, detectable on staining or culture [2–4, 12]. Most experts also require the presence of documented type 1 (immunoglobulin IgE-mediated) hypersensitivity to cultured fungi and nasal polyposis [2, 3, 12].

There are no clear diagnostic criteria to establish the diagnosis of allergic FRS. With the description of newer categories like eosinophilic fungal rhinosinusitis and eosinophilic mucin rhinosinusitis, it has become more difficult to establish criteria for diagnosis. The laboratory findings in the possible AFRS groups are quite variable and are a source of controversy [13]. Hence, the main objective of this prospective study was to study the occurrence and clinical presentation of allergic fungal rhinosinusitis, characterize the same, and correlate with the microbiological profile.

Material and Methods

A prospective study was undertaken to study the occurrence and clinical presentation of AFRS, characterize the same, and correlate it with the microbiological profile of suspected FRS patients.

Clinically suspected FRS patients ($n = 75$) depending upon their clinical presentation, nasal endoscopy, and radiological evidences from wards and OPDs of our hospital were included in this prospective observational study, after obtaining informed consent from the patients. Relevant clinical history, nasal endoscopy findings, and radiological findings were noted.

Relevant clinical samples from the FRS suspected patients, namely, allergic mucin, nasal lavage, exudate from the nasal mucosa, tissue biopsy from nasal polyps, sinus mucosa from middle meatus preoperatively under endoscopic guidance and during paranasal surgery,

and venous blood, were received in Department of Microbiology and Pathology. Nasal tissue samples were cut into small pieces using sterile scissors and were sent in normal saline and formalin.

A portion of each of the nasal sample was examined using light microscopy after digestion with 10% potassium hydroxide (KOH) and using fluorescent microscopy after digestion with a mixture of KOH and calcofluor white. The remaining portions of the samples were cultured onto Sabouraud’s dextrose agar and Sabouraud’s dextrose agar with chloramphenicol and gentamicin. They were incubated at 22°C and 37°C for 4 weeks. Fungal isolates were identified by the colony morphology and microscopic morphology (including Riddle’s slide culture) observed on lactophenol cotton blue (LPCB) preparations as per standard recommended procedures [14].

Histopathological examination was done in the Pathology Department and the findings of allergic mucin (consisting of degenerating eosinophils, cellular debris, and Charcot Leyden crystals) inflammation and hyphae and calcification and so forth were recorded. Venous blood sample was taken to evaluate the absolute eosinophilic count and serum total IgE levels of the cases. Eosinophilic count higher than 500 cells per mL was considered as serum eosinophilia while IgE levels were considered raised when the counts were >100 U/mL [13, 15].

Statistical analysis was performed by SPSS software (version 17). Continuous variables are presented as mean \pm SD, and categorical variables are presented as absolute numbers and percentages. Categorical variables were analysed using the chi-square test or Fisher’s exact test as appropriate. Kappa coefficient was also used to find the agreement between HPE, direct microscopy, and culture variables. For all statistical tests, $p < 0.05$ was considered to indicate a significant difference. All tests of statistical significance were two-tailed.

Results

35 cases out of 75 cases of suspected FRS were diagnosed to have allergic FRS. The average age was 28.4 years with a range of 18–48 years. Male:female sex ratio was noticed to be 1.18:1. 82% of patients were from urban area and 94% were found to be educated.

Most cases presented to the hospital in autumn, with an average of 2.75 cases/month followed by winter (an average of 1.83 patients). Mean duration of symptoms was 1.64 years.

All AFRS patients were seen to be suffering from nasal obstruction while nasal discharge was seen in 62.8% of cases with statistically significant association being seen. Other statistically significant associated symptoms were smell disturbances (51.42%), sneezing (31.42%), and loss in vision (11.42%)

The associated comorbidities were bronchial asthma in 14.2% of cases followed by tuberculosis and allergic disorders in 11.42% each and hypertension in 5.71% of cases. 20% of cases had a history of previous nasal surgeries. Statistically significant association was seen in allergic disorders, previous nasal surgeries, and hypertension. Anaemia was seen in 6 (17.14%) cases and found to be statistically associated. Peripheral eosinophilia was significantly seen in 9 (25.71%) cases. Serum total IgE levels were found raised in 80% of AFRS cases (>100IU/mL).

All cases were subjected to computed tomography scans. Heterogenous opacities were seen in a majority of cases. Bilateral-heterogenous opacities were seen in 60% of cases with a statistically significant association. Mucosal thickening was seen in 22.85% of cases. Pressure effects like bone erosion (31.42% of cases) and intracranial or intraorbital extensions (20% of cases) were also seen. Homogenous opacities on unilateral side and calcification were seen in one case each

On nasal endoscopic examination, polyps were seen in almost 95% of cases, being unilateral in 48.57% of cases and bilateral in 45.71% with a statistically significant association in both. Deviated nasal septum was seen in 28.57% of cases and greenish yellow secretions at the opening of sinuses were seen in 17.14% of cases. Hypertrophy of turbinates was also noticed in around 23%, with middle turbinate hypertrophy (11.42%) showing a statistically significant association .

All samples sent to the Pathology Department were subjected to histopathological examination using H&E stain as well as special fungal stains like PAS and Gomori methenamine silver stains. Allergic mucin was seen in all the AFRS cases with statistically significant

association. Fungal hyphae were detected in only 7 (20%) cases while acute inflammation and calcification were seen in 1 (2.8%) each.

Direct microscopy was positive in 25 (71.42%) cases and septate hyphae were seen in all these positive cases. 32 out of 35 cases were positive by culture. 2 samples yielded mixed culture, both growing *A. flavus* and *A. niger*. Among cultures, *A. flavus* (27) (77.1%) was the most common species with a statistically significant association followed by *A. niger* (4) (11.4%), *A. fumigatus* (2) (5.7%), and *Bipolaris* species (1) (2.8%) with no statistically significant association being seen.

In 35 cases of AFRS, 7 samples were positive for fungi in both histopathology and culture while in 25 cases, fungi were isolated on culture but no evidence was seen on histopathological examination. Two cases were negative for fungi on culture but were positive by microscopy while 1 sample was negative by both microscopy and culture with slight percentage of agreement being seen between various tests. The percentage of agreement between culture and direct microscopy was 2.5%, between culture and HPE was 4.58%, and between direct microscopy and HPE was 9%.

Discussion

Allergic fungal rhinosinusitis is a noninvasive form of FRS. Allergic fungal sinusitis is common among adolescents and young adults and is more common in geographical areas of high humidity. Two-thirds of patients are atopic and half suffer from asthma. Two-thirds of allergic fungal sinusitis patients suffer from allergic rhinitis, and approximately 90 percent have increased blood levels of immunoglobulin E (IgE) [16] which was also evident in our study where 80% of AFRS cases have raised serum levels of IgE.

Although there are no unique pathognomonic symptoms, patients often present with unilateral nasal polyposis and thick yellow-green nasal or sinus mucus. The nasal polyposis may form an expansive mass that causes bone necrosis of the thin walls of the sinuses. Should the lamina papyracea of the ethmoid bone be traversed, it may cause proptosis. Polypoid material can also push the nasal septum into the contralateral airway. CT scans often reveal characteristic serpinginous sinus

opacification of more than one sinus, mucosal thickening, and erosion of bone, but this does not represent tissue invasion [2, 17]. In addition, allergic fungal sinusitis may be suspected when a patient with nasal polyposis, having no other known disease, responds only to oral corticosteroids.

In our study, 35 cases were diagnosed to have AFRS depending on presence of allergic mucin in histopathology examination and clinical and radiological evidence of allergic fungal rhinosinusitis as well as on the basis of microbiological examination. The mean age of our cases was 28.45 years with a range of 18–48 years, very similar to a study done in Chandigarh in 2002–2003, the mean age being 28 years in their cases of AFRS [13]. However Montone et al. [18] in USA in 2008 found the mean age to be on the higher side, being 45 years with a range of 18–88 years, and M:F ratio was 1.2:1 similar to our study.

Many patients with allergic fungal sinusitis have a history of chronic rhinosinusitis and have undergone multiple operations prior to diagnosis [2, 3]. In a study in Brazil in 2002 [19], doctors found a significant association of asthma, previous intolerance to aspirin, and topical corticoid use with AFRS [19]. In our study, previous nasal surgeries were seen in 20% of cases followed by bronchial asthma (14.2%), allergic disorders (11.42%), and hypertension (5.71%). Statistically significant association was seen with allergic.

In our study, culture was positive in 32 (91.42%) samples, *Aspergillus flavus* being the most common isolate with a statistically significant association. In many studies in India, *A. flavus* was the most common isolate in AFRS cases [21–23]. A study by Saravanan et al. [13], in Chandigarh, reported that, among the 32 patients in the AFRS group, the most common culture isolate was *A. flavus* (81%), followed by *A. fumigatus* (9%), with *Bipolaris* spp. being isolated in only 2 cases (6%). Meanwhile in the West, in a period (1991–2008), the most common single fungal isolates were *Aspergillus* sp. (34%) with *A. fumigatus*, *A. flavus*, and *A. niger* being most frequent and dematiaceous species (30%) with *Alternaria* spp., *Bipolaris* spp., and *Curvularia* spp. isolated most often. In cultures with multiple isolates, various combinations of dematiaceous fungi with *Aspergillus* and non-*Aspergillus* spp. have been

seen [17]. Our study did not find dematiaceous fungi much among our isolates. This might be due to different geographical distribution of the fungi in different areas depending on local climate temperature and humidity.

Conclusion

It was realised that prompt clinical suspicion in patients of chronic sinusitis with suspicious signs and symptoms along with timely sampling of the adequate patient specimens and the optimal and timely processing of samples by microscopy and culture and histopathological examination will go a long way for early diagnosis and management of these patients.

Ethical Clearance- Taken from ethical committee of institution

Source of Funding- Self

Conflict of Interest – Nil

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Incidence of Cervical Spondylosis as Cause of Vertigo in a Tertiary Care Hospital in Malwa region of Punjab

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Abstract

Background: Vertigo or giddiness is a common symptom seen in patients attending ENT OPD. Vestibular and neurological pathologies being the known common causes. Cervical spondylosis is being established as a common condition leading to vertigo. Our aim is to evaluate the significance of cervical spondylosis as a cause in patients with vertigo.

Methods: Hundred patients of either sex, between the age group of 23-64 years, with vertigo were evaluated with complete history and clinical examination followed by PTA and impedance audiometry. All common causes of vertigo were ruled out and these patients were screened with digital x-ray cervical spine in lateral view to rule out cervical spondylosis. The results were analysed statistically using Chi square test and inference was drawn.

Results: Out of 100 (100%) patients evaluated, 58 (58%) were female patients and 42 (42%) male patients. Cervical spondylosis was found to be present in 47 (47%) patients.

Conclusions: Cervical spondylosis was found as a common finding in patients with vertigo. It can be ruled out easily using a simple investigation of cervical spine x-ray, in patients where other commoner causes cannot be established.

Keywords: Cervical vertigo, Vertebrobasilar insufficiency, X-ray cervical spine, Cervicogenic dizziness

Introduction

Vertigo is one of the most common complaints encountered in ENT OPD. It is perceived as swaying or rotational movement either of one's own body or of the environment, or both.^{1,2} Different causes of vertigo include those arising from disturbances of the ear; central nervous system (CNS); cardiovascular system; and benign positional paroxysmal vertigo (BPPV).³

Cervical pathologies as a cause for vertigo was first described in 1858 by Claude Bernard⁴ Cervical spondylosis develops in 25-50% of people, by the age of 50 and in at least 70% of elderly population by the age of 75 years.⁵

The aim of our study was to evaluate the clinical importance and significance of cervical spondylosis as a cause of vertigo.

Material and Methods

A prospective descriptive study was conducted on 100 patients with complaints of vertigo attending ENT outpatient department at Adesh institute of medical sciences and research, Bathinda. After obtaining Ethical Committee clearance, the study was conducted during the period of January 2018 to April 2019.

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After thorough history and ENT examination, PTA and impedance audiometry was performed to rule out any auditory pathology. Those patients with no specific cause for vertigo and were willing to participate were included into the study after taking informed and written consent. These patients were later screened with a digital X-ray of cervical spine in lateral view and an orthopaedic opinion and in some, neurological opinion was taken. All the data was recorded in a proforma.

Patients with vertigo after ruling out vestibular and neurological causes, between 23 to 64 years of age of either sex were included. While, patients with vestibular and neurological causes were excluded from the study.

Statistical Analysis

Qualitative data was represented in the form of frequency and percentage. Association between qualitative variables was assessed by Chi square test. A p value of less than 0.05 was considered statistically significant. Statistical analysis was done with IBM SPSS Version 22 for windows.

Results

A study was done on 100 (100%) patients, after ruling out vestibular and neurological causes of vertigo by doing thorough ENT examination and pure tone audiometry.

The patients of age group 23-64 years, of either sex were studied. Mean age being 40.34 years. Most of the patients 59 (59%), were between 30-49 years of age.

Amongst 100 (100%) patients in our study, 58 (58%) were female patients and 42 (42%) male patients.

Out of 100 (100%) patients, 47 (47%) patients had cervical spine degenerative changes and 53 (53%) patients had normal X-ray cervical spine.

The patients with vertigo in age group 50-59 years were found to have highest incidence of cervical spondylosis.

Cervical spondylosis was present in 28 (48.28%) out of total 58 (100%) females and in 19 (45.24%) out of total 42 (100%) males. This was compared and found to be statistically insignificant.

Amongst 100 (100%) patients, 47 (47%) patients had cervical spondylosis. Vertigo in these patients could be attributed to the cervical spine pathologies.

Discussion

Ryan and Cope first termed "cervical vertigo", the condition of combined symptoms of neck disorders and vertigo (1955). Dizziness due to cervicogenic causes was theorized to be a result of abnormal afferent input to vestibular nuclei from damaged receptors in the cervical spine.⁶

Schenk et al attributed three mechanisms to the cause of cervicogenic dizziness: irritation of the cervical sympathetic nervous system, vertebral artery compression due to mechanical stress or stenosis, and functional disorders in C0 to C3 involving proprioceptors.⁷

While clinical evaluation, it is necessary to rule out neurologic, vestibular, and psychosomatic disorders before a disorder of the craniovertebral junction is to be looked for.⁸ In our study we have included patients with vertigo, after exclusion of these causes.

A condition worth mentioning here, is an ischemia caused by compression of cervical sympathetic nerves leading to dizziness is seen in a rare syndrome, called Barre-Lieou syndrome, which presents with symptoms of head or neck pain, tinnitus, vertigo, blurred vision, dilated pupils, nausea or vomiting.⁹

Mazloumi et al conducted a study on evaluation of patients with vertigo secondary to cervical spondylosis, where the mean age group was 62.5 years.¹⁰ In a study by Karlberg et al, it was 37 years.¹¹ The mean age of patients in our study was 40.3 years, with 59 (59%) patients (maximum) in 30-49 years age group.

Rieke et al found the prevalence of vertigo, dizziness, or feelings of imbalance in patients with cervical spine abnormalities to be greater than that found in the general population.¹² Similarly our study showed presence of cervical spondylosis in 47 (47%) patients with vertigo (Significant), which was not attributable to any other causes.

Conclusion

Cervical spondylosis as a cause for vertigo can be

easily ruled out, even with simple and less expensive investigation like digital X-ray of cervical spine lateral view, as it is easily available. Early diagnosis will definitely help in effective treatment. Thus, preventing progression of episodes of vertigo, by treating cervical spondylosis early.

Ethical Clearance- Taken from ethical committee of institution

Source of Funding- Self

Conflict of Interest – Nil

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Incidence of BCC in a Tertiary Care Hospital in Malwa region of Punjab

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Abstract

Objectives. Although the incidence of skin cancers in India (part of South Asia) is low, the absolute number of cases may be significant due to large population. The existing literature on BCC in India is scant. So, this study was done focusing on its epidemiology, risk factors, and clinicopathological aspects.

Methods. A hospital based cross-sectional study was conducted in Punjab, North India, from 2017 to 2019. History, examination and histopathological confirmation were done in all the patients visiting skin department with suspected lesions.

Results. Out of 36 confirmed cases, 63.9% were females with mean \pm SD age being years. Mean duration of disease was 4.7 years. Though there was statistically significant higher sun exposure in males compared to females (value being 0.000), BCC was commoner in females, explainable by intermittent sun exposure (during household work in the open kitchens) in women. Majority of patients (88.9%) had a single lesion. Head and neck region was involved in 97.2% of cases, with nose being the commonest site (50%) with nodular/noduloulcerative morphology in 77.8% of cases. Pigmentation was evident in 22.2% of cases clinically. Nodular variety was the commonest histopathological variant (77.8%).

Conclusions. This study highlights a paradoxically increasing trend of BCC with female preponderance, preferential involvement of nose, and higher percentage of pigmentation in Indians.

Keywords: basal cell carcinoma; pigmentation; histopathological

Introduction

Jacob Arthurin 1827 first coined the term “rodent ulcer” to describe what we now know as a basal cell carcinoma (BCC) [1]. It is the most common cutaneous malignancy worldwide, accounting for 65–75% of all skin cancers. Gross differences are noted in the percentage of skin cancer in the Asians (2–4%) and Blacks (1-2%) as compared to the Caucasians (35–40%) [2]. Although the incidence of skin cancers in India is lower as compared to the Western world, absolute number of cases may

be significant due to large population. The existing literature on BCC in India is scant with lack of clinical studies with statistical analysis [3]. So, this study was undertaken to fill this deficit in literature of BCC with focus on epidemiology, risk factors, and clinical and pathological aspects of the disease.

BCC is a nonmelanocytic skin malignancy arising from basal cells of the epidermis or follicular structures and is seen mostly on sun exposed areas, especially head and neck, occasionally over the trunk and limbs, and rarely on the palms, soles, mucous membranes, and genitals [4, 5].

The anatomic distribution of BCC correlates with embryonic fusion planes. Recently, it has been indicated that BCC occurrence is higher along embryonic fusion planes as compared to other areas of the midface, evidence

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that supports this hypothesis for BCC pathogenesis [6]. (SD), and frequency tables were utilized.

Ninety-five percent of these neoplasms occur in patients aged more than 40 years, although cases in childhood and congenital basal cell epitheliomas have been reported [7-9]. In children, it is usually associated with a genetic defect, such as basal cell nevus syndrome, xeroderma pigmentosum, nevus sebaceous, epidermodysplasia verruciformis, Rombo syndrome, or Bazex syndrome.

Material and Methods

A hospital based study was conducted at a tertiary care hospital situated in Punjab, North India, from 2017 to 2019. Patients of all ages attending skin outpatient department with suspected lesions were screened for BCC after taking an informed written consent. Patients with histopathologically confirmed BCC were enrolled in the study.

Detailed history with recording of various patient variables like age, gender, duration of symptoms, Fitzpatrick skin phototype, skin color, average daily sun exposure (hours/day), occupation, residence place (rural or urban), exposure to chemicals including pesticides, radiation exposure history, treatment with psoralen UVA (PUVA) or narrow band UVB (NBUVB), smoking, alcohol intake, history of personal or family history of skin cancers, personal or family history of other cancers, history of genetic disorder like xeroderma pigmentosum, albinism, and history of previous treatment.

Clinical examination was done with data collection on various tumor variables which included the following: size, location, number, morphological subtype, and pigmentation. For descriptive purposes, the lesions were classified based on size into small (less than 1 cm in diameter), medium (1-2 cm in diameter), and large (>2 cm in diameter).

Investigations included complete blood count with differentials, bleeding time, clotting time, renal function tests, liver function tests, and viral markers. Additional investigations were done depending upon the clinical scenario. Diagnosis was confirmed by histopathological examination of biopsy specimen with documentation of histopathological variant. To analyze the results, descriptive statistics such as mean, standard deviation

Results

A total of 36 histopathologically confirmed cases of BCC were enrolled in the study from 2011 to 2013. An increase was seen in absolute number of cases diagnosed per year with 9, 11, and 16 patients in 2017, 2018, and 2019, respectively .

Out of these patients, males were 36.1% (13/36) and females were 63.9% (23/36) with M:F being equal to 0.57:1 . Age of the affected cases ranged from 29 to 92 years of age. The mean \pm SD age of the patients was years (60.9 yrs years for males and 57.6 years in case of females). Although the difference in mean age between males and females was not statistically significant (data was analyzed using unpaired -test), it carries a clinical relevance as females tend to seek medical care earlier than males for suspicious, asymptomatic, and cosmetically disfiguring lesions. The greatest number of patients was in the age group of 61–80 years (47.2%) followed by 41–60 years (38.95%), 21–40 years (8.3%), and 81–100 years (5.6%), respectively . The youngest age of presentation in case of females was 29 years, while in males the corresponding age was 45 years. Correlation between gender and age group was not statistically significant (Fisher exact test value being 0.177), implying that these two variables are independent .

Out of all patients, 69.4% (25/36) hailed from rural areas. Majority of the patients were illiterate (80.6%) . A statistically significant association was seen between duration of disease and illiteracy (value = 6.95 and value = 0.01). This meant that illiterate patients present at a later stage of disease attributable to lack of awareness about disease entity. Farming was the main occupation among male patients (92.3%), while housekeeping was the major job among female patients (95.7%).

The duration of disease before seeking medical care ranged from 5 months to as long as 15 years, with mean duration being 4.7 years. The average duration of sun exposure was 6 hours/day in case of males and 2.91 hours/day in female patients. This difference in duration of sun exposure was statistically significant (-value being 6.71 and value = 0.000) . However, the females were intermittently exposed to high intensity sunlight

due to work in open kitchens and fields during sowing and harvesting seasons.

None of the patients had been taking photoprotective measures such as use of sunscreens and protective clothing. There was no history of treatment with PUVA or NBUVB in any of the study cases. All the patients were nonalcoholics and nonsmokers. No patient had features suggestive of genodermatoses associated with predilection for cutaneous malignancies like xeroderma pigmentosa, albinism, and so forth. Out of 36 patients, one (2.8%) had been previously treated for breast and endometrial carcinoma. Family history of cutaneous and systemic malignancies was not present in any of them. All the cases belonged to Fitzpatrick skin types III and IV (calculated via Fitzpatrick scoring scale).

The most common histopathological variant was nodular subtype (77.8%) with a significant proportion of tumors being pigmented (16.7%). Other subtypes included basosquamous (8.3%), micronodular (2.8%), morpheaform (2.8%), keratotic (2.8%), and adenoid (2.8%) BCC and BCC with adnexal differentiation (2.8%).

DISCUSSION

Basal cell carcinoma occurs worldwide. So far, BCC has been considered as the disease of the White¹⁴. Consequently, most of the studies have focused on White populations in Europe, USA, and Australia with scarcity of data from developing countries. Estimates of the incidence of BCC are imprecise since there is no cancer registry that collects data on BCC.

Although incidence rates of BCC vary significantly according to the ethnicity and geographic location, most studies show a rising trend in its incidence worldwide. This has been largely attributed to fair complexion and ozone layer depletion resulting in increased UV radiation reaching earth's surface. Similar increasing trend was noticed in our study as well. But factors other than the mentioned above need to be searched and verified as darker skin complexion in Indians should otherwise be protective against BCC. Moreover, ozone layer destruction is most evident over the temperate and polar regions, while India is a tropical country^[15, 16].

Basal cell carcinoma is rare in young populations.

An increased incidence has also been noticed in children and young adults^[17]. This finding highlights the need for early institution of UV protection and skin cancer screening in the pediatric and young adult population. However, there was no case below the age of 20 years in our study. Radiotherapy is another risk factor for the development of BCC in younger age group. Relative risk of BCC is more for children who have undergone radiation therapy for enlarged thymus^[18] or neoplasms such as medulloblastoma^[19].

BCCs are more common in males as reported in most studies worldwide, presumably due to greater occupational and recreational exposure to ultraviolet radiation (UVR). However, an unusual female preponderance was noticed in our study which is consistent with findings of another Indian series^[20]. Indian housewives especially rural women work in open kitchen during their household chores and work in the fields during sowing and harvesting seasons exposing them to intermittent, high intensity UVR. It might explain higher frequency of BCC in females in our study as intermittent rather than constant, cumulative UVR exposure is implicated in the pathogenesis of BCC^[21]. This female predilection may also be attributed to the changes in cultural practices like "veil" custom, structurally thinner skin with lower collagen density in the dermis when compared to men.

In our study, higher frequency among rural inhabitants was seen when compared to urban residents. This can be explained on the basis of more outdoor activities (as agriculture is the main occupation), changes in clothing preferences, illiteracy, and infrequent use of sunscreens. The rural patients regard initial lesions of BCC as a minor cosmetic problem with insignificant impact on health and seek medical advice only when lesions become symptomatic or disfiguring. So, late presentation to health facilities is equally contributory. A study done in Punjab regarding cancer found that tap water contains high content of arsenic, chromium, iron, and mercury, whereas ground water has abundance of arsenic, chromium, nickel, and iron. Even pesticides have been detected in the locally grown vegetables as well. Tseng et al. found a dose-dependent relation between arsenic levels in drinking water and the prevalence of skin cancers. Thus, exposure to harmful metals and pesticides may also add to the risk of skin

cancers, but further clinical and research studies are needed to confirm their role in the pathogenesis of BCC and to delineate underlying mechanisms. Occupations at risk of BCC that are highlighted in our study include agricultural workers and housekeepers.

Although most BCCs are slow-growing, relatively nonaggressive tumors, a minority have an aggressive behavior with local tissue destruction and, rarely, metastasis. Metastatic BCC has a reported incidence of only 0.0028–0.5%. Risk factors for development of metastatic BCC include large primary tumor (>2 cm), location in head and neck region, long standing lesion, multiple primary tumors and recurrences, prior radiation therapy, large tumor depth, invasion of perineural space and blood vessels, fair skin, male gender, and immunosuppression. One of our patients was detected with metastatic BCC.

Conclusion

This study highlights a paradoxically increasing trend of BCC with female predilection and higher percentage of pigmented lesions in Indians. This skin malignancy tends to be commoner in rural and agriculture based population. Major contributory risk factors include intermittent rather than constant UV exposure, cultural and lifestyle changes, cosmetic indifference, possible role of arsenic and pesticides, improved clinical awareness, and diagnostic facilities. The increasing cancer burden calls for the need of introduction of national screening program including mandatory annual skin examination by trained health professionals at the national level. Since early detection and treatment of lesions are crucial to decrease functional and cosmetic morbidity and costs, this study highlights the importance of improving awareness among general practitioners, public health workers, and general population. The clinical and epidemiological data collected in this study would serve as a reference for future research and may be helpful in the development of preventive and educational strategies.

Ethical Clearance- Taken from ethical committee of institution

Source of Funding- Self

Conflict of Interest – Nil

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Evaluate the Association between the Interpterygomaxillary Notch and the Width of Maxillary Anterior Teeth

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Abstract

Aim: Among the most challenging aspect of complete denture construction is the proper selection of maxillary anterior teeth. The main objective of this study was to examine the relationship between the total mesiodistal width of the six maxillary anterior teeth and the interpterygomaxillary notch distance.

Materials and Methods: One hundred maxillary impressions were taken on subjects using irreversible hydrocolloid impression material and stock trays. The distance between two pterygomaxillary notches was measured on a straight line using a digital caliper with a 0.01-mm precision level. For each cast, the maximum coronal widths of each of the maxillary anterior six teeth were measured with a caliper. The results were analyzed using correlation regression tests.

Results: The mean mesiodistal width of the six maxillary anterior teeth was 52.97 (+2.29) mm, and the mean distance of the interpterygomaxillary notch was 44.28 (+ 3.29) mm. The correlation and regression tests showed that there was a statically significant positive correlation ($p=0.001$), Pearson coefficient = 0.498 between the interpterygomaxillary notch distance and total mesiodistal width of the six maxillary anterior teeth.

Conclusion: The majority of cases showed a significant relationship between the interpterygomaxillary notch distance and total mesiodistal width of the six maxillary anterior teeth. Though other parameters should also be considered to analyze and compare other morphological structures to improve the aesthetic requirement for the conventional denture wearer.

Key Words: *W.M.A.T= width of maxillary anterior teeth, I.P.N.D= interpterygomaxillary notch distance*

Introduction

Art is the imposing of a pattern on experience, and our aesthetic enjoyment is recognition of the pattern. The face holds a mark in the beauty in comparison to other features of human beings.

Esthetic in dentistry is defined as the cosmetic effect produced by a dental prosthesis which affects the desirable beauty, attractiveness, character and the dignity of an individual, the ultimate challenge for the restorative dentist [1].

Poetry and literature for centuries have hinted on the importance of teeth with its own role in contributing to the facial beauty. The face being the most noticeable

part of human anatomy holding a key to determining one's social acceptance. The loss of teeth with such a high effect on facial appearance associated with it often attributes to tremendous psychological and psychosocial trauma for the patient [2]. The dental prosthesis which plays a pivotal role in either enhancing or distracting the patient's personal image and attractiveness of the appearance. Frush stated, the acceptance of the treatment by the patients is made considerably easier on prosthesis accomplishing the two basic esthetics needs, the portrayal of physiological form and an actual improvement in the attractiveness of the smile" [3]. Further justifying the other definition of esthetics "the natural setting of the teeth in the arch plus natural ridge and contours of gingiva" [4]. Yet, Hardy concurred as

esthetic is not easily reduced to a formula, additionally complimenting Martones statement “the key to esthetics lie in asymmetry”.

Esthetic in complete denture fabrication is the bug bear of dentistry with a majority of the practitioners. When an edentulous patient hopes for a satisfying treatment, the prosthodontist is compelled to use certain amount of ingenuity. Among the most challenging aspect of complete denture construction is the proper selection of maxillary anterior teeth [5]. The central incisor forms the spearhead of the anterior teeth, where the teeth width is more fundamental than the length [6]. It is the prosthodontist who comes into play and the only one to correlate and evaluate the biomechanical information so that the selection of artificial teeth will meet the individual needs. For the most part, the measurements employed to guide the selection of anterior teeth primarily focusses on the soft tissue landmarks, which may be misleading due to dynamic changes over time [7]. Using a landmark less affected by these factors may therefore be a better and a reliable method for the selection of anterior teeth. The pterygomaxillary notch is the palpable notch formed by the junction of the maxilla and the pterygoid hamulus of the sphenoid bone and does not appear to change with factors such as weight changes, aging, and extraction of teeth [8]. Pterygomaxillary notches can readily be identified on dental casts and may be used as an alternative anatomical

landmark for anterior teeth selection [8] The aim of this study was to examine the existence of any relationship between the interpterygomaxillary notch and the total mesiodistal width of the six maxillary anterior teeth in the Indian population.

Materials and Methods

Dental student volunteers from the JSS DENTAL COLLEGE AND HOSPITAL, JSS University and were solicited by a written announcement to participate in the study. The study protocol was approved by the local Ethics Committee. Informed consent was obtained from all subjects prior to their participation. The inclusion criteria of the subjects limited to those with Angle class I maxillomandibular relationship, natural maxillary teeth in good alignment, no restoration or tooth loss in the maxilla, and no history of orthodontic treatment. The exclusion criteria of the subjects included interdental spacing or crowding and apparent loss of tooth structure. The volunteers were examined by one of the investigators of the study. One hundred were chosen by drawing from the students who met the inclusion criteria. The ages of the subjects ranged between 19 and 22 years.

Maxillary impressions were taken on subjects using irreversible hydrocolloid impression material and stock trays. To correctly register the pterygomaxillary notch and reduce soft tissue distortion, the impression was made under minimal pressure. The stone casts were obtained using ADA type III dental stone. Damaged stone casts were also excluded from the study.



Figure 1



Figure 2

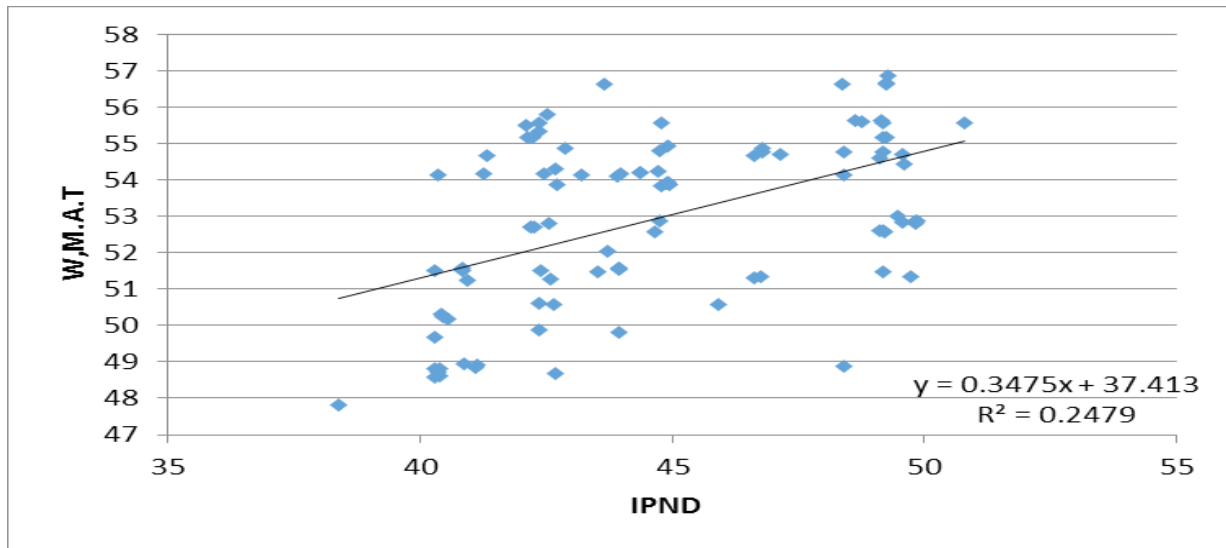
The buccolingual center of the pterygomaxillary notches was identified on each stone cast and marked with graphite. The distance between two pterygomaxillary notches was measured on a straight line using a digital caliper with a 0.01-mm precision level. The arms of the caliper were adjusted so they were in contact with the graphite marks. For each cast, the maximum coronal widths of each of the maxillary anterior six teeth were measured with a caliper. The six individual anterior tooth width measurements from each cast were added to give a total width for the six anterior teeth on each cast. All measurements were performed at two separate occasions by two independent observers. The accuracy of the caliper was tested with the use of a 3.5-mm steel plate and digital micrometer before each measurement. All measurements were recorded in mm. The data were analyzed.

Results

The sample size of the study was taken to be (n=

100). With a variation of 42 female population and 58 male population.

The distribution of the data was not different from the normal distribution, as revealed by Kolmogorv-Smirnov ($p>0.5$). The mean mesiodistal width of the six maxillary anterior teeth was 52.97 (+2.29) mm, and the mean distance of the interpterygomaxillary notch was 44.28 (+ 3.29) mm. The correlation and regression tests showed that there was a stastically significant positive correlation ($p=0.001$), Pearson coefficient = 0.498 between the interpterygomaxillary notch distance and total mesiodistal width of the six maxillary anterior teeth. Figure 1 shows the distances between pterygomaxillary notches (A), which correspond to the mesiodistal width of the maxillary anteriors (B) for each subject. There was a linear relationship between the two measurements according to the linear regression ($p=0.001$), $F=31.98$ analysis; however standardized coefficients (beta) were found as 49% ($r=0.498$



Graph 1 Relation between IPND and WMAT

Table 1 :
Correlations

Correlations			
		IPND	WMAT
IPND	Pearson Correlation	1	.498**
	Sig. (2-tailed)		.000
	N	100	99
WMAT	Pearson Correlation	.498**	1
	Sig. (2-tailed)	.000	
	N	99	99
**. Correlation is significant at the 0.01 level (2 tailed).			

Table 2
Curve Fit

Model Summary and Parameter Estimates							
Dependent Variable: WMAT							
Equation	Model Summary					Parameter Estimates	
	R Square	F	df1	df2	Sig.	Constant	b1
Linear	.248	31.980	1	97	.000	37.413	.347
The independent variable is IPND.							

Discussion

Esthetics is the primary consideration for patients leading to characteristic appearance. The size, color, shape, and overall arrangement of the teeth in the anterior maxillary region are a prime determinant not only to dental esthetics but also to facial esthetics. The ultimate object is to rehabilitate the teeth in consonance with the facial appearance [7].

Since, the evolution of dentistry, multitudinous approaches have been taken for determination of the size of the maxillary anterior teeth. Initially when teeth were selected, mostly by dimensional measurements, with slight consideration given to face form or other qualities [9]. Later, starting from 1815, for the very first time when the geometric classification of face form and profile, by Madame Schimmelpainik for artists use was considered in dentistry for esthetic teeth selection

[10]. Further leading to different techniques like The “correspondence and harmony” concept by J.W. White in 1872, The “Temperamental technic” [11], The “Typal form concept” by W.R. Hall in 1887, “Berry’s biometric ratio method”, in 1906 [11]. Clapp’s “Tabular Dimension Table Method,” around 1910 [12]. “Molar Tooth Basis,” by Valderrama in 1913 [13]. According to this method, the tooth size was measured on a one-fourth increment of the size of a Bonwill triangle, and is determined by measuring the edentulous mandible. Cigrande in 1913 [14] used the outline form of the fingernail to select the outline form of the upper central incisor tooth. 1920 Nelson projected a technique for selecting a tooth mould and he called it as “Maxillary Arch Outline Form,” [15-16]. In 1936 “Wright’s Photometric Method” based on using a photograph of the patient with natural teeth. The “Multiple Choice Method,” by Myerson in 1937 [17]. The “House Instrumental Method” of projecting typal outline and profile silhouettes onto the face by means of a telescopic projector instrument and silhouette form plates [18] by House in 1939.

“Stein’s coordinated size technic,” in 1940 [18]. “Anthropometric Cephalic Index Method,” by Sears in 1941 [19]. “Frame Harmony Method,” by the Justi Company in 1949 [20]. The “Bioform technic” in 1950 based on the House classification [21]. The “Selection Indicator Instrument method,” correlated with Williams’ and Houses’ typal tooth form theory and the tabular table technic [21,24]. The “Automatic Instant Selector Guide” projected in 1951..

With such techniques, came a variety of concepts, including White’s concept, H. Pound’s concept, Winkler concept, Dentogenic concept and Leon William’s concept. [22,23]

Anatomical landmarks which have been established as a guide for selecting maxillary anterior teeth in edentulous individuals but with a variance of different ethnic groups worldwide.

Multiple efforts have been made to unambiguously quantify the selection of the anterior teeth using the anatomical landmarks. BW, IPD, ICD, IAD, and ICOW, and some newer anatomical measurements, such as philtral width, circumference of skull (COS), maxillary arch length (MAL), and maxillary arch width (MAW) have also been studied [22,23]. However, there is no

consensus of data with respect to a single esthetic factor that can be used reliably to facilitate for artificial tooth selection [25]. Hence, this study was carried out to try and identify a single, reliable anthropometric measurement that can be used to determine the size of the anterior teeth in various population groups of India.

Pterygomaxillary notch: It is a narrow cleft of loose connective tissue which is approximately 2mm in extent anteroposteriorly formed by the junction of the maxilla and pterygoid Hamulus of the sphenoid bone. Located by using T- burnisher. Significance: Constitutes the lateral boundary of posterior palatine seal area in maxillary foundation. The pterygomandibular raphe attaches to Hamulus [24].

The position of the pterygomaxillary notches do not appear to change with factors such as weight changes, aging, and extraction of teeth. Pterygomaxillary notches are easily localized on the casts as well [8,24,26].

The use of biometric guidelines typifies a way of matching the width of anterior teeth in complete dentures in as much detail as possible to the original. Therewith, anthropometric parametres obtained from one’s own population indubitably constitute a substantial role as there are abundant studies on the human face proving the existence of significant variations in parameters among different races, population, nation as well as individuals.

Petricevic N et al. asserted that sum of width of maxillary anterior teeth is equal to hamular notch distance as well as distomaxillary arch width. Baker PS et al. concluded that adding 10 mm to the hamular notch distance showed strong correlation with the maxillary anterior teeth [27,28]. Johnson and Stratton in their study stated that pterygomaxillary notch plus 5 mm equals the width of maxillary six anterior teeth [29]. Though, Guldag in his study concluded that inter-ptyergomaxillary notch cannot be used as a predictive factor for anterior teeth selection. But, significant co-relation was identified to be used as method to assess the size of the maxillary anterior teeth [30].

In this study, the mean mesiodistal width of the six maxillary anterior teeth was 52.97 (+2.29) mm, and the mean distance of the interptyergomaxillary notch was 44.28 (+ 3.29) mm. The difference between the results could be due to the difference in the observer’s

respective interpretation. The correlation and regression tests showed that there was a statistically significant positive correlation ($p=0.001$), Pearson coefficient = 0.498 between the interpterygomaxillary notch distance and total mesiodistal width of the six maxillary anterior teeth thus, concurring the relationship between the interpterygomaxillary notch distance and size of the maxillary anterior teeth.

Conclusion

This brings to a conclusion that better studies for certain ethnic groups have to be executed before considering any anatomical landmark being a reliable guide for selecting maxillary anterior teeth for that particular population [31]. Parameters like gender variations in tooth size, ethnic variations, differences in size of dentition on the left and right sides and a specific sample size can limit the areas of this study. Although the application of anterior teeth measurements using anthropometric measurements has been documented extensively, future endeavors are needed to establish a common national or global database to assist in the ultimate selection of anterior maxillary teeth for enhanced aesthetics.

Conflict of Interest: No conflict of interest was found.

Source of Funding: JSS Academy of Higher Education and Research

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Effect of Dynamic Neuromuscular Exercise Training on Explosive Arm Strength and Agility in Basketball Players

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Abstract

Background: As Basketball requires high level conditioning abilities, it is necessary to have the arm and leg explosive power and agility to be derived at desired level. To achieve this derivation we have postulated the Dynamic Neuromuscular exercise training program for Basketball players. This could be useful to enhance their performance by improving their abilities. **Aim:** To study Effect of Dynamic Neuromuscular Exercise Training on Explosive arm strength and agility in Basketball Players. **Setting and Design:** Ethical approval was obtained from Institutional ethical committee. Subjects were selected by convenient sampling method. The players were evaluated for Agility and explosive arm strength. A survey among 68 players was done among which 60 patients participated based on inclusion criteria which were divided into two groups. **Methods and Material:** Experimental group (Group A, n=30) received Dynamic Neuromuscular Exercise Training Program for 4 days/week for 6 weeks whereas control group (Group B, n=30) received the conventional exercises. Pre and post treatment analysis was recorded using Illinois agility test and Medicine ball throw test. **Statistical Analysis:** Data was subjected to Shapiro-Wilk test which showed data does not pass normality test hence parametric pair and un-paired t test were performed to analyse the data within the groups. **Result:** Between group comparisons; group A (n=30, mean age= 21.37±2.12) showed extremely significant (p<0.0001), improvement in Medicine ball throw test in pre (5.80±0.88) to post intervention (8.15±0.80) than group B(n=25, mean age=22.9±2.41) in pre (5.9±1.01) to post intervention (6.35±0.97). As well the Illinois agility test showed significant improvement (p<0.0001) in group A (pre= 21.9±2.9 to post=17.85±1.6) than group B (pre=23.35±2.07 to post=22.67±2.10). **Conclusion:** Study concluded that there is significant effect of Dynamic Neuromuscular training on explosive arm strength and agility in basketball players.

Keywords: Basketball, Dynamic Neuromuscular Training, Illinois agility test, Medicine ball throw test.

Introduction

In India, Basketball game began its journey in 1930 when it was played for the first time. Nowadays, basketball is considered as one of the widely played sports in India. Basketball in India is played in most of the high schools, colleges and universities as well as

there are specific Academies and Clubs accessible in India. There is substantial patronage for the game among the younger generation. In India Basketball is played by both men and women of all ages.¹In particular, matches consist of 2 rounds (15-minute each with half time break in-between) during which an athlete has to produce a quick displacement of his/her body segment, dribbling, passing, shooting and rebound defence.²

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There are many number of sports having their own distinctive skill set and performance characteristics that are necessary for an athlete to excel. In most sports, the ability to generate and transfer explosive power is

a key element to success. The evaluation of the various expressions of strength and explosive power as well as the factors that contribute to their development is fundamental to enhancing performance of specific movement tasks as they relate to skills in a basketball sports.¹

Basketball is one of the fastest team sports game which requires mastery over fundamental skills like dribbling, passing, shooting and rebound defence etc.³ The multidirectional nature of the sport requires frequent changes in forward and backward movement and multiplane movements for defensive activities while other sports concentrate on single plane like running. The Basketball players advance the ball by bouncing it while walking or running (dribbling) or by passing it to a teammate, both of which require considerable skills.³ In basketball, the ability to generate maximal strength levels in the shortest period of time (muscular power) is necessary to gain high sport performance levels. Moreover, agility is a vital component for the success in basketball players⁴

In basketball the Agility performance and Arm Explosive Strength performance is very important for an athlete to excel. Agility is considered crucial for team sports. In Basketball, notably, agility is a prerequisite for achieving high-performance success. Obviously, agility is required to quickly perform all-out technical-tactical movements in multidirectional planes by maintaining dynamic balance, speed, and precision. It characterizes the capability of an athlete to maintain and control correct body positions while quickly changing direction through a series of movements.^{5,6} Arm Explosive Strength performance is important in physical conditioning of basketball players in and around the court and to reduce the risk of joint and tendon injuries during the game.⁶

Dynamic Neuromuscular training will demonstrate to reduce force absorption, active joint stabilization, muscle imbalance and function biomechanics while increasing strength of structural tissue (bones, ligament and tendon)¹. Marked evidence shows that neuromuscular training programs are effective for improving measures of performance.¹ This training program design to produce fast form of powerful movement and improve function of nervous system, generally for the purpose of improving performance in sports.¹ It is also used to increase speed

or force of muscular contraction providing explosiveness for a variety of sports specific activity.¹

These ancillary effects of neuromuscular training, which are likely related to the reduction of the risk of injury in athletes, are positive results of their training. Without the performance-enhancement training effects, however athletes may not be motivated to participate in a neuromuscular training program.¹

Neuromuscular training aims to improve neuromuscular control thus increasing functional joint stability which may have a protective effect against injury. There has been a push toward identifying mechanism of preventing many of these injuries with one focus being the incorporation of neuromuscular training program.³ In each sport requires different level of sensorimotor processes to perform skills and protect the neuromuscular system from injury. Many of their skills require great strength and sometimes exaggerated joint range of motion.⁷

This program can be design as it is a prevention oriented training which could improve sports performance and could be instituted on a large number of motivated athletes. Hence there is a need to study the effect of dynamic neuromuscular exercise training explosive arm strength and agility in basketball players.

Method

Study setting was sports clubs in and around Pune. Total number of 60 basketball players were selected between age group 18-35 years of both genders with more than 6 months of experience were selected randomly. Permission was taken from the institutional ethical committee of Tilak Maharashtra Vidyapeeth, department of physiotherapy and different centres were approached. Subjects were approached for data collection from basketball sport clubs in & around Pune city, India. The aims and methods of the study was explained and their written consent was taken. Out of which 60 participants were selected randomly following the exclusion and inclusion criteria and were divided in two groups that is Group A and Group B. The players were evaluated for Agility and Arm explosive power by using Illinois agility test⁸ and Medicine ball throw test⁹. A 6 weeks (4 days in a week) dynamic neuromuscular training was given to Group A that is to experimental

group and they were also following their regular training. Group B that is controlled group were given conventional exercises and they were asked to continue their regular training.

Protocol:

Exercise Program of Dynamic Neuromuscular training

Warm up: 10 mins of jogging, side shuffles and stretches

EXERCISES	REPETITIONS
Catching and throwing a weighted ball with partner	10 repetitions
Dribbling a ball on the floor or against a wall	10 repetitions
Swinging a weighted object in circular pattern	10 repetitions
Swinging a weighted object in pendular pattern	10 repetitions
Push off from wall	10 repetitions
Low oblique sit exercise	10 repetitions
Overhead slams with medicine ball	10 repetitions
Swing with medicine ball	10 repetitions
Mason twist with medicine ball	5 twists to each side
Repetitive jumping on floor in place	10 jumps
Forward, backward, side to side, diagonally to four corners jump with rotations zigzag jumping	10 jumps each
Running	5 mins
Box jumps	10 jumps
Ladder Drills	5 repetitions

Cool down: 5 min stretching and relaxation technique (Mitchell and Jacobson)

Statistical Analysis: The analysed data showed that it was not a normal distribution using shapro -Wilk test hence parametric test pair and un-paired t test were performed to analyze the data within the groups.

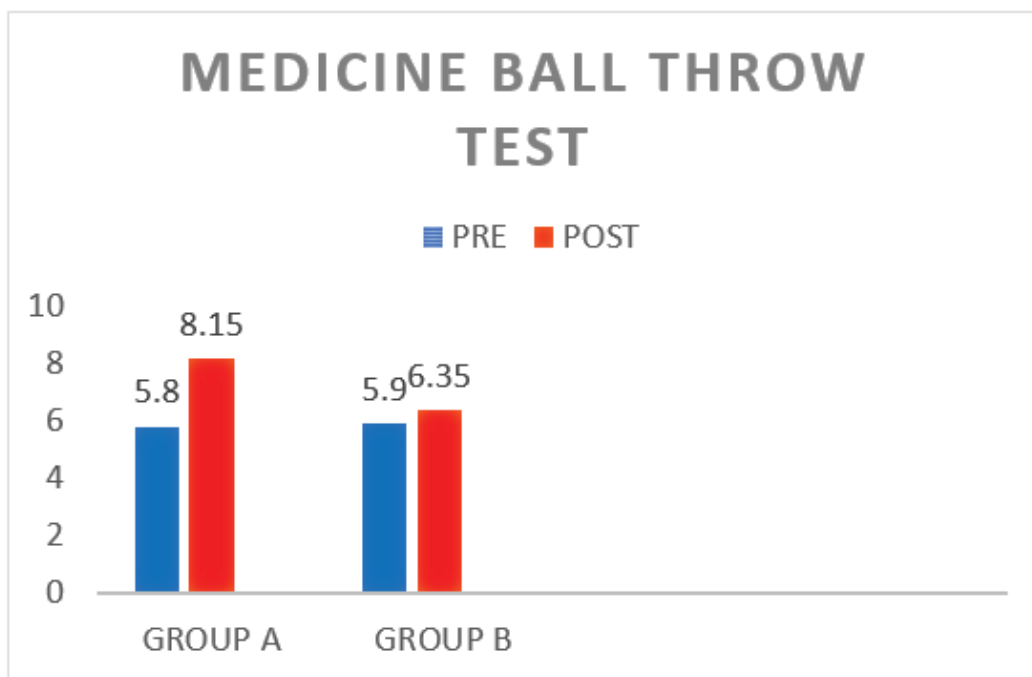
Result

Table 1: Distribution of players according to Demographic and clinical parameters.

Parameters		Experimental group (n=30)	Control group (n=30)
Age		21.37 ± 2.12	22.9 ± 2.41
Gender	Male	17	18
	Female	13	12
MBTT	Pre	5.80 ± 0.88	5.9 ± 1.01
	Post	8.15 ± 0.80	6.35 ± 0.97
	P value	<0.0001	<0.0001
IAT	Pre	21.9 ± 2.9	23.35 ± 2.07
	Post	17.85 ± 1.6	22.67 ± 2.10
	P value	<0.0001	<0.0001

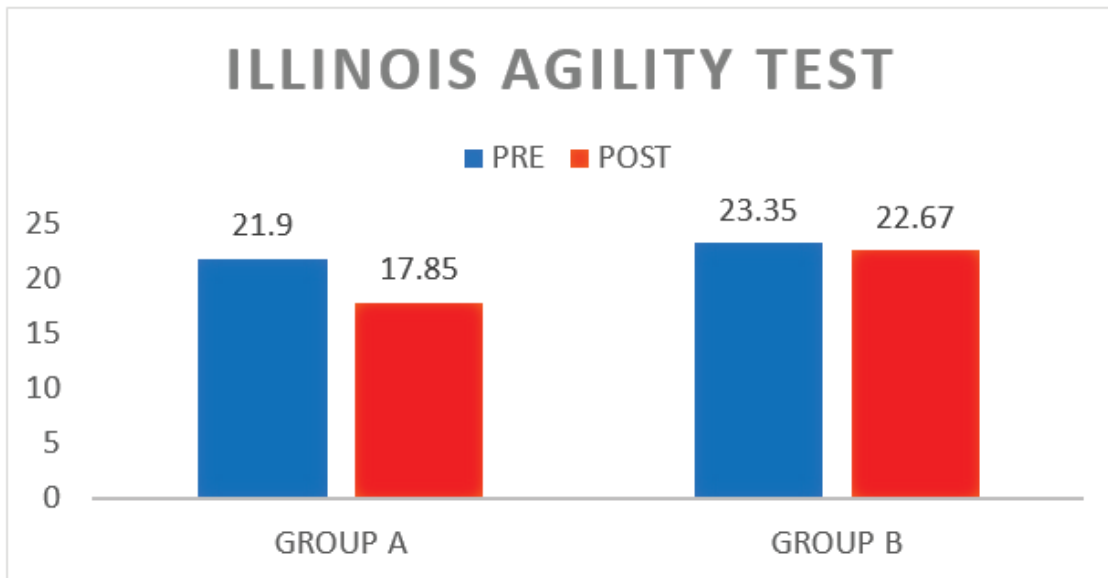
* MBTT– Medicine ball throw test

*IAT – Illinois Agility test



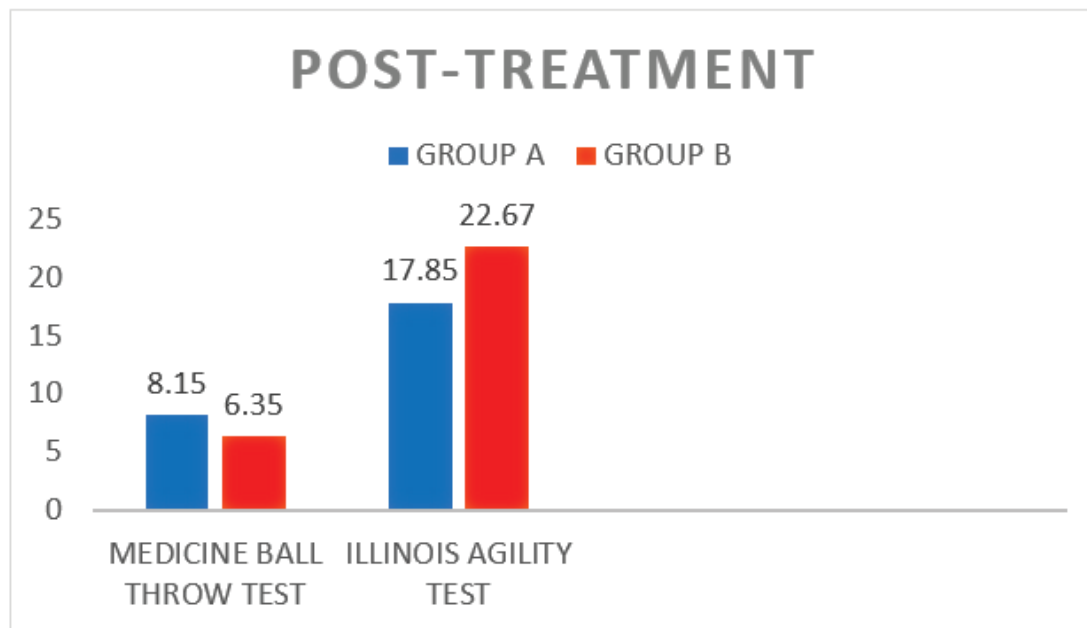
Graph 1: Distribution of players according to Medicine ball throw test

Interpretation: There was a significant increase in medicine ball throw test score which is suggestive of improvement in explosive arm strength after dynamic neuromuscular exercises.



Graph 2: Represents the comparative values of Group A and Group B of Illinois Agility Test

Interpretation: There was a significant reduction in Illinois agility test score which is shows improvement in speed after dynamic neuromuscular exercises.



Graph 3: Comparison between Group A & Group B (Post Intervention) of Medicine ball throw test and Illinois agility test

Interpretation:It has been observed that the average throwing distance of Group A has significantly increased to (8.15 ± 0.80) as compared to Group B (6.35 ± 0.97) after dynamic neuromuscular exercises with $(p < 0.0001)$ which suggests improvement in explosive arm strength and the average running time of Group A has significantly decreased to (17.85 ± 1.6) as compared to Group B (22.67 ± 2.10) after dynamic neuromuscular exercises with $(p < 0.0001)$ which suggests improvement in speed.

Discussion

This project is based on the effect of dynamic neuromuscular training program in basketball players by using Medicine ball throw test and Illinois agility test. Medicine ball throw test (In figure 1) in which it was seen that group a (experimental) average throwing distance which is Pre (5.80 ± 0.88) and Post (8.15 ± 0.80) was at a significant increase ($p < 0.0001$) in score then the group b (control) average throwing distance which is Pre (5.9 ± 1.01) and post (6.35 ± 0.97), this shows improvement in Explosive Arm Strength after dynamic neuromuscular exercises.

In figure 2 the basketball players also underwent Illinois Agility test in which it was seen that group a (experimental) average running time which is Pre (21.9 ± 2.9) and Post (17.85 ± 1.6) was reduced ($p < 0.0001$), then group b (control) average running time which is Pre (23.35 ± 2.07) and Post (22.67 ± 2.10) this suggests that in our study, subjects who underwent dynamic neuromuscular exercise training were able to improve their time and distance significantly on both the Illinois agility test and Medicine ball throw test. Therefore, we found a positive relationship between dynamic neuromuscular exercise training and improvements of both agility test and explosive arm test.

This improvement in agility and power is beneficial for athletes who require quick movements while performing their sport and support results from other studies.¹⁰

In a study, Gregory D. Myer et al conducted a study to see the effect of Dynamic exercises and stabilization in Female athletes in 2006 in Ohio which concluded that the exercises were effective at increasing measures of neuromuscular power and control in female athletes by using Physical Performance Testing and Biomechanical Testing.¹

When the muscle work is involved the isotonic contraction is required which helps in concentric muscle work and eccentric muscle work. The concentric muscle work is used to build up the muscle power, and although most everyday movements involve the use of all types of muscle work, it seems to be more natural and to require least concentric type. And in eccentric muscle work considerable concentration is required during exercises

designed to work the muscles in the way, this is probably to control the speed of the movement, as eccentric work in natural movements is usually fairly rapid.¹¹

To our knowledge only few studies have aimed to determine the functional classification level and sport specific skill tests¹², the power and endurance of the working muscles are maintained or increased in response to the tension created in them. The tension is greater when the exercises is performed at any speed which is slower, or more rapid, than when the natural speed of movement is employed, and it increases with duration of exercise. A high degree of tension and consequent increases in power can be developed by free exercises when the muscles work for any time against the resistance offered by the body weight, or against the mechanical disadvantage of an adverse leverage provided by a long and heavy limb.¹¹

Conclusions

Study concludes that there was significant effect of Dynamic Neuromuscular training on explosive arm strength and agility in basketball players.

Acknowledgments: A sincere thanks to all the player and their coaches who participated in the study and to staff members of Department of physiotherapy of Tilak Maharashtra Vidyapeeth, Pune.

Source of Funding: None

Conflict of Interest: None

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Correlation between Physical Activity Level and Therapeutic Success on Patients with Type 2 Diabetes Mellitus in Dr. Soetomo General Hospital Surabaya

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Abstract

Background: Diabetes mellitus is a group of metabolic diseases characterized by high blood sugar levels that occur due to abnormal working/secretion of insulin. Meanwhile, physical activity plays a significant role in regulating blood sugar levels in type 2 diabetes mellitus (T2DM) patients. During physical activity, insulin resistance decreases because when muscles contract, membrane permeability increases, and glucose can enter the cells. **Objectives:** The study aimed to determine the correlation between physical activity level and the therapeutic success of T2DM patients. **Method:** This cross-sectional study sample was all T2DM patients in Dr. Soetomo General Hospital internal polyclinic with a sample size of 87 people taken by consecutive sampling. Data was collected by direct interviews using the IPAQ questionnaire. The study variables were the therapeutic success and physical activity level of T2DM patients. **Results:** At a low level of physical activity, 69.8% of respondents had not met the therapeutic success criteria, at a moderate level, 56.0% have met the criteria, at a high level, 66.7% have not met the criteria. **Conclusion:** There is no correlation between physical activity level and the therapeutic success of T2DM patients at RSUD Dr. Soetomo Surabaya ($p = 0.086$).

Keywords: Cross-sectional Analysis, Diabetes Mellitus, IPAQ, Physical Activity, Therapeutic Success

Introduction

Diabetes mellitus is a group of metabolic diseases characterized by high blood sugar levels (hyperglycemia). This can occur due to abnormal working insulin, abnormalities in insulin secretion, or a combination of both¹. Indonesia is one of the 10 countries with the highest number of diabetic patients at the age of 20-79 years, ranked 6th in 2017. 80% of patients with type 2 diabetes mellitus (T2DM) are in middle or low-income

countries with an age range of 40-59 years². Surabaya is the largest city in East Java and ranked sixth in the case of diabetes mellitus in 2018 with a total of around 4,5 million patients³. This study aims to determine the correlation between physical activity level and the therapeutic success of T2DM patients by looking at the percentage of patients who achieved the criteria for therapeutic success with their level of physical activity.

Material & Methods

This analytical, observational, and cross-sectional study has a population of all patients with T2DM in the internal polyclinic diabetic division who entered Dr. Soetomo General Hospital from August-December 2019. The minimum sample size in this study was 79 people with an added 10% for anticipation so that the study sample was 87 respondents. The study used consecutive sampling as a sampling technique where all subjects

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who came and met the selection criteria were included in the study until the required number of subjects were met. The subjects must be a diabetic polyclinic patient in Dr. Soetomo General Hospital, has T2DM, aged between 15-65 years old, complete medical record, not having a high physical activity (builders, construction workers and laborers), not having disabilities that cause immobilization or unable to do physical activity, and not having a cardiorespiratory disease (Stroke, COPD, Cardiac decompensation) which cause a decrease of physical activity intensity or duration.

The variables studied were 2 hours post-prandial blood sugar <180 mg / dL, fasting blood sugar <130 mg / dL (bounded variables), and physical activity level of patients with type 2 diabetes (free variables). Data was collected by having a direct interview using IPAQ-SF (International Physical Activity Questionnaire-Short Form) and seeing patients' laboratory results. The collected data were analyzed through Cramer's V and Chi-Square methods. In statistics, Cramer's V is used to see the correlation between nominal data. Meanwhile, Chi-Square is used to see the correlation between 2 categorical variables

Results & Discussion

Table 1 Gender Distribution

Gender	Frequency	%
Male	40	46
Female	47	54
Total	87	100

Table 2 Age Distribution

Age (years old)	Frequency	%	Mean	Standard Deviation
20-35	4	4,6	53,71	8,589
36-50	22	25,3		
51-65	61	70,1		
Total	87	100		

Table 3 Physical Activity Level and Therapeutic Success

Physical Activity Level	Therapeutic Success		Total	p value
	Not achieved	Achieved		
Low	37 (69,8%)	16 (30,2%)	53 (100,0%)	0,086
Moderate	11 (44,0%)	14 (56,0%)	25 (100,0%)	
High	6 (66,7%)	3 (33,3%)	9 (100,0%)	
Total	54 (62,1%)	33 (37,9%)	87 (100,0%)	

According to table 1, from 87 respondents, there were more female patients than male.

According to table 2, out of 87 respondents, the most age group was in 51-65 years old, and the least was in 20-35 years old.

According to table 3, most patients with low and high physical activity level have not met the therapeutic success criteria, and most patients with moderate physical activity level have met the therapeutic success criteria.

The p-value of Cramer's V and Chi-Square test was 0,086. It can be concluded that H0 is accepted and Ha is rejected ($p > 0,05$). Thus it can be interpreted that there is no correlation between physical activity level and therapeutic success of T2DM patients in Dr. Soetomo General Hospital Surabaya. This also means that the physical activity level of T2DM patients does not determine therapeutic success. Several things might contribute to this result. First, there may be some patients who failed to find the equivalent activities based on the intensity despite the existing examples. Secondly, there may be some patients who miscalculated the duration of their physical activities because this questionnaire only relied on estimation and recalls. Third, there may be some confounding and more dominant factors that can influence the results of the study even though they had been eliminated such as medication adherence, counseling, family supports, knowledge and education, stress level, diet and eating patterns, food selection, and sleep quality.

The Non-Correlation between Physical Activity Level and Therapeutic Success

This study establishes that there is no significant correlation between physical activity level and therapeutic success. This indicates that physical activity level is not directly proportional to the therapeutic success of patients with T2DM. High physical activity level cannot guarantee the therapeutic success of patients with T2DM. This finding is supported by a few studies which suggested that this might be caused by most of the respondents who were elderly patients who were unable to do heavy intensity activities. Besides, many respondents are housewives and related to light activities that can be interspersed with rest. This is consistent with

the theory that when resting for an extended period after doing physical activity, the physical activity undertaken will not have much influence on blood sugar levels. Besides intensity, the duration of activity also influences the therapeutic success in patients with T2DM⁴. It was also stated that there was no acute effect in different intensity of physical activity on post-prandial blood sugar levels in the respondents and no blood sugar decreases either being indoors or outdoors after doing submaximal physical activity⁵. The role of physical activity interventions in controlling blood sugar in T2DM was also considered less significant because, in the groups that had performed physical activity interventions, there were no significant controlled blood sugar results ($p = 0.549$)⁶. People with moderate physical activity had the possibility of controlled blood sugar by 0,367 times compared to people with low physical activity. However, moderate physical activity level category did not have a significant relationship with blood sugar levels ($p = 0,061$)⁷. There may be some confounding and more dominant factors that can influence the results of the study even though they had been eliminated such as medication adherence, counseling, family supports, knowledge and education, stress level, diet and eating patterns, food selection, and sleep quality.

Medication Adherence

There is an association between anti-diabetic medication adherence with the regulation of blood sugar levels in diabetic patients. Respondents who are not compliant in taking anti-diabetic drugs will have 14 times greater risk of experiencing poor blood sugar regulation compared with respondents who are compliant in taking anti-diabetic drugs ($p = 0.015$, OR = 14)⁸. Blood sugar level (controlled) has a significant correlation with the level of adherence to consume high category anti-diabetic drugs ($p = 0.002$). Respondents who consumed high category anti-diabetes drugs were 0.143 times more likely to be compliant in regulating blood sugar levels compared to respondents who consumed low anti-diabetes drugs. If the patient is not compliant in taking anti-diabetic drugs, his blood sugar level will be difficult to control. If the patient is obedient, the opposite will happen. It can be concluded that blood sugar levels are associated with adherence to consuming high category anti-diabetic drugs ($p = 0.002$). In contrast, blood sugar levels are not associated with adherence to consuming

low and moderate category anti-diabetic drugs ($p = 0.066$)⁷. Medication adherence is also related to the number of drugs given⁷. In the linear regression test results found that there is a significant influence between the number of drug items to the adherence score of Morisky Medication Adherence Scale-8 (MMAS-8) in patients with T2DM ($p = 0.012$)⁹. The adherence level influences the therapeutic regimen factor for the amount of drug the patient receives. If the number of drug items increases, the value of adherence scores in patients with T2DM will decrease. According to this, increasing the number of pills ingested in a day can reduce the level of adherence¹⁰.

Many factors affect the non-adherence of taking medication; 4 categories are from the patients (age, education, occupation, partner), disease factors, therapeutic regimen factors, and interaction factors with practitioners²². The adherence level will be lower the more they age. It can be caused due to the physiological decline caused by aging¹⁰. In this study, medication adherence was not scrutinized so that the role of medication adherence could not be excluded from the therapeutic success

Counseling

A decrease in blood glucose levels 2 hours post-prandial after counseling shows that counseling affects the knowledge and attitudes of patients to act adherently to the management of diabetes mellitus which includes diet, exercise, and treatment⁶. In this study, education/knowledge was not scrutinized so that the role of counseling could not be excluded from the therapeutic success.

Family Support

Psychosocial factors (e.g. family support) play an essential role in glycemic control too. A family is a social group that plays a vital role in diabetics behavior because family is an influential factor in fostering patient compliance in undergoing therapy¹¹. In this study, family support was not scrutinized so that the role of family support could not be excluded from the therapeutic success.

Knowledge and Education

Educational material can include maintenance/

care of feet, research and the latest technology about diabetes mellitus, education of special conditions faced (pregnant, fasting/sick days), plans for special activities (sports/achievements), management during suffering from other diseases, and introduction and prevention of complications¹². Improving the knowledge of patients can be done via family. Therefore, to have a controlled blood sugar levels, family involvement in every routine control in health care is necessary because some patients are elderly who had experienced some deterioration of physiological organs such as memory, hearing, and vision¹³. In this study, education/knowledge was not scrutinized so that the role of education/knowledge could not be excluded from the therapeutic success.

Stress Level

Sympathetic nervous system secretion is the first reaction of the stress response then followed by sympathetic-medullary secretion. The hypothalamus-pituitary system will be activated when stress persists. The hypothalamus secretes corticotropin-releasing factor which stimulates the anterior pituitary to produce adrenocorticotrophic hormone (ACTH). Increased blood glucose levels are influenced by the production of cortisol that is stimulated by ACTH¹⁴. Blood sugar levels will be in normal limits if the stress level is within the normal range and vice versa¹⁵. In this study, the stress level was not scrutinized so that the role of stress level could not be excluded from the therapeutic success

Diet Adherence and Eating Patterns

Diabetes mellitus patients need to be stressed about the importance of the type and calorie content in the regular eating schedule, especially in those who undergo insulin therapy or use drugs that increase insulin secretion itself¹². The higher the education, the higher the awareness and knowledge of the importance of diabetes mellitus diet in maintaining blood sugar levels. A good level of education makes the respondent had a good motivation to recover faster from illness¹⁶. Dietary factors give ± 11 times influence on increasing blood glucose levels in patients with T2DM¹⁷. Elderlies who had an eating hobby are 5 times more likely to develop diabetes mellitus compared to older adults who had enough eating habits ($p = 0.001$, OR = 5,067)¹⁸. In this study diet/eating pattern was not scrutinized so that the role of diet/eating pattern could not be excluded from the

therapeutic success.

Food Selection

Salty, fatty, and sweet food diet is significantly related to diabetes mellitus. Consumption of fatty and sweet foods had a lower risk of developing diabetes mellitus. While the consumption of salty foods is at risk for diabetes mellitus by 2.62 times¹⁹. This is different from previous studies that the habit of consuming sweet foods has a doubled risk of developing diabetes mellitus²⁰. In this study, the food selection was not scrutinized so that the role of the food selection pattern could not be excluded from the therapeutic success.

Sleep Quality

Sleep quality can also affect the therapeutic success. Decreased sleep quality is caused by sleep disturbances that cause a decrease in the body's response to insulin, insulin resistance, and abnormal glucose tolerance²¹. In this study sleep quality was not scrutinized so that the role of sleep quality could not be excluded from the therapeutic success

Conclusion & Acknowledgement

Based on this study results, the following conclusions can be drawn:

1. 81 T2DM patients in Dr. Soetomo General Hospital, who were the respondents had a proportion of 46% male and 54% female with the most age group at 51-65 years old (70.1%) with the average age 53.71 years old

2. Low physical activity level is the most undertaken by most respondents (60.9%)

3. Most therapeutic success criteria of the respondents are "not achieved" (62.1%)

4. At the low physical activity level, most respondents have not met the therapeutic success criteria (69.8%), at the moderate physical activity level, most respondents have met the therapeutic success criteria (56.0%), and at the high physical activity level, the most respondents have not met the therapeutic success criteria (66.7%)

5. The most therapeutic success criteria "achieved" are owned by respondents with low physical activity

level (48.5%) and the therapeutic success criteria "not achieved" are most owned by respondents with low physical activity level (68.5%)

6. There is no correlation between physical activity level and therapeutic success on patients with T2DM in Dr. Soetomo General Hospital Surabaya ($p = 0.086$)

Conflict of Interest: There was no conflict of interest in this study

Ethical Clearance: The Ethical Clearance is taken from the health research ethics committee at Dr. Soetomo General Hospital Surabaya, Indonesia.

Source of Funding: This study was supported by the authors

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Esthetic Outcome of Computer-Guided Versus Free-Hand Immediate Implant Placement In Fresh Extraction Sockets in Esthetic Zone, A Randomized Clinical Trial

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Abstract

Aim: to compare the esthetic outcome of two surgical techniques used in single immediate implant placement (computer guided vs free hand) in the esthetic zone in terms of pink esthetic score (PES) and gingival recession (GR).

Methods: This was a randomized clinical trial, where twenty patients with a failing tooth in the esthetic zone were recruited for immediate implant placement and restored with non-functional provisional crowns. They were randomly allocated to either computer guided (test group) or free hand (control group). Six months after surgery the patients were restored with their definitive crowns. Pink esthetic score was recorded twice (after surgery and after definitive crown), while gingival recession was recorded after the definitive crown.

Results: No statistically significant difference was found between the mean differences of pink esthetic score between both groups and within each group overtime. Regarding gingival recession, 2 implants showed gingival recession in the computer guided group while none in the free hand group.

Conclusions: Within the limitations of this study (sample size and follow-up duration), immediate implant placement using computer guided surgical guides would consume more time, effort and expenses yet it provided similar results with the free hand which seems beneficial for the learning curve for unexperienced clinicians.

Key-words: Computer guided implant, free hand implant, gingival recession, pink esthetic score

Introduction

Immediate implant placement for a failing single tooth in the esthetic zone is becoming a very popular treatment option that is gaining acceptance nowadays due to the evolving society and the growing need of patients to shorten the treatment period.¹ This treatment modality also provides preservation of the alveolar ridge, provide similar survival rates when compared to

delayed implant placement, provide better esthetics and finally provide psychological acceptance for the patients especially if combined with immediate restoration of a prosthesis¹⁻³.

The anatomical architecture in the maxillary anterior zone is very critical where 90% of humans have suboptimal thickness of facial supporting bone (less than 1 mm) especially in the crestal and mid root portion of the maxillary anterior natural teeth⁴, emphasizing the importance of placing implants in the correct three-dimensional position during immediate implant placement.

Computer guided implant placement has provided a tremendous evolution in implant therapy for the past

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decades which proved its reliability by recent clinical researches regarding accuracy of transfer from virtual plan to actual implant placement.^{5,6}

Therefore, the combination of the precision of computer guided surgery and immediate implant placement might help in placing implants into an optimum position avoiding the fenestration of thin labial bone and consequently reducing the risk of gingival recession. So, the aim of this study was to compare immediate implant placement using either computer guided or free hand technique in single tooth replacement in the esthetic zone regarding PES and gingival recession.

Methods

This was a randomized clinical trial, triple blinded, two arm parallel group, with allocation ratio 1:1. The study was conducted in research clinic, Prosthodontic department, Faculty of dentistry, Cairo university, Egypt and was approved by Ethics Committee of Scientific Research at Faculty of Dentistry with registration number 17-8-2. It was registered online at clinicaltrial.gov with identifier registration number **NCT03211819**.

Based on a previous paper⁷ the expected difference between computer-guided and free- hand immediate implant placement in pink esthetic score was 3 ± 1.89 . Using power 80% and 5% significance level, we needed to study 7 in each group to be able to reject the null hypothesis that the population means of the experimental and control groups were equal. This number was increased to 8 to correct for non-parametric usage and again to 10 each group to compensate for possible losses during follow up. Sample size calculation was achieved using PS: Power and Sample Size Calculation Software Version 3.1.2

So, a total of 20 patients were recruited from the period September 2017 till September 2019, from the outpatient clinics of Prosthodontic, Oral Surgery and Endodontic departments, who met the inclusion criteria. Medical history was taken from the patients willing to participate in the trial and signed an informed consent form.

The inclusion criteria were:

- Patients with teeth or remaining roots indicated for extraction in the esthetic zone (from tooth number

#15-25) and eligible for immediate implant placement

- Sufficient bone labially (at least 1.5-2 mm) assessed after cone beam computer tomography (CBCT) scan
- Presence of adequate mesio-distal length (at least 7mm) between the adjacent natural teeth measured on the study cast
- Presence of adjacent natural teeth to the tooth/root to be extracted

Exclusion criteria:

- Presence of active signs or symptoms of acute infection in the tooth or the remaining root to be extracted
- Heavy smokers (more than 2 packs per day)
- Parafunctional habits (clenching or bruxism)
- Patients with poor oral hygiene
- Pregnant women
- Any systemic condition that may interfere with osseointegration (as uncontrolled diabetes, recent head and neck radiation)
- Sever over eruption of the opposing teeth related to the tooth to be extracted

The patients were randomly allocated to either computer guided group (test group) or free hand group (control group) using a computer-generated table of random numbers by third personnel. The primary outcome was the pink esthetic score (PES) which is a scoring checklist proposed by Fürhauser in 2005. "The PES is based on seven variables: mesial papilla, distal papilla, soft tissue level, soft-tissue contour, alveolar process deficiency, soft-tissue color and texture. Each variable was assessed with a 2-1-0 score, with 2 being the best and 0 being the poorest score".⁸ This makes the maximum score that could be reached 14 and the minimum score zero.

Intervention for both groups

After diagnosis and history taking, the patients were sent to perform a CBCT scan. Scans were examined using Blue Sky ® planning software (Bluesky plan4,

Bluesky Bio,USA). Eligible patients were then recalled for preliminary impressions (Tropicalgin; Zhermack SpA -Via Bovazecchino, Italy). After pouring of the impression, the tooth or root to be extracted was modified on the cast and an artificial tooth (Acrostone Manufacturing and Import Co., Cairo, Egypt) was placed, and a vacuum sheet (1 mm hard) was then pressed on the cast.

Small papers were sequentially numbered from 1-20 and placed (double folded) inside opaque sealed envelopes for random allocation of patients. During the visit of impression making after the CBCT scan, the participant selected one of these concealed opaque envelopes. During the planning stage, the principal investigator opened the envelope of the participant and informed the co-supervisor with the enclosed code and in return she informed him with the allocation group.

Due to the nature of the trial the principal investigator couldn't be blinded during the planning and surgical phase. Assessment of the outcomes (PES; gingival recession) was assessed on coded photographs, making the outcome assessor blinded. The data analyst was also blinded to the data collected as data were sent with codes.

Virtual planning was done for both groups using Blue Sky® implant planning software. For the computer guided group, the primary cast was optically scanned (Freedom HD scanner, DOF, Seoul Korea) and the stl file was imported and superimposed on the CBCT scan. The surgical guide was virtually fabricated and exported to the 3D printing machine (Zenith 3D printer, Dentis, Daegu- Korea) to be printed. Then a metallic sleeve was placed and adapted to the surgical guide in the proposed implant site using adhesive.

Surgical procedure:

Prophylactic antibiotics (Amoxicillin 1 gm (Capsules), GSK. Egypt) were prescribed twice/day for all patients 1 day prior to the surgery and for 5 days after surgery. Then on the day of surgery, the patient was locally anaesthetized (Septanest SP [Articaine hydrochloride 4%]. France) and the remaining root or tooth was extracted in an atraumatic procedure using lancet, periostome, adequate forceps with minimal force and rotational movement (Figure 1,2). After extraction,

the socket was examined for intact labial and palatal bone.



Figure 1: Preoperative photo for remaining root #22



Figure 2 Extraction using forceps

Computer guided group

In the test group, computer guided implant surgical kit was used (Simple guide, DENTIS, Korea) (Figure3). Drilling was done using initial, intermediate and final drills through computer guided surgical guide (Figure 4). Implant (OneQ S clean, Dentis, DENTIS CO., LTD., Daegu, South Korea) was inserted through the guide using implant driver till resistance was met. Then a torque wrench was used to continue tapping the implant till it submerged 2 mm from bone level and reached at least 30 Ncm torque (Figure 5).



Figure 3: Computer Guided surgical kit



Figure 4: Computer guided surgical guide intraorally

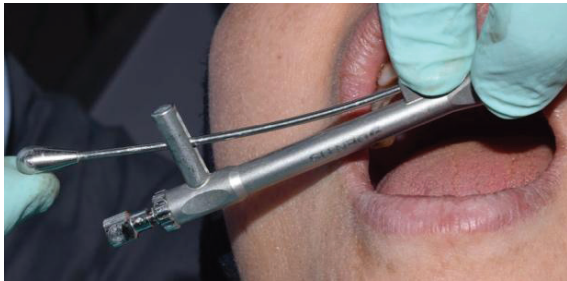


Figure 5: Checking torque to be 30 Ncm

Free hand group

In the control group, the same surgical procedures for extraction were done, then osteotomy site preparation was initiated by a pilot drill through the palatal surface of the extraction socket with extreme care, avoiding slippage of the drilling towards the labial bone. Then intermediate and final drills were used subsequently (Dentis, DENTIS CO., LTD., Daegu, South Korea). The implant (Dentis, DENTIS CO., LTD., Daegu, South Korea) was then placed into the osteotomy site

using an implant driver until resistance was met, which was followed by a torque wrench to continue tapping the implant. The wrench was supported to avoid any slippage towards the buccal plate of bone until the implant was submerged 2 mm below the bone level and torqued till 30 Ncm.

Then in both groups chair-side provisional crowns were fabricated and made out of occlusion both in centric and eccentric movements (Figure 6). The patient was instructed to avoid eating or incising any hard food for at least six weeks. After a week (first follow up), patients were recalled for inspection and postoperative photos to be taken for PES assessment for both groups using a standard camera. Photos were taken at pre-calculated distance with the patient seated upright showing the provisional crown and the contralateral tooth in case of anterior tooth or the adjacent tooth in case of premolar tooth. Photos were then coded and placed into folders.



Figure 6: Provisional crown after adjustment (out of occlusion)

Definitive crown fabrication

After a period of 6 months the patients were recalled to remove the provisional crowns and start fabricating the definitive crown. Open tray impression technique and condensation silicon (Zetaplus, Zhermack SpA, Badia Polesine, Italy) were used to make the final impression to fabricate a metal ceramic crown. At the appointment of the delivery, the abutment was tightened using torque wrench till 25 Ncm. After occlusal adjustment the crown was cement retained using zinc phosphate cement (Dental zinc phosphate cement, Medental, Florida). After setting, excess cement was removed (Figure 7).



Figure 7: Cementation of final crown #22

After a week of definitive crown delivery, the patient was recalled to take the postoperative photos (6 months follow up) using the same standard camera while the patient sitting upright and at the pre-calculated distance. Photos were again coded and placed into folders. PES was measured and the scores were given to each of the parameters in the PES index and tabulated for analysis.

Secondary outcome assessment

The presence or absence of gingival recession more than 1 mm was observed on the postoperative photographs taken 1 week after definitive crown delivery and tabulated for analysis.

Statistical methods

Data management and statistical analysis were performed using the Statistical Package for Social Sciences (SPSS) version. Numerical data were summarized using means and standard deviations. Data were explored for normality by checking the data distribution and using Kolmogorov-Smirnov and Shapiro-Wilk tests. PES comparison between 2 groups was done using the t-test and PES overtime in each group was done by paired-t test. P-values ≤ 0.05 were considered significant.

Results

Twenty patients were recruited in the study, of which three implants failed to osseointegrate, one in the computer guided group and two in the free hand group and one patient loss to follow up in the free hand group. The total sixteen patients had their definitive crowns after a healing period of six months at which the follow up assessment was done.

The mean difference in PES at base line between both groups was 0.10 (95%CI -1.8-2.2) which was non statistically significant. After 6 months the mean difference between both groups in the PES was 0.75 (95% CI -3.5-1.9) which also presented a non-statistically significant difference (Table 1).

Table 1: Mean, standard deviation for comparing for PES of the tested groups (test group: Computer Guided, control group: Free Hand).

	Test group		Control group		Mean difference	p value
	Mean	SD	Mean	SD	(95% CI)	
At the baseline	11.40	1.7	11.30	2.1	0.10(-1.8,2.2)	0.870
After 6 Month	10.75	2.1	11.5	2.3	0.75(-3.5,1.9)	0.529

The mean difference in the PES in the test group from baseline till six months decreased by 0.65 presenting a 5.5% reduction. While in the control group the mean

difference in the PES from baseline till six months increased by 0.2 presenting 1.4% increase. However, both results were statistically insignificant (Table 2).

Table 2: Mean and Standard deviation, paired t test for comparing PES at baseline and 6 months postoperative (test group: Computer Guided, control group: Free Hand).

Pink esthetic score (PES)	Baseline		6 Months		Mean	95%CI of MD		%	p value
	Mean	SD	Mean	SD	Difference	Lower	Upper	change	
Test group	11.40	1.7	10.75	2.1	0.65	-1.2	2.4	-5.5	0.435
Control group	11.30	2.1	11.5	2.3	0.20	-1.8	1.5	1.4	0.809

Regarding the gingival recession: In the computer guided group, 1 implant failed to osseointegrate, and out of the remaining 9, two implants showed gingival recession more than 1 mm. And in the free hand group, 2 implants failed to osseointegrate and 1 patient lost to follow-up, and out of the remaining 7, none showed gingival recession more than 1 mm.

Discussion

Pink esthetic score (PES) of ≥ 10 was considered an optimum esthetic outcome, while a PES of less than 7 was used to define an esthetic failure.^{9,10}

Results of our study showed that the mean PES in the computer guided group one week postoperatively was 11.40 which represents an acceptable score for esthetics, which might be due to the proper case selection and proper positioning of the implants guided by the surgical guide. Furthermore, the mean PES in the free hand group one week postoperatively was 11.30 which might be due to the care taken during drilling and implant placement to be more palatal and avoid slippage towards the facial bone. These results are in accordance to previous studies, but the main difference lies in that latter ones used bone grafts and/or connective tissue grafts to fill the gap between the implants and alveolar bone. The average PES of these studies was 11.385 range [11.1-11.67].¹¹⁻¹⁴ However, the PES of the present study was higher than other studies, where they placed implants after raising a flap which might have affected the blood supply to the surgical site reducing the PES to 10.30 (SD 1.89) and 10.48 (SD 2.47).^{7,9}

Higher PES 12.55 after 1 year was reported in a study which used xenograft and enamel matrix

derivative (EMD) in contact with the soft tissue of the newly formed socket which had a positive effect on early periodontal soft tissue wounds and showed earlier gains in soft tissue density and lead to increase in PES.¹⁵

On the other hand, the PES after 6 months follow-up in the free hand group showed non-statistical increase to 11.5, which might be due to the growth of soft tissue around the immediately placed and provisionalized implants.¹⁶ However, the non-statistical reduction of the PES to be 10.75 after 6 months follow-up in the computer guided group could be attributed to the slight reduction in bone level due to reduced irrigation effect during guided flapless drilling through computer guided surgical guides that might have caused non-destructive heat-induced necrosis and inevitable bone loss that might have reduced the amount of support to the overlying soft tissue thus reducing the PES.^{17,18}

Regarding gingival recession, only two implants out of the whole sample showed gingival recession more than 1 mm representing 12.5 %. This is in accordance to a previous study which reported that 87.5 % of the cases involved in the study showed a discrepancy between gingival margin and “ideal” facial margin based on the corresponding natural control tooth was equal or less than 1 mm. This might be attributed to marginal bone and soft tissue preservation by means of immediate implant placement and provisionalization in post-extraction sites in properly selected cases.¹⁹

Although immediate implant placement using computer guided surgical guides would consume more time, effort and expenses yet it provided similar results with the free hand. The benefit one could gain is that implants could be placed immediately in fresh extraction

sockets without needing very high level of clinical experience in this critical zone.

Conclusion

Within the limitations and the results obtained, it could be concluded that:

On comparing pink esthetic score in computer guided vs free hand immediate implant placement at 1 week after provisional crown and 6 months follow up no statistical difference was found. Regarding gingival recession, immediate implant placement and provisionalization provided an acceptable treatment modality for achieving good soft tissue results in the esthetic zone in both computer-guided and free hand groups with less than 1 mm gingival recession.

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Obesity Contribution in Synthesis And Degradation of Cartilage Marker Through Inflammation Pathway in Osteoarthritis Patient: Analysis of Adiponectin, Leptin, Ykl-40 and Cartilage Oligomeric Matrix Proteinase (Comp)

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Abstract

Background: To determine the role of obesity in osteoarthritis (OA) through inflammation pathway by analyzing articular cartilage synthesis and degradation markers in synovial fluid.

Methods: We performed observational study with cross sectional approach. Obesity was determined based on WC. OA genu diagnosed based on American College of Rheumatology (ACR) 1986 criteria. We examined leptin as inflammation marker, adiponectin as anti-inflammation marker, YKL-40 as cartilage synthesis marker and COMP as cartilage degradation marker in synovial joint using ELISA.

Results: From 70 OA genu patients, 61 subjects with central obesity and 9 subjects with non-central obesity. In OA patient with central obesity group, WC does not correlate directly with COMP and YKL-40, but through level of adiponectin and leptin. WC correlates with adiponectin and leptin level, and then adiponectin level correlate with YKL-40 level, and leptin level correlate with COMP level, the greater the WC, the lower adiponectin level and the higher leptin level. The lower the adiponectin level, the lower the YKL-40 level and the higher the leptin level, the higher the COMP level. Whereas in OA patient with non-central obesity group, WC is directly correlated with COMP level (not through adiponectin or leptin); the greater WC, the higher COMP level. WC does not correlate directly with YKL-40, but through adiponectin due to increasing age, not because of changes in WC. In non-central obesity, the older a person is, the lower adiponectin level; and the lower adiponectin level, the lower YKL-40 level.

Conclusions: Obesity contributed in central obese OA, group on destruction of articular cartilage was directly correlated with WC without involving inflammation pathway.

Keywords: *Osteoarthritis, Obesity, Adiponectin, Leptin, YKL-40, COMP*

Background

Osteoarthritis (OA) is a progressive disorder of the joint that is characterized by damage of the articular cartilage, subchondral bone, inflammation and/or

thinning of the synovial tissue. Joints that are often affected are the vertebrae, pelvis, knees, hands and ankles.¹

The pathomechanism of OA is not fully understood. The relationship between obesity and knee joint OA where obesity is considered as a risk factor has been known and reported for a long time. The occurrence of OA in the weight bearing joint is associated with trauma to the joint due to the weight it has to bear.² The previous pathogenesis paradigm of OA, known as a degenerative process, is now also accepted as an inflammatory process.³ Several conditions supporting

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the concept of inflammation are increased acute phase protein (C-reactive protein), increased levels of pro-inflammatory cytokines such as interleukin (IL) -1, tumor necrosis factor (TNF) - α , and IL-6 at OA.^{4,5}

Adiponectin is an adipocytokine which its secretion is decreased in obese subjects. Based on clinical observations, plasma adiponectin levels were significantly lower in OA subjects than controls in healthy subjects. Overall the results of these findings indicate that adiponectin can be considered as a potential molecule involved in the pathogenesis of OA.⁶

Leptin is a pro-inflammatory adipocytokine secreted by fat cells. Leptin in synovial fluid is known to have a biphasic effect, which at low levels will facilitate the synthesis of articular cartilage, but at high levels it causes inflammation and degradation of articular cartilage.^{7,8,9}

Biologic markers for assessing tissue turnover originating from bone, articular cartilage and synovium have been investigated in animal models of OA and in humans. Molecular markers of synthesis and degradation of articular cartilage that are widely studied are YKL-40 as a marker of synthesis and Cartilage Oligomeric Matrix Protein (COMP) as a marker of degradation.¹⁰

From the description above shows that obesity plays a role in knee OA, both mechanically and biologically. This research aim is to see the contribution of obesity to the synthesis and degradation of articular cartilage

through inflammatory pathways in patients with OA.

Method

We performed observational study with cross sectional approach in 70 OA genu patient who undergo medical check up in Rheumatology Outpatients Clinic of Dr. Wahidin Sudirohusodo Makassar Hospital. Obesity was determined based on WC, whereas central obesity when WC >90cm in male and >80cm in female. Osteoarthritis genu diagnosed based on American College of Rheumatology (ACR) 1986 criteria. We examined leptin as inflammation marker, adiponectin as anti-inflammation marker, YKL-40 as cartilage synthesis marker and COMP as cartilage degradation marker in synovial joint using ELISA. Data analysis was performed using the SPSS version 22 program. To assess the correlation, Pearson test and Spearman test were used, and the results of the statistical test were considered significant if the p value of the test <0.05.

Results

Research sample collection starting from October 2013 to April 2014. There are 70 research subjects were obtained, which consisted of 29 male (41.4%), and 41 female (58.6%). There are 61 subjects (87%) with central obese and 9 subjects (13%) with non-central obesity. The characteristics of research subjects are shown in Table 1.

Table 1. Characteristic of Research Subject

Variable	Unit	Minimum	Maximum	Average	SD
		N = 70			
Age	Years	42	86	61.6	9.4
WC	cm	66	116	95.0	8.7
Adiponectin	ng/ml	163	3563	1438.8	913.7
Leptin	ng/ml	446	55276	12980.8	10949.5
COMP	ng/ml	4714	183332	16680.3	20476.3
YKL-40	ng/ml	272	5506	2128.0	1451.7

WC: Waist Circumference; COMP: Cartilage Oligomeric Matrix Proteinase; SD: Standard Deviation

The results of a comparative analysis between OA patients with central obesity and non-central obesity based on age, leptin, adiponectin, COMP, YKL-40 level can be seen in Table 2.

Table 2. Age, levels of Leptin, Adiponectin, COMP, and YKL-40 at OA Patients with Central Obesity and Non-Central Obesity

Variable	Central Obesity	Non-Central Obesity	P
	(n=61)	(n=9)	
Age	60.80±9.095	67.22±10.292	0.056
Leptin	13435.45±9731.96	9899.64±17648.79	0.370
Adiponectin	1386.920±883.41	1675.61±1213.80	0.387
COMP	17050.08±21881.52	14174.29±4142.27	0.697
YKL-40	2072.18±1372.25	2506.14±1967.25	0.406

Table 2 shows that in OA patients with central obesity group had a lower age, higher leptin level, lower adiponectin level, higher COMP level and lower YKL-40 level than those non-central obesity, but were not statistically significant ($p>0.05$). Differences in COMP and YKL-40 level as well as adiponectin and leptin level were not statistically significant in this study but were still in line with the research hypotheses likely to be designed by the inhomogeneous age between the two groups; especially because the central obesity group is younger than the non-central obesity group. Remembering that after all, OA is a degenerative disease.

Table 3. Correlation between Research Variables in OA Patients

Variable	Correlation between Research Variable in OA Patients		Total (n=70)
	Central Obesity (n=61)	Non-Central Obesity (n=9)	
Age Vs:			
WC	$r = -0.336; p = 0.004$	$r = 0.108; p = 0.391$	$r = -0.354; p = 0.001$
Leptin	$r = -0.288; p = 0.012$	$r = 0.166; p = 0.335$	$r = -0.206; p = 0.044$
Adiponectin	$r = -0.021; p = 0.436$	$r = -0.785; p = 0.006$	$r = -0.123; p = 0.156$
COMP	$r = -0.041; p = 0.377$	$r = 0.119; p = 0.380$	$r = -0.059; p = 0.315$
YKL-40	$r = -0.275; p = 0.016$	$r = -0.876; p = 0.001$	$r = -0.345; p = 0.002$
WC Vs:			
Leptin	$r = 0.229; p = 0.038$	$r = -0.112; p = 0.387$	$r = 0.190; p = 0.158$
Adiponectin	$r = -0.358; p = 0.002$	$r = 0.178; p = 0.323$	$r = -0.277; p = 0.010$
COMP	$r = 0.048; p = 0.357$	$r = 0.586; p = 0.049$	$r = 0.226; p = 0.030$
YKL-40	$r = 0.100; p = 0.221$	$r = -0.045; p = 0.454$	$r = -0.003; p = 0.490$
Leptin Vs:			
COMP	$r = 0.324; p = 0.005$	$r = -0.300; p = 0.216$	$r = 0.026; p = 0.417$
YKL-40	$r = 0.043; p = 0.371$	$r = -0.183; p = 0.316$	$r = -0.056; p = 0.322$
Adiponectin Vs:			
COMP	$r = -0.092; p = 0.240$	$r = 0.200; p = 0.303$	$r = -0.046; p = 0.353$
YKL-40	$r = 0.217; p = 0.047$	$r = 0.583; p = 0.050$	$r = 0.340; p = 0.002$

Table 3 shows that age is significantly correlated with YKL-40 level ($p < 0.05$), but not with COMP level ($p > 0.05$); both in the central obesity and non-central obesity group. In the central obesity group, age was significantly correlated with WC and leptin level ($p < 0.05$), but not with adiponectin level ($p > 0.05$). Thus, age correlates significantly with YKL-40 level; the greater the WC, the lower the YKL-40 level and has no significant correlation with COMP. It can also be seen that in the central obesity group, WC was significantly negatively correlated with adiponectin level ($r = -0.358$; $p = 0.002$) and with leptin level ($r = 0.229$; $p = 0.038$); but not significantly correlated in non-central obesity group ($p > 0.05$). It can also be seen that age is only significantly correlated with adiponectin level and YKL-40 levels ($p < 0.05$), but not significantly correlated with WC, leptin and COMP level ($p > 0.05$) in OA patient with non-central obesity group. The level of adiponectin is significantly correlated with YKL-40 level ($p < 0.05$) in both groups and the correlation is stronger in the non-central obesity group, while adiponectin levels do not significantly correlated with COMP level ($p > 0.05$). The lower adiponectin level, the lower YKL-40 level.

From the overall results of the statistical analysis in this study, it can be concluded that in OA patient with central obesity group, WC does not correlate directly with COMP and YKL-40, but through adiponectin and leptin. WC correlates with adiponectin and leptin, and then adiponectin correlate with YKL-40, and leptin correlate with COMP, the greater the WC, the lower adiponectin and the higher leptin. The lower the adiponectin, the lower the YKL-40 and the higher the leptin, the higher the COMP. Whereas in OA patient with non-central obesity group, WC is directly correlated with COMP (not through adiponectin or leptin); the greater the WC, the higher the COMP. WC does not correlate directly with YKL-40, but through adiponectin due to increasing age, not because of changes in WC. In non-central obesity, the older a person is, the lower of adiponectin; and the lower adiponectin, the lower YKL-40.

Discussion

Obesity is a risk factor for OA, it has been proven that OA not only affect weigh bearing joints but also affect joints that are not involved in the weight bearing process. Inflammatory processes can explain this relationship, it

damages the articular cartilage and becomes the basis for the occurrence of OA in addition to the already known mechanical process.^{11,12} Evidence that inflammation has a role in the pathomechanism of OA, is proved by the discovery of inflammatory cytokines, both in plasma and in synovial fluid in patients with OA. These cytokines such as IL-1, IL-6, IL-8, IL-10, TNF- α ¹³, include protease enzymes and their inhibitors, as well as markers of the synthesis and degradation of synovium, articular cartilage as well as the bone itself.^{14,15}

In this study, subjects were divided into two groups; OA with central obesity and OA non-central obesity. It turned out that leptin levels were found to be higher in the central obesity group compared to the non-central obesity group, same goes to the COMP levels as well. While adiponectin level as well as YKL-40 level were lower in the central obesity group compared to the non-central obesity group. This is consistent with the theory that in inflammatory conditions, leptin levels increase while adiponectin levels decrease. Ferranti et al (2008) described that obese subjects have sick fat cells which results in restricted adiponectin production, resulting in low levels of adiponectin and an imbalance between pro and anti-inflammatory cytokines.¹⁶

It is known that in these obese subjects, an increase in COMP level is also accompanied by low level of YKL-40. This shows that in obese subjects, articular cartilage damage is not balanced by synthesis.^{4,17} Azab et al (2012), found that the greater WC and BMI, the higher COMP level and the lower YKL-40 level will be, this indicates that the articular cartilage degradation is increase and the synthesis is decrease.¹⁸

Several studies have found that obesity is a condition which involves inflammation, with the discovery of inflammatory cytokines namely levels of IL-1, TNF- α , NO, and high degrading enzymes, and on the contrary IL-10 and inhibitors of articular cartilage degradation (TIMP) are seen decreased both in plasma and in synovial fluid.¹⁹ Obesity is associated with OA caused by the increase mechanical load directed on the joint. This mechanical load can cause chondrocyte cells to release inflammatory mediators and degradation enzymes responsible for joint inflammation and articular cartilage damage.²⁰ This mechanism poses as a stimulation of physical mechanical signals into biological signals, which

involves mechanoreceptors. However, this mechanism cannot explain the occurrence hand OA among obese patients which are joints that aren't involved in the weight bearing process. This fact shows that there are other systemic mechanisms that contribute towards the pathomechanism of OA in the hands.⁷ Adipose tissue, considered as an endocrine organ, releases factors that contribute to the inflammatory process such as cytokines, IL-1 and TNF- α , and adipocytokines such as leptin, adiponectin, resistin, visfatin, and so on. The source of adipocytokines in the diarthrodial joints is IPFP.

In this study, the index of central obesity, in this case WC, was negatively correlated with adiponectin, and positively correlated with leptin. Both relationships were statistically significant. It means that the greater the WC, the lower the adiponectin level within the synovial fluid analyzed, whereas the higher leptin level within the synovial fluid. This shows that in cases of central obesity there is an inflammatory process also occurring. Furthermore, WC does not correlate directly with synthesis markers or degradation markers. Signs of synthesis and degradation only correlate significantly with adiponectin and leptin level, whereas adiponectin levels significantly correlate with YKL-40 and leptin levels significantly correlate with COMP. The lower adiponectin level the higher the YKL-40 level, and the higher leptin level, the higher COMP level. This means that obesity has no direct effect on joint damage in patients with OA, but through an inflammatory process characterized by an imbalance of pro and anti-inflammatory cytokines, namely high levels of leptin and low levels of adiponectin.

Koskinen et al (2011) in his study also found a significant negative correlation between adiponectin level with signs of articular cartilage degradation, in this case COMP level and MMP-3 enzymes. Low adiponectin level is preceded to induce the production of NO, IL-6, MMP-1 and MMP-3 enzymes in articular cartilage and chondrocyte cells that will cause articular cartilage degradation. It was concluded that articular cartilage damage in people with OA is in fact caused by and could be mediated by low levels of adiponectin.²¹

In the OA group non-central obesity, WC is directly related to COMP and does not correlate directly with YKL-40. YKL-40 level are only significantly related to

adiponectin. This means that the low adiponectin level in this group is affected by the age of our subjects, our suggested bias causing factor. This study implies that WC is directly related to high COMP level, which means that articular cartilage damage in the OA group non-central obesity does not go through the inflammatory pathway but possibly through a mechanical route. Meanwhile, YKL-40 level increase due to low of adiponectin level within the synovial fluid, after the age factor is controlled.

Conclusion

Obesity contributed in central obese OA, group on destruction of articular cartilage was directly correlated with WC without involving inflammation pathway.

Conflict of Interest: No Potential conflict of interest relevant to be declared.

Source of Funding: This study was conducted with self funding, no external funding sources for this study.

Ethical Clearance: The study protocol was approved by Ethics Committee in Research of our institution (Hasanuddin University), following the ethical recommendation from the Helsinki Declaration of 1975.

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Collective Efficacy and Communication Ability according to Emotional Intelligence in Nursing Students

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Abstract

Background: The purpose of this study was to examine differences in collective efficacy and communication ability according to the degree of emotional intelligence in nursing students.

Methods: The participants of this study were 185 nursing students. Data were collected through personal interviews using a questionnaire from October 8 to 22, 2019. Data were analyzed using descriptive statistics, t tests, one-way analysis of variance, and Pearson's correlation coefficients.

Conclusion: Emotional intelligence, collective efficacy and communication ability according to the general characteristics commonly showed significant differences in motivation to choose the department and satisfaction with the major. The group with the top 25% emotional intelligence showed a higher degree of collective efficacy and communication ability than the group with the bottom 25% emotional intelligence. Emotional intelligence showed significant positive correlations with collective efficacy and communication ability. It is necessary to develop and apply programs to improve the level of emotional intelligence in nursing students, and these programs will improve collective efficacy and communication ability.

Keywords: Communication, efficacy, emotional intelligence, nursing, students

Introduction

The medical environment in Korea has changed very rapidly, and the recent changes have been more intense and radical. To cope with these changes in the medical environment, competent nurses are needed. The Korea Accreditation Board of Nursing Education suggests communication and cooperation skills among specialized fields as an important core competency that nursing students should have at the time of graduation^[1]. Nursing students who need to complete clinical practice should cooperate with patients and medical staff^[2]. In addition to imparting knowledge and clinical experience, nursing curricula should provide students with opportunities to develop their communication and

emotional skills^[3]. Emotional intelligence promotes effective communication and improves nursing performance^[4].

Emotional intelligence includes awareness of self and others and empathy, and these behaviors are congruent with the mission of nursing because they improve health outcomes^[4]. Nurses with higher emotional intelligence tend to be better in establishing productive relationships with patients and their families, and nurses possessing empathetic skills manage their own emotions effectively^[3]. Developing emotional intelligence is useful for improving academic and clinical performance and reducing the risk of emotional distress during clinical placement experience^[5].

Occupational health nurses who are emotionally intelligent have improved relationships with others, an important aspect of the nursing role^[4]. Collective efficacy is the belief that one can successfully perform a common task^[6]. Learners with a high level of collective

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efficacy can actively participate in the learning process and develop communication skills through active interaction with colleagues^[7]. Team efficacy is an important factor that helps nurses cooperate with fellow nurses and experts in various fields^[8]. Therefore, it is necessary to help students prepare for proper interaction with others during the school education.

Emotional intelligence is positively related to clinical communication ability among nursing students^[9]. Communication refers to the ability to accurately convey one's thoughts and feelings to others according to one's intention^[10]. In a complex medical environment, the cooperation among multidisciplinary health care teams is considered important, and the importance of nurses' communication skills is further emphasized^[11]. Problems in communication among medical staff were reported as the main root cause of red-signal incidents, where in patient safety incidents resulted in life threats, permanent damage, or death^[12]. Lack of communication skills can also affect nurses' presentation of clinical views or performance in nursing behavior, ultimately leading to poor nursing quality^[13]. Nursing students' communication ability is reported as moderate level^[11], making it difficult to maintain therapeutic relationship with various subjects at clinical sites. Therefore, nursing students should evaluate their communication ability and come up with measures to enhance their communication skills before going for clinical practice.

In a prior study, emotional intelligence was found to improve the communication ability, clinical performance, and self-leadership of nursing students^[14-16]. However, there has been no research on collective efficacy and communication ability among nursing students according to the level of emotional intelligence. Therefore, this study intended to provide basic data on strategy development for the improvement of emotional intelligence, collective efficacy, and communication ability by examining the differences in collective efficacy and communication ability according to their emotional intelligence levels.

Methods

The participants for this study were selected as second-year students with no clinical practice experience

attending the nursing department in G-gun, Korea. The 185 participants who participated in this research, excluding the 15 whose responses were insufficient among the 211 through document investigation. Data for this study were collected from October 8 to 22, 2019.

General characteristics of the participants included gender, age, religion, motivation to choose the department, satisfaction with the major, and grades in the previous semester. Emotional intelligence was measured using the tool modified by Jung^[17] from the original Emotional Intelligence Scale (WLEIS) by Wong and Law^[18]. This tool uses a 5-point Likert scale and has 16 questions. Higher scores mean higher emotional intelligence. The Cronbach's alpha for the previous study was .92^[17], and that of the current study was .92. Collective efficacy was measured using the tool developed by Alavi and McCormick^[6]. This tool uses a 5-point Likert scale and has 21 questions. Higher scores mean higher collective efficacy. The Cronbach's alpha for the previous study was .95^[6], and that of the current study was .91. Communication ability was measured using the tool modified by Hur^[19] from the original Interpersonal Communication Competence Scale (ICC) developed by Rubin et al.^[20]. This tool uses a 5-point Likert scale and has 15 questions. Higher scores mean higher communication ability. The Cronbach's alpha for the previous study was .72^[19], and that of the current study was .92.

Data were analysed using SPSS version 25.0 program. General characteristics of the participants were presented in real numbers, percentages. The levels of emotional intelligence, collective efficacy, and communication ability were presented in means and standard deviations. The differences among emotional intelligence, collective efficacy, and communication ability according to general characteristics were analysed using t tests and one-way analysis of variance; post hoc test was made through Duncan's test. The correlations among emotional intelligence, collective efficacy and communication ability were analysed through Person's correlation coefficients.

Results

Level of emotional intelligence, collective efficacy and communication ability

The participants' mean scores for emotional intelligence, collective efficacy, and communication ability were 3.72±0.54 (range, 1-5), 3.81±0.57 (range, 1-5), and 3.80±0.56 (range, 1-5) respectively (Table 1).

Table 1 Level of Emotional Intelligence, Collective Efficacy and Communication Ability (N=185)

Variables	Mean±SD	Range
Emotional intelligence	3.72±0.54	1-5
Collective efficacy	3.81±0.57	1-5
Communication ability	3.80±0.56	1-5

Differences in emotional intelligence, collective efficacy and communication ability according to general characteristics

As to the participants' scores for emotional intelligence, there were significant differences statistically, according to motivation to choose the department (F=4.92, p<.05) and satisfaction with the major (F=10.57, p<.001). The scores of collective efficacy showed significant differences statistically, according to motivation to choose the department (F=3.31, p<.05) and satisfaction with the major (F=4.08, p<.05). Communication ability also showed significant differences statistically, according to age (t=2.03, p<.05), motivation to choose the department (F=14.28, p<.05) and satisfaction with the major (F=5.05, p<.05) (Table 2).

Table 2 Differences in Emotional Intelligence, Collective Efficacy and Communication Ability according to General Characteristics (N=185)

Characteristics	Categories	n(%)	Emotional intelligence		Collective efficacy		Communication ability	
			Mean±SD	t/F(p) Duncan	Mean±SD	t/F(p) Duncan	Mean±SD	t/F(p) Duncan
Gender	Female	138(74.6)	3.74±0.53	-0.60 (.552)	3.81±0.53	-0.16 (.875)	3.83±0.55	-1.42 (.156)
	Male	47(25.4)	3.68±0.57		3.80±0.68		3.70±0.56	
Age (yr)	≤25	164(88.6)	3.73±0.55	0.47 (.642)	3.83±0.56	1.43 (.154)	3.83±0.56	2.03 (.043)*
	≥26	21(11.4)	3.67±0.45		3.64±0.63		3.57±0.52	
Religion	None	128(69.2)	3.72±0.57	0.67† (.881)	3.78±0.60	1.39 (.246)	3.81±0.59	2.97† (.397)
	Buddhism	4(2.2)	3.73±0.17		3.81±0.31		4.03±0.41	
	Catholic	16(8.6)	3.80±0.40		4.08±0.38		3.89±0.33	
	Protestant	37(20.0)	3.69±0.54		3.77±0.56		3.68±0.52	
Motivation department choice	According to school records	12(6.5)	3.33±0.42	4.92 (.001)* a<d	3.47±0.77	3.31 (.012)* a<d	3.33±0.57	14.28† (.006)* a<d,e
	Invitation of others	36(19.5)	3.52±0.55		3.60±0.46		3.64±0.46	
	To serve	6(3.2)	3.43±0.56		3.74±0.46		3.58±0.76	
	Because of the nurse's appeal	77(41.6)	3.84±0.51		3.93±0.56		3.90±0.50	
	Because of employment	54(29.2)	3.80±0.53		3.85±0.56		3.89±0.61	
Satisfaction with major	Good	112(60.5)	3.85±0.54	10.57 (.000)** c<b<a	3.90±0.56	4.08 (.019)* (b<a)	3.87±0.56	5.05 (.007)* c<a,b
	Usually	59(31.9)	3.58±0.51		3.69±0.52		3.77±0.52	
	Bad	14(7.6)	3.29±0.36		3.56±0.69		3.39±0.53	
Last semester grade	<3.0	31(16.8)	3.60±0.51	0.72 (.542)	3.67±0.59	0.82 (.483)	3.64±0.52	1.06 (.370)
	3.0-3.4	72(38.9)	3.75±0.54		3.82±0.55		3.84±0.56	
	3.5-3.9	52(28.1)	3.72±0.54		3.83±0.56		3.82±0.57	
	≥4.0	30(16.2)	3.78±0.59		3.89±0.64		3.82±0.56	

**p<.001, *p<.05, †Kruskal Wallis test

Collective efficacy and communication ability according to emotional intelligence

The group with the top 25% emotional intelligence (score 4.15, n=46) showed a higher degree of collective efficacy and communication ability than the group with the bottom 25% emotional intelligence (score 3.31, n=50) ($t=-10.84, p<.001$). In communication ability, the group with the top 25% emotional intelligence level was significantly higher than the group with the bottom 25% ($t=-15.73, p<.001$) (Table 3).

Table 3: Collective Efficacy and Communication Ability according to Emotional Intelligence (N=96)

Variables	The lowest 25% group (n=50)	The highest 25% group (n=46)	t(p)
	Mean±SD	Mean±SD	
Collective efficacy	3.31±0.54	4.35±0.38	-10.84(.000)**
Communication ability	3.23±0.42	4.40±0.29	-15.73(.000)**
**p<.001, *p<.05			

Correlations among emotional intelligence, collective efficacy and communication ability

Emotional intelligence of the study participants was positively correlated with collective efficacy ($r=.68, p<.001$) and communication ability ($r=.79, p<.001$). Communication ability was positively correlated with collective efficacy ($r=.69, p<.001$) (Table 4).

Table 4 Correlations among Emotional Intelligence, Collective Efficacy and Communication Ability (N=185)

Variables	Collective efficacy	Communication ability
	r(p)	r(p)
Emotional intelligence	.68(.000)**	.79(.000)**
Collective efficacy	1	
Communication ability	.689(.000)**	1
**p<.001, *p<.05		

Discussion

This study was conducted to use as basic data to develop strategies for improving emotional intelligence, collective efficacy and communication ability of nursing students by examining the differences between collective efficacy and communication ability according to their emotional intelligence.

In this study, the participants’ mean score for emotional intelligence was 3.72 points out of 5. The

result of emotional intelligence were higher than the mean 3.63 points of Kim’s study^[15] and lower than the mean 3.85 points of Kim study^[16]. The results in each study were different due to the differences between the participants. Emotional intelligence is an important part of nurses’ clinical practice. By developing emotional intelligence, nurses learn how to deal with their feelings, and provide emotional support to patients and their families in multi-dimensional clinical environments^[3]. Therefore, various programs are needed to enhance the

emotional intelligence of nursing students. With regard to collective efficacy, the participants' mean score was 3.81 points out of 5. There is no research on collective efficacy in nursing students, so there is a limit to the discussion. The results of this study were higher than the mean of 3.73 points of Park, Ko's study^[7] and 3.72 points of Lee, Gil's study^[21]. Further research is needed to investigate the causes of differences in collective efficacy between nursing and general university students. In this study, the participants' mean score for communication ability was 3.80 points out of 5. The result of this study were higher than the mean 3.58 points of Lee, Gu's study^[22] and 3.33 points of Choi, Son's study^[23]. The results are different because of different participants in each study. In Lee and Gu's study^[22], the subjects are third and fourth graders who conducted clinical practice. Difficulties in communicating with patients and caregivers, negative emotions, and poor coping skills are believed to have affected communication during clinical practice^[22]. Therefore, programs are needed to strengthen communication in the first and second grades.

Regarding the participants' scores for emotional intelligence, there were significant differences according to motivation to choose the department and satisfaction with the major. The results were consistent with those of Kim^[16,24], who showed significant differences in emotional intelligence according to the satisfaction with their major among the nursing students. Emotional intelligence relates to job satisfaction, reduced stress level, and burnout and helps to facilitate a positive environment^[25]. It can thus be assumed that satisfaction with major can increase emotional intelligence of the nurses. The collective efficacy scores showed significant differences statistically, according to the motivation to choose the department and satisfaction with the major. However, since there is no research that shows collective efficacy among nursing students, it is difficult to compare and discuss the results of this study, so repeated research is needed later. Communication ability also showed significant differences statistically, according to age, motivation to choose the department and satisfaction with the major. The results of this study were consistent with those of Lee and Gu^[22] and Choi and Son^[23], which showed significant differences in emotional intelligence according to satisfaction with major, in nursing students.

The result of this study showed that the group with

a high level of emotional intelligence had a higher collective efficacy and communication ability than the group with a lower level of emotional intelligence. The results of this study were consistent with the Lee and Gu's study^[22], where the group with a high level of emotional intelligence showed higher communication ability than the group with a lower level of emotional intelligence. Emotional intelligence also appeared to be the most influential variable in communication ability^[23].

With regards to the correlations among emotional intelligence, collective efficacy and communication ability, the result of this study were consistent with those of Lee and Gu's study^[22], which confirmed that if nursing students had high emotional intelligence, their communication ability improved. Adding training courses that cover emotional control and empathy skills to the nursing curriculum, to be taught alongside other academic skills, could be a pertinent approach^[3]. The results of this study were similar to those of the Lee and Gil^[21], where the higher the emotional intelligence, the higher the collective efficacy in the pre-child care teacher. Emotional intelligence is based on the ability to understand oneself and others, respond to environmental needs, and address daily problems^[26]. It can be seen that effectively responding to the feelings of oneself and others is beneficial to collective efficacy^[21].

Conclusion

The results of this study showed that high emotional intelligence had high collective efficacy and communication ability. Therefore, the development and application of curricular or extra-curricular programs to improve the level of emotional intelligence in nursing students, and these programs will improve collective efficacy and communication ability.

Conflict of Interest: The authors declare no conflict of interest.

Source of Funding: Self

Ethical Clearance: Participants who agreed to participate in this survey signed his or her name on a consent form.

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Knowledge of Pregnant Women Concerning the Physiological Delivery Process in Babylon Governorate

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Abstract

Physiologic delivery is a normal vaginal birth of the fetus following the process of labor that has not been modified by medical interference, improvement the knowledge of pregnant mothers regarding this mode of delivery is very important to avoid more problem may faced them through the cesarean section delivery. Descriptive study cross sectional design, the study carried out to identify the knowledge of pregnant women regarding physiological delivery in Babylon governorate in Iraq. The results show (37.5%) as a highest percentage of study sample at age ranging between (21-26) and more of them (33.0%) with primary school as level of education, also the assessment of response rate for pregnant women regarding overall domain of physiological delivery was (Fair) for knowledge regarding physiological delivery at mean of score (1.85) and (Poor) for knowledge regarding delivery room (Equipment and Personnel) at mean of score (1.61) while the assessment of knowledge regarding physiological delivery problems were (Poor) at mean of score (1.38).

Keywords: Knowledge, Pregnant Women, Physiological Delivery, Babylon governorate.

Introduction

Physiologic childbirth is the vaginal birth with less medical interference. Physiological birth, is more confidence to mother's body for delivery. During this kind of birth mode, gravid women take special classes about labor and delivery process, how to prepared for it and learn the ways that lead to cope with the fear, anxiety and pain. The sessions began through the twenty week of pregnancy. In these classes the pregnant women learn about the process of relaxation and breathing, physical activity during pregnancy and delivery ,stages of the delivery process .the classes carried out weekly and provide sessions for 8 weeks⁽¹⁾.

According to several health organizations, physiological delivery involve the spontaneous vaginal delivery at term, with least technologic and medications used, and is followed by skin-to-skin contact and easier

breastfeeding experience after delivery⁽²⁾. The rate of mothers who don't opted the physiological birth and undergoing to other mode of delivery in the absence of medical indication is increasing in the world. Women attitude have an essential role in the request or selecting a birth mode. Poor the awareness, knowledge, beliefs, attitudes and behaviors of pregnant women which effect on the choice of delivery mode, therefore in many cases lead to avoided the physiological birth⁽³⁾.

Health education can play an important role to increase knowledge, and change attitude and behavior of pregnant women using applicable theories and models ⁽⁴⁾. The benefits of physiological delivery as short-term for pregnant women that create from birth include feeling emotionally ,psychologically physically and healthy and have ability and powerful like other mothers. The advantage of physiological birth for the infants from the ability of their mothers to cope with their needs, and from the less use of pharmacological interventions which have impact on the neurological attitude. The outcomes for long -term involve advantage effects for the woman's physical and mental health, and

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promote the growing and development of infant, and help in minimize the occurring of chronic disease ⁽⁵⁾.

Many studies have shown lowest ratio of physiological delivery rather than other type of birth in the world. In the united states was 22% , 25% in Brazil was 25% , 27% in Chile, while from 17- 40% in 19countries of Latin America. The recommendation of (WHO) show that the rate must not overrun 15% of whole deliveries ⁽⁶⁾. United States of America in 1996 reported an increase in the number of other birth like C/S ,the ratio were 21.8% of the approximately 3.9 million birth , and instrumental birth by vacuum extraction and forceps were 14.4% and the residual 63.8% were normal physiological birth ⁽⁷⁾.

In Iraq, physiological delivery rate has begun to decline with increasing the percentage of cesarean section and other delivery, in the public sector was 24.5% during 2009 increased to 25.8% during 2010, whereas in the private sectors the percentage was very much higher reaching 75.8% and 79.5% during the years 2009 and 2010 respectively⁽⁸⁾.

The rate of other deliveries like cesarean section compared to physiological delivery in 2012 for whole births at Iraq was 24.4%, it was comparable to the rates in the Iraqi Kurdistan Region (25.4%) and the South/Center of Iraq (24.3%). The aggregate rate of other delivery at Iraq raised from (18.0%) in 2008 to (24.4%) in 2012 compared with physiological delivery ⁽⁹⁾.

The study aim was to identify the level of knowledge of pregnant women regarding the physiological labor and delivery and find out the relationship between the subjects knowledge and their variables in Babylon governorate.

Material and Methods

A descriptive study was carried out in primary health care centers at Babylon governorate, the study was conducted on pregnant women in second and third trimester of pregnancy in order to assess their knowledge about physiological delivery process via using a designed questionnaire, the study was initiated from (25 November 2017 to 10 September 2018). The study was conducted in Babylon province at (13) mean centers of primary health care, these centers belonging to

three sectors, the researcher started in gathering the data from the period of 7 February 2018 to 25 April 2018. The setting of current study were (3 sectors) selected randomly from (5 actual sectors) and were adopted as a setting for the study. All of (13) primary health care centers is picked for the purposes of the study.

Non probability “convenient” sample consists of (200) pregnant women has been chosen from 13 main primary health care centers at three sectors in Babylon governorate, all of them are registered in the primary health care centers at antenatal period (second and third trimester) of pregnancy. The tools which were used in this study (questionnaire form) were opted after a reviewing the previous literature and were exposed to many modifications by researcher for adopting as an instrument to use in the study to identify the knowledge of pregnant women regarding physiological delivery at Babylon governorate. This tools consists of four parts and the overall items included in these questionnaires are (71).

Results

Table (1) shows the distribution of the pregnant women socio-demographic characteristics by the frequencies and percentage. Results indicate that most of women (37.5%) are within second age group (21-26) years old. Concerning women level of education and their occupation. A (33.0%) and (67.0%) respectively were primary school graduated and works at home. Regarding monthly income, it is obvious proportion (54.5%) were satisfied to certain limit and (66.0%) of them residences at urban areas. Finally in this table, women their husband educationally and occupationally, (38.0%) of them are primary schools graduated and (57.5%) were free works (self-employ).

Table (2) show the assessment of women knowledge about physiological delivery indicated that a majority of (46.4%) with mean of score (1.85) and standard deviation (0.71) were fair knowledge (mean of score 1.67-2.33). The assessment of women knowledge about delivery room (equipment and personnel) indicated that a majority of (56%) with mean of score (1.61) and standard deviation (0.75) were poor knowledge (mean of score 1-1.66). The assessment of women knowledge about physiological labor problems indicated that a majority of (68%) with mean of score (1.38) and standard

deviation (0.59) were poor knowledge (mean of score 1-1.66). In general, women with poor knowledge as the latter domain has the lowest levels of identifier in terms of percentage, mean of scores and standard deviation.

Table (3) shows that there is highly significant relationship between the women socio-demographic data and their knowledge regarding physiological labor and delivery process at p-value <0.01. As well as, there is significant relationship between women age and residency at p-value <0.05

Table (1): Distribution of Study Sample by their Demographic Characteristics

Pregnant Woman’s Demographic Characteristics		
	Frequency	Percentage
Women Age (years)		
15-20	55	27.5
21-26	75	37.5
27-32	49	24.5
33-38	15	7.5
≥39	6	3.0
Total	200	100
Mean= 24.65 Std= 5.868		
Women level of Education		
Not read and write	42	21.0
Read & write	16	8.0
Primary school	66	33.0
Secondary school	23	11.5
Diploma & above	53	26.5
Total	200	100
Occupation		
Working	49	24.5
Students	17	8.5
House wife	134	67.0
Total	200	100
Monthly Income		
Satisfy	87	43.5
Satisfy to some extent	109	54.5
Not satisfy	4	2.0
Total	200	100

Cont... Table (1): Distribution of Study Sample by their Demographic Characteristics

Residence		
Urban	132	66.0
Rural	68	34.0
Total	200	100
Husband Educational Level		
Not read and write	17	8.5
Read & write	16	8.0
Primary school	76	38.0
Secondary school	40	20.0
Diploma & above	51	25.5
Total	200	100.0
Husband Occupation		
Employer	68	34.0
Free business	115	57.5
Student	8	4.0
Not working	9	4.5
Total	200	100

Table (2): Distribution of the Participants Knowledge by their Overall Domains

Knowledge Domains	Scale	F	%	S.d.	M.S.	Assessment
Knowledge Regarding Physiological Labor and Delivery	I Know	38	19.0	0.71	1.85	Fair
	Uncertain	93	46.5			
	Don't Know	69	34.5			
	Total	200	100			
Knowledge Regarding Delivery Room (Equipment and Personnel)	I Know	33	16.5	0.75	1.61	Poor
	Uncertain	55	27.5			
	Don't Know	112	56.0			
	Total	200	100			
Knowledge regarding Physiological Labor problems	I Know	12	6.0	0.59	1.38	Poor
	Uncertain	52	26.0			
	Don't Know	136	38.0			
	Total	200	100			

F= Frequency, %= Percentage, S.d= Stander deviation, M.S.= Mean of score “ Cut off point (0.66), Poor (mean of score 1-1.66), Fair (mean of score 1.67-2.33), Good (mean of score 2.34 and more)”.

Table (3): Relationship between Pregnant Women Knowledge and their demographic Characteristics

Demographic data	Scale	Overall Knowledge				χ^2 obs.	d. f	χ^2 crit.
		I Known	Uncertain	Don't know	Total			
Age (years)	15-20	0	16	39	55	25.604	8	15.507
	21-26	7	26	42	75			
	27-32	14	17	18	49			
	33-38	1	6	8	15			
	≥39	1	2	3	6			
	Total	23	67	110	200			
P-value= 0.001 →S								
Women educational Level	Not read and write	0	14	28	42	87.554	8	15.507
	Read & write	0	1	15	16			
	Primary school	0	22	44	66			
	Secondary school	0	13	10	23			
	Diploma & above	23	17	13	53			
	Total	23	67	110	200			
P-value= 0.000→HS								
Women occupation	Working	20	20	9	49	66.245	4	9.488
	Students	0	7	10	17			
	House wife	3	40	91	134			
	Total	23	67	110	200			
P-value= 00.000→HS								
Monthly income	Satisfy	20	25	42	87	20.289	4	9.488
	Satisfy to some extent	3	40	66	109			
	Not satisfy	0	2	2	4			
	Total	23	67	110	200			
P-value= 0.000 →HS								

Cont... Table (3): Relationship between Pregnant Women Knowledge and their demographic Characteristics

Residency	Urban	21	47	64	132	10.073	2	5.991
	Rural	2	20	46	68			
	Total	23	67	110	200			
	P-value= 0.006→S							
Women Husband Educational Level	Not read and write	0	7	10	17	71.160	8	15.507
	Read & write	0	5	11	16			
	Primary school	1	26	49	76			
	Secondary school	1	9	30	40			
	Diploma & above	21	20	10	51			
	Total	23	67	110	200			
P-value= 0.000→HS								
Women Husband Occupation	Employer	22	27	19	68	57.613	6	12.592
	Free business	0	34	81	115			
	Student	1	4	3	8			
	Not working	0	2	7	9			
	Total	23	67	110	200			
	P-value= 0.000 →HS							

χ^2 obs. = Chi-square observer, χ^2 crit. = Chi-square critical, Df= Degree of freedom, P-value= Probability value, S= significant, NS= non-significant, HS= high significant

Discussion of Results

Results indicated that most of sample are within second age groups (twentieths) years old these result correspond with results of study conducted in Niknafs Maternity Center in Iran to identify the knowledge and attitudes of women regarding modes of delivery by *Aali and Motamedi., (2005)* ⁽¹⁰⁾ where their findings was (35.3%) of participant within (20-24) years as a high proportion. Concerning women education level and their occupation a (33.0%) with primary school graduation while more than sixty percent are housewives as a high percentage these finding coincide with results of study

carried out by *Hassan et al.,(2016)* ⁽¹¹⁾ to investigate the awareness and attitudes of pregnant women regarding anesthesia at labor where their results was (37.6%) with primary school and (79.0%) housewives women, also agree with results of study conducted at Al-Kadhumyia Teaching Hospital to identify the preference and knowledge of delivering mothers toward normal vaginal delivery and caesarean section by *Habib et al., (2011)* ⁽¹²⁾ where their results were (47.3%) with primary school and (87.4%) house wife as highest percentage.

Regarding the pregnant women monthly income, it is obvious proportion of (54.5%) were satisfied to

some extent as a higher proportion this result agree with finding of study conducted to recognize the delivery mode and subsequent long-term sexual function of women with primiparous in Ankara by *Gungor et al., (2007)* ⁽¹³⁾ where their result represents (91.4%) for Somewhat satisfied as high percentage and supported by a study done by *Mbada et al., (2014)* ⁽¹⁴⁾ to recognize the attitudes and knowledge of pregnant women regarding exercise during antenatal period in Nigeria where their result were only (27.0%) is not satisfy about monthly income as highest proportion. Related residences the higher percentage was lived in urban area this result come in consistent with *Lilungulu et al., (2016)* ⁽¹⁵⁾ where they conducted a study to report the attitudes, knowledge and practice toward prenatal services for pregnant women in Tanzania the results revealed that majority of people of urban residency as a highest percentage while this result disagree with the result done by *Hailu et al., (2010)* ⁽¹⁶⁾ to recognize the knowledge of pregnant women regarding obstetric danger signs in Ethiopia where the higher proportion were among rural area as (86.7%).

Finally in this table and regarding the husband educational level the higher percentage represents less than fifty participants husbands with primary school this result disagree with the study carried out by *Moosavi et al., (2017)* ⁽¹⁷⁾ to identify factors may influence in choosing method of delivery in Iran where the higher percentage was (33.3%) for husband with high school, while related the husband occupation the high percentage was (57.7%) free business these finding agree with *Aali and Motamedi., (2005)* ⁽¹⁰⁾ where they find the higher percentage among free business husband (48.6%).

The findings indicate that more than half percent of participants have poor knowledge about physiological labor and delivery process in Babylon Governorate this result coincide with result in study conducted by *Bita et al., (2014)* ⁽¹⁸⁾ to recognize the knowledge and attitude of pregnant women regarding physiological labor and delivery at Fatemiyeh hospital Hamadan in Iran, where their result indicated that majority of pregnant women who participated in this study represented (83.4%) as highest percentage have poor knowledge about physiological labor and delivery process, also the result agree with study done at Kerman city to clarify the awareness of pregnant women regarding delivery modes by *Aali and Motamedi., (2005)* ⁽¹⁰⁾ where they found

that among participants a (63.5%) with poor knowledge regarding delivery modes . Most common reasons for pregnant women not choosing the normal physiological birth is the fear of labor pain and lack of knowledge about the advantages of physiological delivery and other delivery modes like cesarean section in most countries has increase like in United State from (5%) in 1970 to (32.2%) in 2009, and the prediction for this rate reach to 56% in 2020 (*Solheim et al ., 2011*)⁽¹⁹⁾. one of the recommendations of WHO in maintaining the health of pregnant women is to minimize the rate of other delivery to achieve the women optimal health and to avoid the complications occurs. The present study deals with the knowledge of pregnant women regarding the physiological delivery, knowledge nowadays may be affected by many factors, one might be the electronic media in its different models, the other one how much those women can be affected by the other domain ones as well as friends and relatives experience .

Conclusions

This study focus on clarify the knowledge of pregnant women regarding physiological delivery process in Babylon governorate at primary health care centers, the main conclusions of the study are the majority of the study sample who participated in the study with mean age of (24.65) and stander deviation (5.868) , and most of them with primary school as level of educations as highest proportion. The result show there was lack of knowledge among pregnant women regarding physiological delivery process.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both MOH and MOHSER in Iraq

Conflict of Interest: None

Funding: Self-funding

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Extraction violate oil CLAMC and Its Rapid Therapeutic Effect for the Treatment of Chronic Sinusitis, Headaches and Colds

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Abstract

This study conducted as an attempt to find therapeutic alternatives from natural sources. used as a treatment for elimination or reduction of chronic sinusitis and to avoid the patient to refer to surgical process first aim & second aim to reduce the side effects of the treatments currently used to treat the sinuses as well as the duration of effect faster medicine in patients with sinuses and avoid headaches Which has severe effects on the patient's body and vitality, the choice of three oils for the effective effect of sinus treatment and treatment of headaches resulting from an immediate treatment

Keywords: *sinuses, treatment, headaches, elimination, reduction*

Introduction

Sinusitis is a very common chronic illness with a substantial health care impact. This review focuses on factors contributing to sinusitis pathogenesis and chronicity, including anatomic factors, disturbances in mucociliary clearance, microbial pathogens, and inflammatory factors^[1]. A distinction made between “infectious” and “noninfectious” types of inflammation in chronic sinusitis. The inflammatory characteristics of noninfectious inflammation reviewed primarily in the context of chronic hyperplastic sinusitis with nasal polyposis. Key features of this type of inflammation include the presence of chronic inflammatory cells, large numbers of eosinophil's, and IL-5-producing T lymphocytes. Allergic sinusitis discussed as a special type of chronic sinusitis. Published studies on the outcomes of medical management reviewed. Finally, algorithms for medical management of chronic sinusitis and allergic fungal sinusitis a presented ⁽²⁾.

In a recent survey of practice patterns, sinusitis accounted for approximately 20% of office visits to specialists in allergy and immunology (AI). This makes sinusitis one of the most important diseases treated by AI subspecialists. Unfortunately, sinusitis is often very frustrating and difficult to treat, and medical “failures” often become surgical patients. Hence there is a strong need for greater understanding of the disease and for more effective treatments. Several recent consensus conferences have addressed this subject, summarized current definitions of acute and chronic sinusitis, and reviewed factors in sinusitis pathogenesis^[3]. Rather than duplicating these efforts, the current review focuses on factors contributing to sinusitis pathogenesis and chronicity, microbial pathogens, the special case of “allergic fungal sinusitis,” and the outcomes of medical management^[4].

Material & Method

The samples were collected through a study of 150 patients suffering from sinusitis by taking a swab from the infection area. The information about each patient was recorded in terms of sex and age. The patient was not taken for any antibiotic before taking the swab for at least a week. The swabs were planted on the following agglutination media

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(Agar Blood). Central Maconkey, Central Manitol). The samples were incubated for 24 hours and at a temperature of 37 m. The developing colonies were initially diagnosed with their morphological and agricultural properties and then dyed with Gram. The tests were then carried out, namely IMViC tests, Oxidase, Catalase, and Coagulase tests to confirm isolated bacterial species.

Antibiotic sensitivity test: The sensitivity test was performed for 10 antibiotics (Table 1), with (4-5)

pure colonies of bacteria transferred to the center of the nutritious broth and incubated at a temperature of 37 ° C for 14-16 years. And dilute with Normal saline 0.9 In comparison with the standard control tube 8, which is equivalent to 10 cells / cm³ of bacterial suspension on a container plate, 1.0 cm in diameter was distributed in the middle of the Muller-Hanton Akkar and using a sterile cotton swab. Leave the dishes at room temperature. In order to get drunk for a period of (30) minutes. And for the purpose of studying the inhibitory zone of antibiotics [8.6].

Table (1) shows the antibiotics used to test the sensitivity of bacterial isolates

NO.	Antibiotic	symbol	Mg \capsule
1	Cephalothin	KF	30
2	Gentamicin	GM	30
3	Tobramycin	TOB	10
4	Rifampicin	RD	30
5	Vancomycin	VAN	25
6	Tetracycline	TE	30
7	Ampicillin	AMP	25
8	Amikacin	AM	30
9	Co-Cotrimoxazole	SXT	25
10	Vancomycin	VAN	25

Study of antioxidant efficacy:

The experiment was carried out on the animals of the rabbits (Albania rabbits) and the animals with a specific dose. The laboratory animals divided rabbits into five groups in each group of five rabbits

The first group (A1): (control group) was injected with a dose of water at a concentration of (1 ml/kg) orally. (A2) (Control group) is injected (1: 1) Liquid Paraffin carbon tetrachloride

Second group treated with onion oil (B1): Group (100 mg/kg) of onion oil.: (B2) The group was injected with onion oil + carbon tetrachloride

The third group treated with clove oil (C1): This dose (100 mg/kg) clove oil. ; (C2) This group was pumped with carbon tetrachloride + clove oil

Group 4 treated with peppermints (D1): Dosed

(100 mg/kg)

Sensitivity test

.D2) The fourth group was injected with carbon tetrachloride + peppermint oil

Group 5 (Group CLAMC E1): The three oils (onion oil, clove oil and peppermints oil) were treated (E2). The three oils were treated with carbon tetrachloride& (onion oil, clove oil and peppermint oil)

After 30 minutes, the blood was drawn by a stab of the heart and placed in the container tubes on the EDTA and kept in the refrigerator until the biochemical tests

Sensitivity test for three oils that used (4 - 5) colonies of to the feeding medium and incubated at a temperature of (37 ° C) for a period (14-16) hours, and then reduced the bacterial suspension saline Normal saline Normal and compared with the standard control tube that Equipped with 10 cells / cm³ of bacterial suspension on a plate, spread 1.0 cm in the center of Akar Muller-Hinton and using a sterile cotton swab. Leave the dishes at room temperature to get drunk for 30 minutes. And for the purpose of studying the inhibitory effectiveness of the oils used [7].

Table (2) shows the age groups of samples from which samples were collected

No.	Age categories	Female		Male		Total	%
		NO.	%	NO.	%		
1	1-18	32	21,1	15	9,9	47	31
2	19-39	47	31,1	30	19,8	47	51
3	39-58	18	11,4	10	6,6	28	18
		97	64	55	36	152	100

Sensitivity test

Table (3) shows the sensitivity of the aromatic oil of cloves to the pathogenic bacteria causing the sinuses

1%	0.01%	0.001%	Concentration Bacteria
B,a 2.00+12.00	ABC,a 1.15+10.66	A,a 1.15+8.66	Klepsiella pneumoni
B,ab 1.15+14.33	AB,ab 1.00+12.01	A,ab 2.00+11.00	Staph. Aureus
B,ab 1.15+16.36	AB,ab 0.57+12.33	A,ab 1.00+11.14	Haemophilus influenza
C,ab 0.00+14.00	B,ab 0.57+12.66	A,ab 0.57+10.33	Streptococci pneumoniae
C,b 1.00+16.00	B,b 1.52+13.66	A,b 0.57+8.66	Pseudomonas aeruginosa
BC,b 1.00+17.00	AB,ab 1.00+13.00	A,ab 1.73+11.00	Moraxella

(A, B) means a significant difference ($P < 0.05$) to compare the different letters (a, b) means that there is significant difference ($P < 0.05$) for comparison between columns

It was found that the effect of aromatic oil of cloves by calculating the area of inhibition at the following concentrations: 0.001, 0.01, 1% on the *Klebsiella pneumoniae*, as follows: 8.66, 10.66, 12.00 mm. Diameter inhibition of the concentrations mentioned for *Staphylococcus aureus* as follows: 11.00, 12.01, 14.33 mm and inhibition diameter of *Haemophilus influenzae* as follows: 11.14, 12.33, 16.36. *Pseudomonas aeruginosa* bacteria as follows: 8.66, 13.66, 16.00 and *Moraxella* bacteria as follows: 11.00, 13.00, 17.00

CLAMC combination:

0.1% peppermint oil

2% onion oil

1% clove oil

It is highly effective in inhibiting the bacteria that cause sinus infections [5].

Current new formulation, which has taken a combination of three oils through the results, has been shown to have an anti-inflammatory effect compared to aspirin with higher anti-inflammatory effect by reducing the production of inflammatory mediators. SOD is an enzyme Very effective and has anti-inflammatory properties (anti-inflammatory activity and anti-bacterial and inhibitor of bacteria causing sinus infections

the highest efficiency in killing bacteria with aspirin was compared with the same concentration and the same effect of aspirin in albumin albumin albumin albumin. All proteins of the albumin family dissolve in water. This indicates that it contains properties similar to aspirin in inhibition of inflammation as well as its anti-allergic effect through improved patients and lack of inflammation and kill bacteria [6]. This indicates its anti-allergic effect by reducing anti-inflammatory histamine. The improvement in symptoms is evidence of the effect of oils on the autonomic nervous system [4].

known that the oils used in this study is a non-toxic substance without any significant risk and has shown a very effective effect in inhibiting the growth of bacterial

cells causing sinusitis used in the study, therefore, its effect and characteristics combined with oils made it effective medicine in a short time in addition to its effectiveness anti-inflammatory

in this study, natural extracts of clove oil, onion oil and peppermint oil were used in certain percentages (0.1% mint oil 2% onion oil 1% clove oil) as a treatment for the elimination of headaches and sinusitis and a comprehensive compounding of properties with therapeutic effect to eliminate Inflammation and reduction of pain and antioxidants In addition to the fact that the local treatment of inhalation and natural plant materials to reduce the side effects caused by chemical treatments currently used in the treatment of sinusitis, which have significant effects on the vitality of the body and its feasibility and the absence of a local or global study on The subject and found (worldwide), but it dealt not reached this installation of this study was therefore conducted the current study, [5].

Conculsion

It is composed of three essential oils that compensate for four groups or types of medicines and the method of giving it by inhalation (local drug) characterized by the lack of side effect and not pass through metabolism In the liver (first pass effect). In addition, it affects a specific area that does not affect the entire body. It requires a lower dose compared with oral chemotherapy. It is also easier to take by the patient

Dispensing of anti-inflammatory drugs and drugs of cortisone and antibiotics in the autonomic nervous system (AND) and pain medication

It is important that the period of use for five to ten minutes feel better headache pain while taking the normal drug (paracetamol amp) for 15 minutes to take effect and give the home oral need half an hour (30 minutes) .The licensing and availability of materials is not a natural and plant material available in our country and it is possible to integrate these oils easily

it is applied to sinusitis (acute, chronic and normal) and headaches caused by sinusitis can be used as an alternative to a combination of medications given to people with sinusitis used in colds because the composition of this properties of anti-inflammatory and

pain and anti-allergic

Treatment by nose is given to inhalation of oils through the experience of infected persons.

Conflict of Interest: There is no conflict of interest among the authors.

Funding: Self

Ethical Clearance: This study is ethically approved by the Institutional ethical Committee.

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Investigating The Effect of of Pharmacist Educational Intervention on the Proper Use of Insulin Pen in Older Patients with Type 2 Diabetes Mellitus in Primary Health Care and Diabetic Centres in Makkah Al-Mukarramah, Saudi Arabia

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Abstract

Objective: Diabetes mellitus (DM) is one of the fastest-growing health problems in the world, which is now reaching an epidemic proportion in some countries. There were around 3,852,000 cases of diabetes in Saudi Arabia in 2017. Geriatric patients are at particularly high risk, especially those who lack the knowledge of self-care to control their blood glucose levels. When reviewing the literature, we did not find any focus on educational interventions to reduce the errors related to the use of an insulin pen. Therefore, it is essential to conduct research to measure these outcomes and apply the applicable intervention if needed. **Aim:** The aim of this study was to evaluate the impact of pharmacist-conducted educational intervention on reducing the errors related to inappropriate insulin pen use. **Methods:** A multicentred, prospective, before-and-after study with an educational intervention component was carried out. The study was conducted on (n = 1500) elderly type 2 diabetic patients. **Results:** The patients' mean age was approximately 65.2 ± 3.5 years old with a male to female ratio of 60:40. Around 95.5% of patients stated that they had received instructions for insulin pen use from their physicians. The average duration of their diabetes was approximately 15 ± 2.8 years. After giving complete instructions to the patients, we found an improvement in insulin pen use by approximately 30 %, and a significant decrease in the rate of errors. **Conclusion:** Pharmacists can play an important role in the safety and efficiency of the use of insulin pens in elderly diabetic patients by decreasing the likelihood of medication errors associated with them.

Key Words: Insulin pen, Diabetes, Old age, Educaional intervention.

Introduction

Diabetes is considered a public health concern that is correlated with serious long-term consequences and escalating healthcare costs^{1,2}. For the elderly, treatment of type 2 diabetes represents a huge challenge both in terms of clinical management and public health^{3,4}. In general, the aging process can develop a marked

increase in the pandemic of diabetes in elderly people. However, scientific evidence to support the most appropriate treatment for diabetes in the elderly is not very common⁴. Given the heterogeneity of the elderly population, which contains subjects with very different functional and cognitive capacities, co-morbidities and life expectancies, it is essential to make a development assessment from a biopsychosocial perspective to address the vascular risk factors integrally and to establish individually tailored targets for glycaemic control⁵. The elderly or individuals with a short life expectancy may be expected to maintain HbA_{1c} level between 7.6%–8.5%⁵. However, the ideal HbA_{1c} target

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level of < 7% may be difficult to achieve in the elderly but is recommended for all adults. Research is lacking regarding the benefit of tight control in the very elderly (> 80 years of age) ².

Furthermore, the therapeutic management of elderly patients with type 2 diabetes should be individualised and agreed with the patient and their caregivers, according to the objective. Improving the quality of life, assuring patient safety and avoiding the adverse effects of antidiabetic treatment should be prioritised. Given the increased susceptibility of the elderly to severe hypoglycaemia and its consequences, antidiabetic therapies that minimise the risk of hypoglycaemic events should be selected ^{4,5}.

Insulin is an excellent way to maintain normal blood glucose levels. As insulin does not come in the form of pills, it should be injected through the skin ⁶. The most common insulin injection methods are through a flask, injector (needle), pump or insulin pen. Generally, the health care provider should talk to the patient about the use of an insulin pen, and there are leaflets available that have been designed to give good and easy to read guides⁶.

The ease of using the pen is especially important, not only for older patients who suffer from manual dexterity and tremors but also for younger individuals who are too busy to devote considerable time to inject themselves. Insulin pens are portable and, therefore, provide flexibility in daily life ⁹. Lee et al. (2017) examined how the quality of life was improved when switching to insulin pens in 65 diabetic patients. Patients received an assessment on their glucose control after 12 weeks and were asked to fill out a questionnaire on quality of life related to health. The study showed that the use of insulin pens improved the control of blood sugar and health related to the quality of life in patients with diabetes. Thus improving the functional situation is an important aspect of this millennium ⁸.

It is important to understand that the role of the pharmacist should always be as an important member of the clinical team, to optimise a better clinical outcome ⁷. We all think that the education and management of type 2 diabetes depends only on the physician, which is not accurate. Indeed, pharmacists have a key role in education and management which is important in

successful medication adherence ^{7,11,12}.

Therefore, our main aim of this study was to evaluate the impact of pharmacist-conducted educational interventions on reducing the errors related to inappropriate insulin pen use. The objectives were to determine how elderly diabetics are using, storing and preparing their insulin pen. Moreover, to determine their adherence to using the insulin pen. In addition to determine if they receive any educational information to guide them about the insulin pen.

Method

Study design

A multicentred, prospective, before-and-after study with an educational intervention component with a total of 1500 type 2 diabetic patients was carried out. The study was conducted on elderly diabetic patients.

The study took place in

1. Al-Noor Hospital, Makkah (Diabetic centre)
2. King Abdullah Medical City, Makkah (Diabetic clinics)
3. Primary health care centre, (Aleskan)

Data were collected from medical case records and laboratory records.

The inclusion criteria were male and female elderly patients above 50 years old with type 2 diabetes, while the exclusion criteria were patients aged less than 50 years with type 1 and 2 diabetes, and other types of diabetes (e.g. gestational).

Data were collected through interviews using researcher-administered questionnaire, as well as the patients' medical records. Patients consented to take part and were then asked about the preparation, injection and storage techniques they followed when using insulin pens. Blood glucose parameters were extracted from the laboratory records. After the detection of errors, patients were instructed about insulin pen use by the (Graduated) pharmacist (authors of this study). Patients were re-evaluated after four weeks using the same questions from the questionnaires and new lab results.

Descriptive statistical analyses were used, and data were mean \pm SD, data were analysed using Excel software (2018) $P < 0.05$ was considered statistically significant.

Results

Around 1500 patient were included in this study, their mean age was 65.2 ± 3.5 years old with a male to female ratio of 60:40. Around 95.5% of the patients stated that they had received instructions for insulin pen use from their physicians. However, the mean diabetes duration was 15 ± 2.8 years (Table 1).

Approximately 56.8 per cent of the study population reported that they changed the insulin pen needle with each use, 7.6 per cent daily, about 23.7 per cent after two uses, 0.8 per cent after seven uses, and 1.7 per cent did not change their needles. Moreover, the study showed that about 68.6 per cent of the study population indicated that they had no site-related injection reactions during use, while only 31.4 per cent complained about this side effect (Table 1). Almost 30 per cent (450 patients, $P <$

0.05) indicated that they had tried successfully to change their injection site, 22 per cent of patients tested and slightly successful, 11.7 per cent of patients tested but failed, and about 25 per cent of patients did not attempt to change the injection site at all.

In Comparing the patients' blood glucose parameters (last fasting blood glucose [FBG] read before intervention vs. 4 weeks after educational intervention) demonstrated a significant decline in the FBG levels which were found to be 143.7 ± 12.5 to 122.4 ± 13.1 mg/dl pre- and post-intervention, respectively ($P < 0.05$). There were no significant changes in the 2-hour postprandial glucose and random blood glucose measures.

Laboratory data analysis showed that HbA_{1c} levels did not significantly change ($96.8\% \pm 0.7\%$ - $95.7 \pm 0.4\%$, $P = 0.18$) after 4 weeks of intervention (Table 2).

During the initial phase of the study, a total of around 50% of insulin pen-related errors were detected. This figure experienced a considerable decline after education to around 30% of errors $P < 0.05$ (Table 3).

Table 1. Base line characteristics and survey questions for the diabetic patients using insulin pens.

Characteristic	Participants (n=1500) No. (%)
Average age	65.2 ± 3.5 (30.02%)
Male: Female ratio	71:51 (41.0%: 30.0%)
Onset of patient diabetes?	
> 15 year	103(68.4%)
< 15 years	22(14.5%)
< 1 year	24(16.2%)
Instruction on how to use the insulin pen done by?	
Physician	143(95.5%)
Nurse	8(5.3%)
Pharmacist	3(2.0%)
Family member	2(1.0%)

Cont... Table 1. Base line characteristics and survey questions for the diabetic patients using insulin pens.

Frequency of changing the insulin pen needle	
With every use	68(57.3%)
After 7 uses	2(0.9%)
Every 2 days	3(1.7%)
None	3(1.7%)
Percentage of injection-related sites and related reactions	
Yes	600 (68.6%)
No	150 (31.4%)
Number of patients who tried to change their injection site	
Tried and succeed	42 (30.0%)
Tried and failed	25 (11.7%)
Tried and slightly succeed	28(22.0%)
Did not try	35(25.0%)

Table 2. Average blood glucose parameters before and after the educational intervention.

	Blood glucose levels mg/dl. (%)	HBA1C > 6.5% No. (%)	HBA1C < 5.3% No. (%)	P-value
Fasting blood glucose (FBG)				
Before	143.7 (97.5%)			*0.05
After	122.4 (74.4%)			
Random blood glucose (RBG)				
Before	122 (67.5%)			0.314
After	120 (74.4%)			
2 hours glucose tolerance (GTT)				
Before	177 (87.5%)			0.532
After	175 (73.4%)			
HBA1C%				
Before		145(96.8%)	15(10.0%)	0.18
After		134(95.7%)	13(9.0%)	

Table 3. Rate on incorrect insulin pen use among patients before and after educational intervention

Errors in insulin pen use	Before intervention	After intervention	P
Multiple use of a needle	46.2%	22.9%	<0.05
Incorrect time of administration	2.7%	2.5%	0.23
Blocked needle	13.5%	9.2%	<0.05
Rolling insulin pen before use	32.6%	26.4%	<0.05
Detaching needle immediately after use	15.7%	11.3%	<0.05
Storage in refrigerator before opening the insulin pack	35.6%	20.8%	<0.01
Incorrect injection angle	33.2 %	15.5%	<0.01
Injection site related reactions	31.4%	30.4%	2.34
Rotation at the site of injection	30.0%	29.7%	1.67
Remaining needle within the injection site for 5-6 s	31.5%	28.7	0.17

Data are presented as n (%) of participants

Discussion

The main aim of our study was to assess the impact of pharmacist-conducted educational interventions on appropriate insulin pen use among elderly type 2 diabetic patients in primary health care and diabetic centres in Makkah AlMukarramh. 1500 outpatients who were using insulin pens and who visited the hospital outpatient clinics were considered for inclusion.

The main finding of our present study indicated that pharmacists giving complete instructions to patients improved insulin pen use by 30%, and significantly decreased the rate of errors associated with the inappropriate use of insulin pens. Regardless of the efforts in the health-care systems to decrease the rate of medication errors, insulin is still considered a high-alert medication that may need extra attention¹¹. Data from previous studies among insulin pen users showed that in 75% of the patients, the method of insulin pen use was not in accordance with the manufacturer's instructions in terms of proper administration and storage. Therefore, it is essential to conduct coordination between health care professionals and patients for the rational use of insulin pens that can be of great help in this matter^{11, 12, 14, 15}.

Most of the studies that have looked at appropriate insulin pen use have been performed on hospitalised patients while information about the correct use of insulin pens among outpatients in developing countries is rare. Mitchell, Porter and Beatty (2012) investigated the effect of educating hospitalised patients about insulin pen usage by pharmacists or nurses. They elucidated that an initial education on insulin pen use results in significantly better rates of correct usage¹³. Another study that assessed the role of the pharmacist in optimising insulin use in the hospital setting showed that the pharmacist's contribution could decrease the rate of medication errors in the prescription, transcription, dispensing and administration stages^{11, 16, 17, 18}.

In our study, we collected data and performed the educational intervention in the outpatient diabetic clinics at Makkah Al-Mukarramah. We found that patient education reduced the number of insulin pen-related errors from 50% to 30% errors per patient. Despite this considerable decrease in the number of errors, this figure still remains high. There may be several factors contributing to this finding. First, more than 45% of the participants in this study had only a primary school education. Our results are similar to the results from another study that assessed the health of diabetic patients

and showed that patients with low knowledge of health are more susceptible to poor glycaemic control, and are more likely to develop retinopathy due to diabetes. The second factor is that the time in which we conducted our education was very short and we need more time to give patients multiple educational visits throughout the year.

In our study, around 95.5% of patients stated that they had received instructions for insulin pen use from their physician, while 4.5% of patients received instructions from their family members. We found that multiple use of the insulin pen needles constituted the largest proportion of detected errors with nearly 46.2%. Although a lack of knowledge might be the main reason for this error, some patients stated that they use the needles several times due to cost considerations; however, this issue decreased slightly after the educational intervention to about 22.9%.

Our current results showed that the patients' fasting blood glucose (FBG) had a significant decline after patient education from 143.7 ± 12.5 to 122.4 ± 13.1 mg/dl. Multiple factors can have a large part in achieving this improvement as patients were injecting their insulin pen without being aware that the attached needle was blocked. Moreover, taking into consideration that each needle was used multiple times in many of these patients, the effect of this error on the glycaemic control of patients becomes even more concerning.

Unlike the FBG levels, HbA_{1c} did not show a significant change in this study. The reason for this might be that this study was conducted over a relatively short period of time; it was not possible to assess the long-term impact of patient education about insulin pen use on HbA_{1c} levels.

Despite that HbA_{1c} did not decrease significantly in this current study, a previous study that assessed the short-term impact of HbA_{1c} on the morbidity of people with type 2 diabetes over a 6-year period showed that in diabetic people who have an initial HbA_{1c} level above 8%, a decrease in this percentage is associated with a reduced mortality among these patients^{11, 19, 20}. Therefore, future plans to continue and expand this study is considered essential.

In our study, we found that around 30% of the patients tried to rotate and change their injection sites, while 25%

did not change the site at all with no obvious reasons. Moreover, around 68.8% of the study population denied any injection site-related reactions during their use, while 31.4% complained of this side effect. Therefore, we need to improve patient knowledge to decrease this harmful effect especially after educational intervention showed no changes in this matter.

Although most of the study population denied any injection site-related reactions, there were still some issues with the proper use of the insulin pen such as the multiple use of the needle, adherence and not changing the site of injections regularly. Pharmacist-conducted educational interventions to these patients led to a significant decrease in the rate of medication errors associated with inappropriate insulin pen use, as well as an improvement in the glycaemic control of the patients.

Indeed, educating older patients and their caregivers on the appropriate techniques of insulin pen use will have a positive impact on diabetes management and error prevention. Thus, pharmacists can play an important role in the safe and efficient use of the insulin pen in elderly diabetic patients by minimising the likelihood of medication errors associated with insulin pen use.

We had multiple limitations to this study as it was conducted over a short period of time on patients who visited the outpatient clinics. The studied sample may not be a complete representation of the general population of diabetic patients. Moreover, the answers given by old and mainly uneducated patients make judgments about the reliability of the answers even harder. Finally, the time for the educational interventions and follow-ups were also limited and needed further future plans for a better outcome.

Ethical approval was obtained from the Umm Al-Qura University IRB Committee UQU- COP-EA-#143911.

Funding : There was no funding for this study

Competing Interests: Authors declare no competing of interests.

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Causes & Impacts of Flood Disaster in Bangladesh: Special Focus on Public Health

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Abstract

Introduction: Bangladesh is one of the disaster-prone countries in the world and the flood is the most common natural hazard, because of its geographical characteristics, extensive rivers network, climate change effects, monsoon climate, and the coastal morphology. **Aims:** This study aimed at exploring the causes of flood disasters in Bangladesh and its impacts on socioeconomic and public health. **Methodology:** This study utilized quantitative data from the Centre for Research on the Epidemiology of Disasters (CRED) and other databases. **Results:** From 1985 to 2019 the country has experienced a total of 234 natural disasters and among total disasters, storm and flood are common disasters which represent 51.71% and 31.62% respectively. Within 34 years (1985-2019) the country was flooded 74 times and the 10965 people died with 222371823 people were affected and total economical damage was 12131800 ('000US\$). **Conclusion:** The flood impact in Bangladesh on socioeconomic, public health is significant. After the flood, early health effects are skin infection, pneumonia, respiratory infection and late effects are mosquito-borne illnesses, hepatitis A or E virus infection, and mental disorders.

Keywords: *Flood, Causes, Impacts of Flood, Bangladesh, Health Impact.*

Introduction

The World Health Organization has reported that worldwide around 90000 people are killed and closely 160 million people are affected every year by natural disasters. Natural disasters include earthquakes, tsunamis, volcanic eruptions, landslides, hurricanes, floods, wildfires, and heat waves.¹ Globally, 4000 massive natural disasters had been accounted for estimating 1.5 million deaths during 2005-2015.² In the world, Bangladesh is one of the most vulnerable countries in terms of natural and anthropogenic disasters and Floods are a normal phenomenon in Bangladesh. Flood usually occurs during the monsoon season, normal flooding incidents in July and September.³

Over the last few decades, climate change acted as a risk factor for increasing flood-related risks in the South Asian region. Scientifically projections confirm that in the main river basins of India, Bangladesh and Nepal will considerably increase risks of flooding.⁴ During the monsoon season more than 75% of rain occurs in Bangladesh, due to weak tropical depressions which are brought from the Bay of Bengal into Bangladesh through the wet monsoon winds.⁵ Approximately 90 percent of the damage related natural disasters are occurred by floods and associated ruins flows. Floods can damage and destroy homes and farms, displace families, livestock, damage crops, and disrupt agriculture and local business.⁶

According to World Risk Index (WRI) 2011, among the 173 countries, Bangladesh was ranked 6 and the country has been declared the second most disaster-risk country in Asia and vulnerability was 63.41% and WRI was 17.45%. Alarming information in the World Risk Report, 2014 is showing that Bangladesh was ranked 5 where the world risk index is 19.37 %.¹¹

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Materials and Methods

This paper was made through using the secondary data and the information from different peer-reviewed scientific research and gray literature such as reports, media sources. The Emergency Database (EM-DAT) of the Centre for Research on the Epidemiology of Disasters (CRED) was used as a secondary data source. Data was gathered from Emergency Database (EM-DAT) of different disasters occurred in Bangladesh from 1985 to 2019 period.

Results and Discussion

Geographical Background:

Bangladesh covers an area of 147,570 square kilometers and it is located in the northeastern part of South Asia. The population of the country is about 158 million and the population density of 1,070 persons per square kilometer in 2014.⁷ Meteorological Department data shows that from 1958–2007 the mean annual rainfall was 2488 mm in Bangladesh (Figure 1). The magnitude of change of annual rainfall of Bangladesh increased at a rate of +5.53 mm yr⁻¹ estimated by Sen’s slope estimator and the rate of increase was approximately 5.5% per decade.⁵ Country has one of the largest river networks in the world with a total number of about 700 rivers including tributaries and a total length of about 24,140 km.⁸

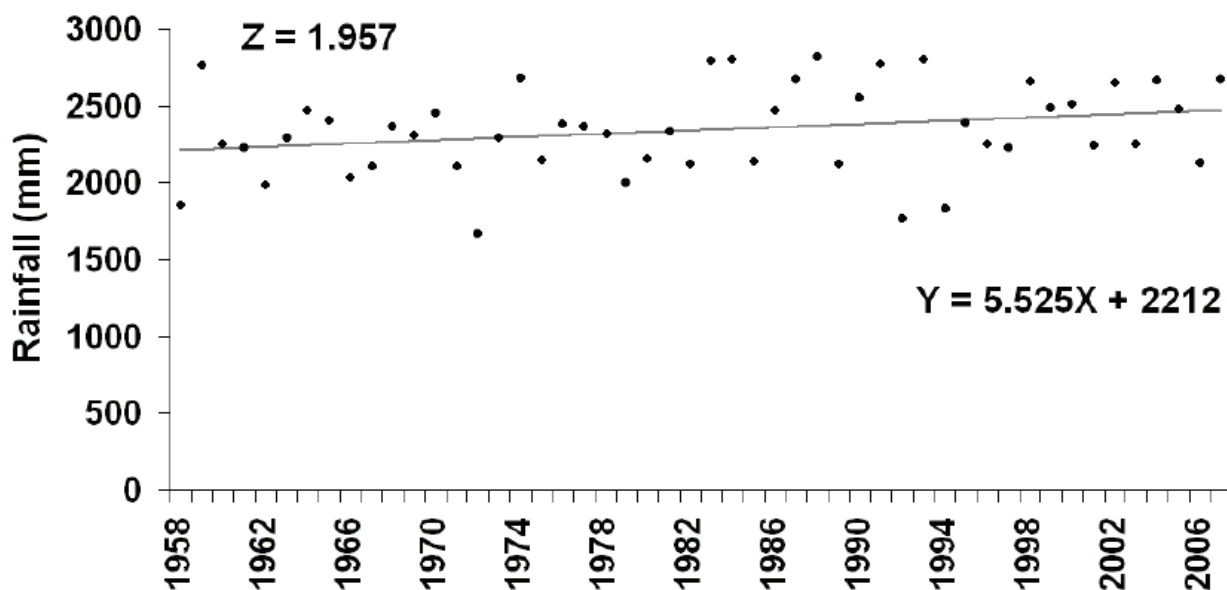


Figure 1: Trend in annual rainfall in Bangladesh over the period 1958–2007.[5]

Due to the geographical location, land characteristics, multiplicity of rivers, coastal morphology, and the monsoon climate, Bangladesh is one of the highly vulnerable countries to natural disasters.⁹

Frequency Distribution of Natural Disasters in Bangladesh:

From the record of EM-DAT (CRED) on the different types of disasters, it has been observed that since

1985 somehow every year natural disasters happened in Bangladesh. It is alarming and a matter of thought that the different types and sometime same types of natural disasters happened frequently in Bangladesh (Figure 2). Within 34 years the total frequency of disasters was 234. During this period, the most frequent disaster was Storm 121. Among all disasters, earthquakes and landside were less frequent. Natural disaster flood and the extreme temperature was happened 74 times and 24 times respectively.¹⁰

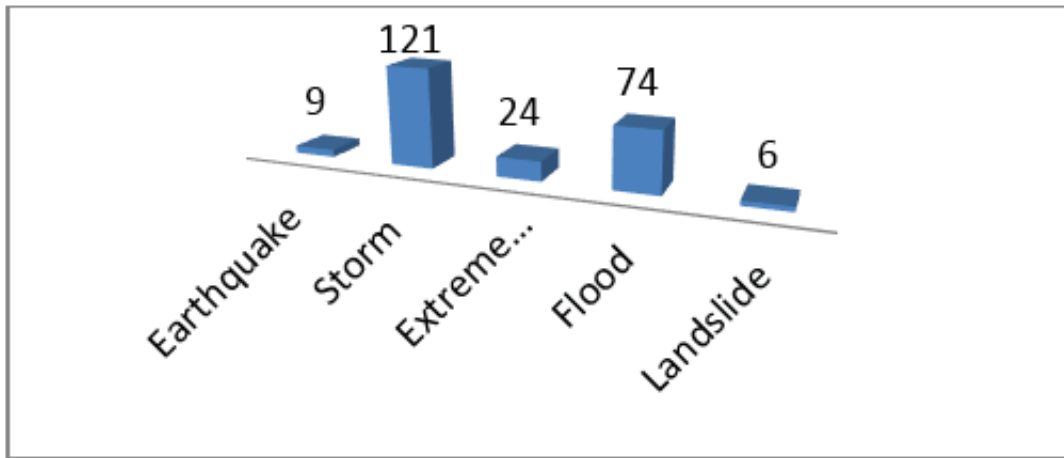


Figure 2: Frequency of Natural Disaster in Bangladesh from 1985- 2019. [10]

Frequency and types of Flood in Bangladesh:

Flood is becoming an annual natural phenomenon in Bangladesh. Every year in different parts of the country is drowned by the flood. Since 1985, the country experienced the highest frequency of flood (five times) in the year 1999. Last three decades, the average

frequency of flood disasters was two times each year. Some of the years, the flood happened three times, and 1994, 1995 years it happened four times. In Bangladesh, the flood can be categorized in three ways as Monsoon flood, Flash flood and Tidal/Coastal flood. Within 34 years, county has undergone Riverine flood (77.59%), Flash flood (18.97%), and Tidal/Coastal flood (3.45%) (Figure 3).

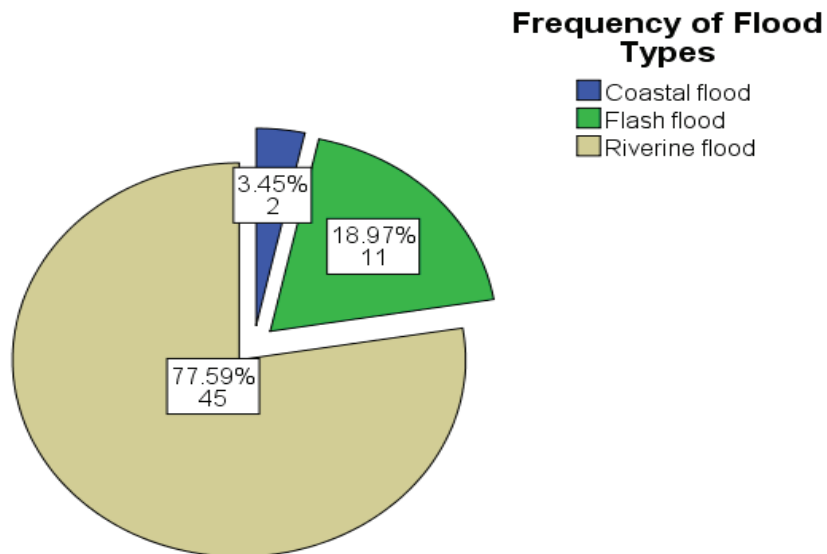


Figure 3: Frequency of Flood in Bangladesh on the Basis of their Types.[10]

Causes of Flood in Bangladesh

The main reason for flood in Bangladesh is due to extensive rainfall in the catchment areas of the rivers. In the North part of Bangladesh, the monsoon belt with the Himalayas makes the region of heavy rainfall. During

the 5 months from May to September, approximately 80% of the rainfall occurs. The main river of the country- the Brahmaputra-Jamuna, the Ganges, the Meghna, and other smaller rivers are carried about 90% of water which is entered from outside the country (Figure 4).¹²

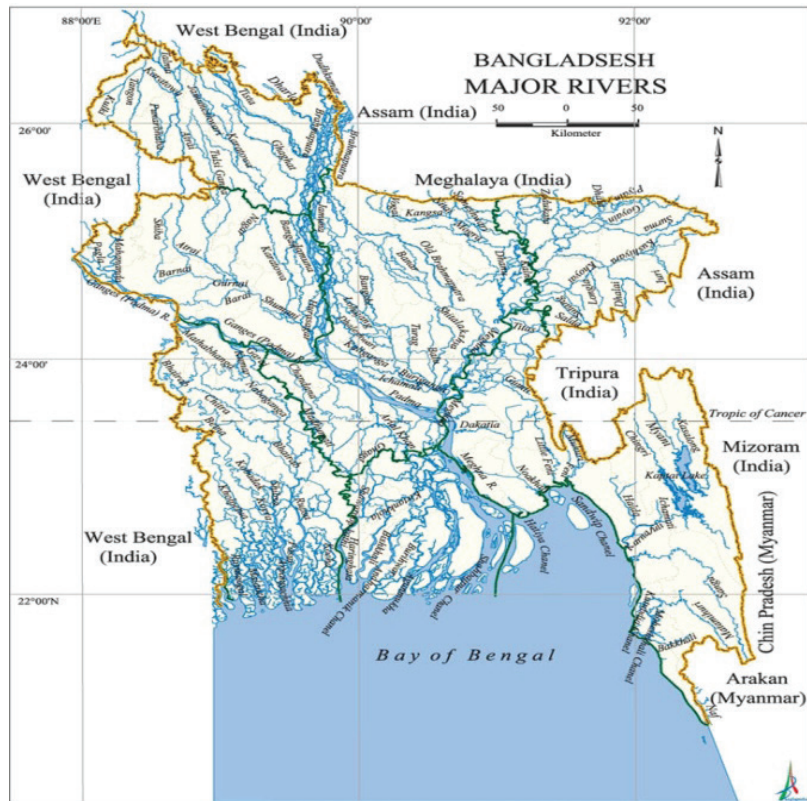


Figure 4: Major Rivers Map of Bangladesh.[8]

Although, the primary cause of the flood is heavy rainfall in the catchment area of the rivers. There are some other factors which may associate to develop the floods, those are (i) general low topography of the country with major rivers draining through Bangladesh including a congested river network system, (ii) rainfall in the upstream country or the mainland, (iii) snow-melt in the Himalayas, (iv) river siltation or landslides that reduces the carrying capacity of the rivers and develop the flood, (vi) human intervention of the environment such as deforestation in the catchment area that increases the downstream water flow, (vii) slowing down of the river outflow by tidal and storm, (viii) construction of barrages and protective works close to the banks of the river and (ix) tectonic anomalies those change the river flow or morphology.¹²

Effects of Natural Disasters from 1985- 2019

In Bangladesh, storms, floods, and earthquakes are a common disaster. Within 34 years most frequent disaster was storm 121 times (51.71%) and the second most frequent disasters were flood 74 times (31.62%). Among those five disasters, most of the damage was occurred by the flood which worth was 12131800 ('000 US\$) and second and third disasters were storm and earthquake respectively. Majority of people was died and affected by floods and storms. Within 179769 deaths 165970 and 10965 people were lost their life due to storms and floods respectively (Table 1). Earthquake and extreme temperature disasters less frequently happened in Bangladesh but the total economic losses by the earthquake is noticeable 500000 ('000 US\$).

Table 1: Effects of Natural Disasters from 1985- 2019

Disasters Types	Number of Events	Percentage	Total Deaths	Total Damages('000 US\$)
Earthquake	9	3.85%	45	500000
Storm	121	51.71%	165970	6013485
Extreme temperature	24	10.26%	2524	
Flood	74	31.62%	10965	12131800
Landslide	6	2.56%	265	
Total	234	100%	179769	18645285

Social and Economical impacts of floods:

Floods in developing countries in the world are a greater threat to human life, health, and well-being than in developed countries. Commonly, two-thirds of deaths directly related to flood events are caused by drowning and one-third by physical trauma, heart attack, electrocution, and animal bites.¹³ The effects of flooding in Bangladesh are severe in both rural and urban areas affecting the majority of the population, infrastructures, and family assets and their life. Within 34 years flood affected total population were 222371823 and total affected area was 751112 km² (Table 2).

Impacts on Personal Security:

In the flooding areas, day labors sometime starve to death due to staying a long period of time without work or due to sickness. In 1988, 1998, and 1999 floods in Bangladesh hundreds of industries, especially garments factories went underwater. By that time, water destroyed raw materials, machines which were worth millions of Dollars and some factories never came into production. In that situation, thousands of workers went unemployed and the country was living dependent on foreign aid.¹⁴ The most important urban sectors that affected severely by the floods include urban infrastructure, houses, industry, trade, commerce and utility services etc.¹⁵

Impacts on Buildings and Infrastructures:

Study shows that impact of the flood on housing

infrastructure and households can be extensive. Fast-flowing floodwaters are able to wash away entire slums village while the slowly rising water damages buildings and infrastructures. Most of the houses in the rural area of Bangladesh are built with “Mud Walls”, “Coconut leaf Walls” and “Tin Walls”. Flood collapses leaving people in the village and their asset exposed and vulnerable. About 32% of the total population in Bangladesh lives in slums setting and therefore a large number of people are left homeless and stranded for days due to flooding.⁴

Impacts on crops and animals:

The economy of Bangladesh is agriculture-dependent and agriculture construct about 18.6% of the country’s GDP and employs around 45% of the total labor forces. The majority of the poor people in this country live in areas of high risk to floods and landslides and most of them are depending on local natural resources. Rice and wheat are stapled foods of Bangladesh.⁴ One of the special types of rainfed rice; Aman has grown in Bangladesh and this rainfed rice is highly efficient to river floods. During the 1998 floods in Bangladesh, 82% of deepwater Aman, 69% of Aus rice production, and 91% of transplanted Aman were lost and the country became food insecure (Figure 5). The whole mushroom industry in Bangladesh was seriously affected by the floods of 1998 and in 2007 floods causing huge loss of foreign currency.⁴

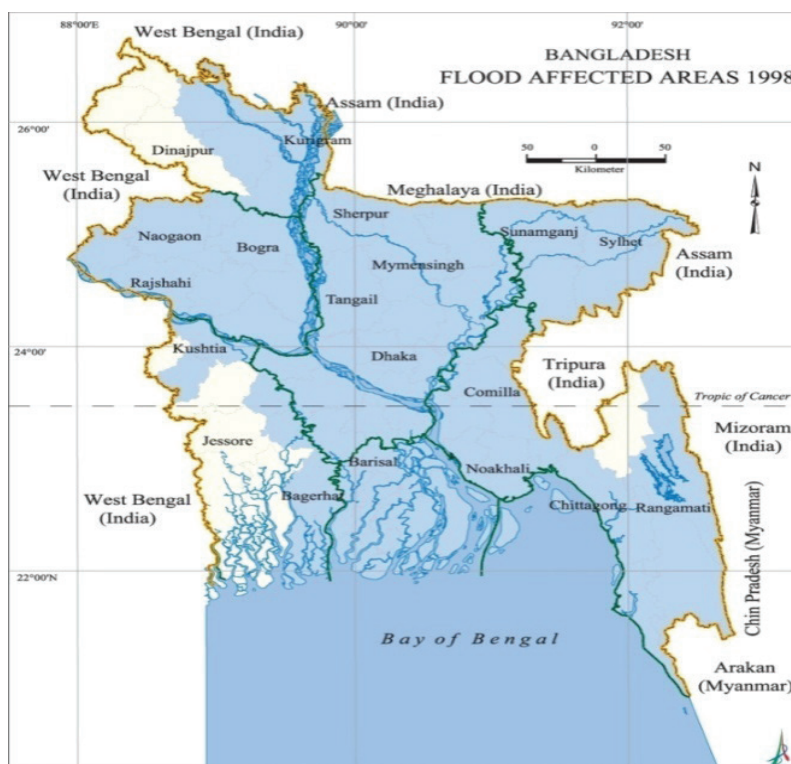


Figure 5: 1998 Flood Affected Areas in Bangladesh.[8]

Impacts of Flood on Public Health

During the flood, water supply and sanitation conditions become dangerously hampered. In every flood all toilets and about two-thirds of the tube-wells become unusable. At the same time people owing to using hanging latrines or a boat and defecating directly into water bodies and in this way, most people pollute that water. Therefore, the majority of people suffer from different water-borne diseases. Impacts of floods on health are immediate, medium, and long term and it can be extensive. In Bangladesh, the major impact of floods is death and the deaths are caused by drowning, water-borne diseases, diarrhea, snakebites(Tables 3).¹⁶

Table 3: Different Effects of Flood on Health

Immediate Effects	
▪	Drowning
▪	Trauma
▪	Hypothermia
▪	Electrocution
▪	Carbon monoxide poisoning
Early (Less than 10 days after event)	
▪	Cutaneous infection
▪	Aspiration pneumonitis or pneumonia
▪	Viral respiratory infections
▪	Gastroenteritis
Late (More than 10 days after event)	
▪	Leptospirosis
▪	Mosquito-borne illnesses
▪	Cutaneous infection
▪	Hepatitis A or E virus infection
▪	Mental health disorders and depression.

In the 2007 monsoon floods in Bangladesh, Snakebites were one of the most significant causes of death estimated to be the second after drowning. Those causes were contributed to more deaths than even diarrheal and respiratory diseases.¹⁷

Mortality:

The mostly identified flood deaths are those that happen acutely from drowning or trauma, for example being hit by objects in fast-flowing waters. In 1988 Bangladesh floods, data showed that diarrhea was the

most frequent (27%) cause of death, but again the effect of the flood was not separately measurable from seasonal influences.¹⁸

From 1985 to 2019 in the Emergency Events Database shows that 10965 people were died by floods although, most people were affected by floods in the years 1987, 1988, 1993, 1995, 1998, 2004, and 2007 (Table 4). Those years the frequencies of floods were two times or three times and in 1999 the frequencies were five times. Gradually deaths and flood affected population number had reduced due to some measures had taken by Government.

Table 4: Most Flood Effected Years and its various Impacts.

Most Effected Year	Total Deaths	Affected People	Economic damage (US\$ 000)
1987	2280	29700000	1057500
1988	2440	45000000	2137000
1991	265	2990000	150000
1993	194	15751613	-
1995	741	14718331	375300
1998	1050	15000050	4300000
2004	761	36871700	2200000
2007	1230	13851440	114000
2014	59	3200447	160000
2017	144	8086025	628000
2019	114	7600000	75000

Diarrhea Diseases:

During 2000-2006, there were 16551 diarrhea cases reported in the flood-protected area, while the number of cases was 2.9 times higher in the unprotected area.¹⁹ The existence of diarrhea risk after flooding may also be influenced by local environmental conditions and also variation in disaster management and adaptation strategies.²⁰

The long-term rise of infection in the post-flood period may be due to the existence of low hygiene and sanitation status in the flood-affected communities.²¹

Potential persistent poor nutrition of the flood-affected population may also be suffered in the post-flood excess of diarrhea. In the presence of malnutrition, chronic or persistent diarrhea could develop secondary to other infections.²²

Fecal-oral and Vector-borne diseases:

In flood situations, there is potential for increased fecal-oral transmission of disease, in particular areas where the population does not have access to clean water and sanitation facilities. Some Published studies have reported post-flood increases in cholera,

cryptosporidiosis, nonspecific diarrhea, poliomyelitis, rotavirus, and typhoid, and paratyphoid.²³ There is a complex relationship between flooding and vector-borne disease. Many important infections are transmitted by mosquitoes and the mosquitoes can breed in or close to stagnant or slow-moving water.²⁴

Acute Respiratory Infection:

In 2001-2006, there were a total of 23,163 and 11,310 acute respiratory infections from non-flooded and flooded areas, respectively, in children under 5 years. The acute respiratory infection rates appeared higher in flooded compared with the non-flooded area.²⁵ 1998 floods in Bangladesh, health problems among flood victims after diarrhea (27%), respiratory problems (14%) were the second most common. In the 1988 flood, acute respiratory infection was also the second most common cause of illness (17%) and among the victim's death (13%).²⁶

Conclusion

This paper presented that Bangladesh is a highly disaster-prone country and every year country faces floods frequently. Each flood has a huge devastating effect on life, livelihood, and the country's economy. The country faces a long term impact in various sectors after the flood. Flood prone area has to provide stronger shelter, pure water facility, and sanitation structures which can withstand floods better. Bangladesh's government and non-government organizations always come up to mitigate the impact of the flood but still need a comprehensive flood management plan and its implementation.

Source of Funding: Self

Conflict of Interest: Nil

Ethical Clearance: The study was dependent on recorded data from EM-DAT database as institutional rules. So, the study did not look for any individual consent.

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Patient Satisfaction of Computer-Guided Versus Free- Hand Immediate Implant Placement in Esthetic Zone, A Randomized Controlled Trial

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Abstract

Background: The evolution of minimally invasive concept made flapless implant placement combined with CAD/CAM surgical templates superior on free hand immediate implant placement in fresh extraction socket. Although Patient reported outcome measure in relation to any restoration in the esthetic zone is a very important criterion, very limited studies reporting patient satisfaction of free hand immediate implant placement protocol compared with computer guided approach. This study aimed to evaluate patient satisfaction of computer guided (test group) versus free hand (control group) immediate implant placement in esthetic zone.

Materials and Methods: A total of 20 patients with remaining roots in the aesthetic zone and indicated for extraction were selected. They were allocated randomly into two equivalent groups of 10 participants each. Immediate implant placement was performed using computer aided surgical guide for test group and free handed without any surgical guide for the control group. For patient satisfaction assessment a validated questionnaire was used where each question of the questionnaire was scored by the patients on 10 cm visual analogue scale (VAS).

Results: No statistically significant difference was found in patient satisfaction between the test and control groups.

Conclusions: within the limitation of our study, combining a computer aided surgical guide to an immediate implant placement seems to be a predictable therapy especially for young practitioners.

Keywords: patient satisfaction, extraction socket, computer aided, surgical guide

Introduction

Placement of implant immediately after tooth extraction can preserve the soft tissue and alveolar bone architecture.¹⁻⁵ Although immediate implant placement offers advantages for both practitioners and patients, it is accompanied by many challenges such as positioning errors and esthetic demands required by the patients

which made free hand immediate implant placement a meticulous process.⁶⁻⁹

The evolution of minimally invasive concept made flapless implant placement combined with CAD/CAM surgical templates superior on free hand immediate implant placement in fresh extraction socket.¹⁰⁻¹³

Although Patient reported outcome measure in relation to any restoration in the esthetic zone is a very important criterion, Very limited studies reporting patient satisfaction of free hand immediate implant placement protocol with computer guided approach.^{14,15} The purpose of this study was to evaluate patient

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satisfaction of computer guided versus free hand immediate implant placement in fresh extraction sockets in esthetic zone. This article is reported according the CONSORT statement for improving the quality of reports of parallel-group randomized trials (<http://www.consort-statement.org/>).

Materials and Methods

This study was a parallel double arm randomized clinical trial with ratio of 1:1. It was approved by the Ethics Committee of Scientific Research at Cairo University.

T test power calculation was used to detect the proper sample size.¹⁶ The results showed that a total sample size of 16 implants would be adequate to have a power of 95% (8 implants in each group). To compensate for 30% non-response rate, the sample was increased to a total size of 20 implants.

Twenty patients were selected from the outpatient clinic of the Prosthodontics, Faculty of Dentistry, Cairo University. Patients with teeth or remaining roots in the aesthetic zone and indicated for extraction and replacement with immediate implant were recruited. A sufficient labial bone (at least 1.5-2 mm) was among the selection criteria which was confirmed by cone beam computer tomography (CBCT) scan to avoid labial bone plate fracture during extraction.

A preoperative CBCT scan was performed for the patient's maxillary arch and examined using 3D planning software (BlueSky® plan3, BlueSky Bio, USA). Simple randomization was performed for eligible patients according to a computerized random allocation program (Tripod random allocation software, Version 1.0, May 2004.) in two groups, test group (in which computer guided immediate implant placement was performed using computer aided surgical guide) and control group (in which free hand immediate implant placement was performed).

Primary maxillary and mandibular impressions were made for eligible patients. For temporary crowns

fabrication, duplication of maxillary study cast was performed and the tooth or root to be extracted was modified on the duplicate cast and an artificial tooth was placed instead. After that, a 1mm hard vacuum sheet was pressed on the modified duplicate cast and a hole was drilled in the template opposite to the centre of the artificial tooth. Then the vacuum template was finished and polished.

For both test and control group, the DICOM images of the CBCT scan were imported in 3D implant planning software (Bluesky plan3, Bluesky Bio, USA). 3D diagnostic analysis and virtual implant planning was performed. For the computer guided group, the primary cast was optically scanned and the STL (Standard Triangulation Language) file was imported to the plan. Then, superimposition of this model with the 3D imaged model of the patient's jaw was performed.

Proper prosthetically driven virtual implant planning was performed Guided with the tooth to be extracted and bone volume analysis. After that, the teeth supported virtual surgical guide was drawn and exported as STL file. The exported STL file was sent for rapid prototyping unit of the prosthodontic department, faculty of dentistry, Cairo University (Mogassam, Digital Dentistry, Egypt) for guide fabrication through stereolithography process. Then a metallic sleeve was fixed in the proposed site in the surgical guide using adhesive.

All participants received prophylactic antibiotic: (2 g of Amoxicillin or Clindamycin 600 mg if allergic to Penicillin) twice one day prior to the surgery. After local anesthesia injection, atraumatic extraction without flap reflection was performed for both groups through Perioste application (Nordent Manufacturing, INC, USA). After that, surgical curette was used for socket debridement.

For computer guided group, osteotomy preparation and implant installation were performed through the surgical guide sleeves according to the computer guided kit instructions (Dentis Simple guide, Korea) (Figure 1).

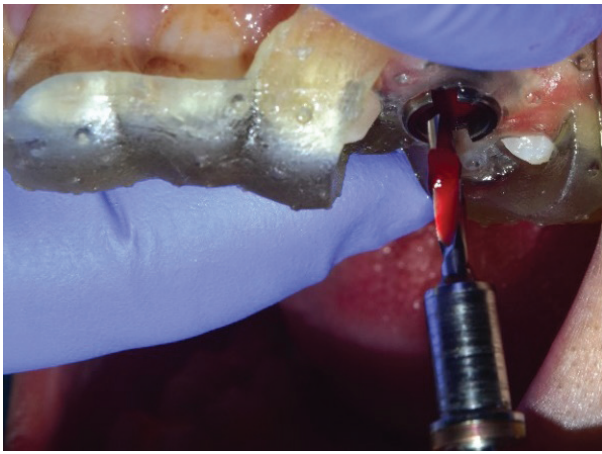


Figure 1: Drilling through the computer-aided surgical guide.

For free hand group, Sequential drilling was performed without any stents following conventional kit instructions (DENTIS Guide, dentis-korea). Drilling was directed along the palatal bony plate extending 3 mm beyond the root apex.

In both groups, root form tapered and threaded dental implants (S-clean implant fixture-Dentis-Korea) were used to replace the extracted tooth or root in the extraction socket. The implants length ranged within (12-14 mm), and diameter ranged within (3.5-4.1 mm), Implants were inserted with an insertion torque of 35 Ncm. After implant placement, the horizontal jumping gap was always less than 2 mm, so no bone augmentation procedure was performed. Moreover, suturing was unnecessary due to gentle soft tissue handling during extraction and implant placement.

For temporary crown fabrication on the immediately placed implant, the selected titanium abutment (straight or angled) was modified according to the interarch space. Then, a temporary crown material (LuxaTemp®, DMG America, www.dmg-america.com) was injected through the vacuum template and placed over the screwed abutment, where the excess material escaped through the central hole previously prepared in it. After material setting, the abutment was unscrewed, and the template was removed. For final contouring, flowable composite resin (Alpha-Flow® Flowable Composite, USA) was used to fill any voids or deficiencies in the temporary crown.

After that, the final restoration was tried in directly onto the implant to be out of occlusion contacts in both

centric and eccentric positions, modified, finished, and polished. Then, abutment screw was tightened with torque 25 Ncm once esthetic and occlusal adjustments were achieved and screw access hole was closed using PTFE and composite material (Alpha-Dent® Light Cure Composite, USA).

The prophylactic antibiotic that was prescribed one day before the surgery was continued for another 5 days postoperatively. Analgesic drug (Ibuprofen 600mg, or for patients allergic to NSAIDs, of 1 g paracetamol) was prescribed to be used if pain was encountered. The patients were instructed to eat soft diet for 1 month and not to eat or bite on the implant site for the first 8 weeks. The patients were dismissed and recalled after 1 week for checkup and outcome assessment. The patients were included in a maintenance program involving follow-up 1 week, 6 months after implant placement.

After 6 months of implant installation, the provisional restoration was replaced by a permanent cemented restoration. The provisional crown and the titanium abutment were removed, and the impression coping was screwed to the implant and customized to replicate the soft tissue profile. A closed double phase impression technique was performed using rubber base impression material (Zetaplus, Zhermack SpA, Badia Polesine, Italy), where the impression coping along with the implant analogue were seated in the final impression after removal from the patient's mouth. After impression making the abutment and the provisional crown were repositioned again in patient's mouth to avoid soft tissue collapse.

After that impression was poured, try in of the cobalt chromium substructure was performed. Finally, the metal-ceramic crown was fabricated and directly cemented to the torqued titanium abutment (25 Ncm).

Patient satisfaction outcome was assessed through a validated questionnaire¹⁷ (Figure 2) which was translated in to Arabic version in certified translation center (Trust translation center, Nasr city)and each question of the questionnaire was scored by the patients on 10 cm visual analogue scales (VAS). The VAS scale is a horizontal line on which patients can mark their response with 0 indicating extreme dissatisfaction and 10 indicating complete satisfaction. Patient satisfaction scores were registered at the follow-up examination. First score was

registered postoperatively 1 week following the surgery to allow for soft tissue healing around the provisional restoration. The second score was registered 1 week after final restoration insertion (at 6 months follow up).

Data management and statistical analysis were performed using the Statistical Package for Social Sciences (SPSS) version. 24. Numerical data were summarized using means and standard deviations.

Data were explored for normality by checking the data distribution and using Kolmogorov-Smirnov and Shapiro-Wilk tests. For satisfaction score comparisons between 2 groups were done using the Mann Whitney test. Question 8 of the questionnaire was compared by fisher exact test among the studied groups. All p-values are two-sided. P-values ≤ 0.05 were considered significant.

Patient satisfaction questionnaire (Layton and Walton)

Please answer the following questions by placing a cross on the line at the point at which you feel represents the answer.

Note the start of the line on the left side represents the worst possible result or experience that you could imagine whereas the end of the line of the right side represents the absolute best possible result or experience that you could imagine.

Place a tick in the appropriate box for the last question.

1. How would you rate the appearance of your teeth immediately after their treatment?
Extremely poor _____ Excellent
2. How would you rate the appearance of those teeth today?
Extremely poor _____ Excellent
3. How would you rate your present capacity to chew?
Extremely poor _____ Excellent
4. How would you rate your present capacity to speak?
Extremely poor _____ Excellent
5. How easy do you find it to clean your teeth and gums?
Extremely difficult _____ Extremely Easy
6. What did you think about the financial cost of your treatment at the time of treatment?
Extremely costly _____ Extremely reasonable
7. In hindsight how would you rate the initial financial cost of your dental treatment?
Extremely unjustified _____ Extremely justified
8. In hindsight would you undergo the treatment you had for your mouth and teeth again?
 YES
 NO

Figure 2: Patient satisfaction questionnaire (VAS line is not to scale, requires 10 cm in length)

Results

From 20 enrolled patients, 18 patients only were included in the study. Two implants failed one in each group. The first 7 questions of the questionnaire were related consecutively to initial esthetics, current esthetics, Mastication, Phonetics, Cleansibility, initial Cost and hindsight Cost, while Q8 was related to undergoing the treatment again.

Using Mann Whitney test, it was found that there is no statistically significant difference in overall patient

satisfaction between the 2 groups for the first 7 questions at the baseline and at 6 months. At the baseline, the median score for group I (computer guided group) was 9.33 with range (5.5-10), while the median score for group II (free hand group) was 9 with range (8-10). At 6 months, the median score for group I (computer guided group) was 10 with range (9.5-10), while the median score for group II (free hand group) was 10 with range (9-10) (table 1)

By using fisher exact test there was no statistically significant difference between the two groups for Q8

which was related to undergoing the treatment again, The results at 6 months were the same at the baseline where 100 % of patients agreed to undergo the treatment again in group I while, 85.7 % agreed to undergo the treatment again in groupII. The percentage value for patient Satisfaction score for Q8 are listed in (table 2).

	Group I			Group II			
Esthetic	Median	Minimum	Maximum	Median	Minimum	Maximum	p value
Baseline	9.33	0.55	10	9	8	10	0.723
6 Months	10	9.5	10	10	9	10	0.749

P≤0.05 is statistically significant, analysis done by Mann Whitney test

(Table 1): Median, range for comparing patient Satisfaction for the first 7 questions of the tested groups at the baseline and 6 months

		Group I		Group II		
		No.	%	No.	%	p value
Q8	No	0	0.0	1	14.2	1.000
	Yes	8	100.0	6	85.7	

P≤0.05 is statistically significant, analysis done by fisher exact test

(Table 2): percentage for Q8 for comparing patient satisfaction of the tested groups (Group I and Group II)

Discussion

Descriptive data for this study showed that there was no statistically significant difference between both groups in patient satisfaction regarding esthetics, mastication, phonetics, cleansibility and cost. This insignificant difference found at one week postoperatively, and at 6 months after definitive crowns cementation.

Regarding repeating the treatment again only one patient from group II (free hand group) affirmed that he would not undergo again the same treatment without any statistically significant difference between the two groups.

This was surprising as it was expected that computer guided implant placement is less traumatic procedure for the supporting hard and soft tissue. Thus, it can provide better abutment alignment and achieve better patient satisfaction functionally and esthetically.¹⁸

These results are in accordance with results of a RCT study.¹⁹ The authors reported that there was no statistically significant difference found between free hand and computer guided groups regarding patient satisfaction.

Moreover, all patients were fully satisfied with the function and aesthetics of their definitive prostheses and only one patient from the conventional group declared that they would not undergo again the same treatment.

The insignificant difference in satisfaction scores in this study at the baseline may be attributed to the careful case selection with strict inclusion criteria for both groups. All the cases were selected to be with adequate interproximal bone with intact interdental papilla and intact labial plate of bone without any fenestration. This in role, helped to preserve the supporting soft tissues and decreased liability for bone loss.²⁰ Additionally, the operator followed cautiously the atraumatic extraction rules and steps for both groups which preserved the extraction socket without any damage. Thus, this may be the cause to make free hand technique with esthetic and function satisfaction results nearly similar to computer guided group.

In addition to the previously mentioned causes, the insignificant difference in satisfaction scores in this study at 6 months may be justified additionally by the proper construction of the provisional restoration which was properly contoured according to the surrounding soft tissue architecture. Moreover, during definitive impression making, replication of the soft tissue contour was performed through customization of the impression transfer. This in role provided better esthetics, mastication, phonetics and cleansibility results.

Conclusion

There was no statistically significant difference between implants placed using free hand technique and those placed using computer aided surgical guide regarding patient satisfaction. Within the limitation of this study due to small sample size, it seems that computer aided surgical guides may be helpful for young practitioners and operators with less experience to avoid positioning errors and make immediate implant placement more feasible process.

Ethical Clearance- It was approved by the Ethics Committee of Scientific Research at faculty of dentistry, Cairo University

Source of Funding- Self funded

Conflict of Interest – no conflict of interest

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Serum Cortisol, Progesterone and Total Antioxidant Status of Students Pre-and Post-Examination

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Abstract

Background: Stress is defined as a mental or emotional strain resulting from very demanding circumstances. In recent years, traumatic episode and poor results following school examination have made stress an issue of major concern in academics. This study aimed to investigate examination induced stress among apparently healthy University students in relation to some biochemical parameters and antioxidants status pre-and post-examination.

Materials and Methods: This is a case controlled study involving 40 examinees as test group and 40 non-examinees as control group. Serum concentrations of cortisol and progesterone were estimated by ELISA method, and total antioxidants status (TAS) was quantified by colorimetric method. Data obtained were subjected to statistical analysis using SPSS software application (version 16.0) and the results expressed as mean \pm standard deviation.

Results: The results showed that cortisol level was significantly decreased in pre (34.84 \pm 8.50) examination than in post (21.18 \pm 14.53) examination while progesterone level was significantly increased from 0.42 \pm 0.32 to 0.92 \pm 0.96 ($p < 0.05$) and TAS increased from 0.97 \pm 0.05 to 1.02 \pm 0.32 ($p > 0.05$). The mean serum cortisol in subjects with outstanding academic activity was not statistically significant when compared to subjects without outstanding academic activity ($p > 0.05$).

Conclusion: the differences in the biochemical parameters observed in this study pre and post examination suggest that examination has the tendency to induce stress which could culminate to oxidative damage in chronic cases.

Keywords: Stress, examination, students, University

Introduction

Stress is a constellation of event which is composed of a stimulus called stressor that precipitates a reaction in the brain (stress perception) which subsequently activates a physiologic (fight/flight) system in the body which is called stress response¹. Examination is a formal and informal assessment of learning and tests of students' ability to perform specific tasks². It is designed to test students' performance giving an indication of

their ability to cope under pressure in a fixed period. This is a constant feature in Nigerian universities. Stress due to examination is a feeling that is created when a student is faced with examinations on accumulated courses over a period pre-determined by the examination time table and this usually occurs within one to four weeks and mostly at the end of the semester.

There are many causes of stress and these range from minors such as noise, thinking and day to day activities³ to the major ones such as too many assignments,

competition within a chosen field, failure, financial worries about school, inadequate resources to perform academic work, overcrowded hall, poor relationship with other students or lecturers, inadequate classroom, bad conditions of university hostels, long walk to school, etc^{4, 5, 6}.

Other sources of stress include the ever increasing rate of student enrolment without accompanying support facilities, lack of adequate counseling programmes⁷, poor welfare programmes (power failure, absence of pipe borne water for the students, non-provision of Iran spoliation system, etc), poor time management and study habit skills, poorly planned orientation and character development programmes and poor health programme⁸.

Stress is generally classified into acute and chronic stress depending on the duration of exposure⁹. Acute stress is the stress that last for a period of minutes to hour and chronic stress persists for several hours to weeks or months. However, stress is also classified on the basis of stressors as physical/environmental, emotional/psychological¹², and mental stress. Examination can induce both menial and psychological stress¹³. However, in Nigerian universities and many other developing countries especially in Africa students experience all these three types of stress; Physical stress from poor infrastructures in the schools, increased anti-social vices, unconducive learning environment. Emotional stress from a broken home, non-caring father or mother, death of a loved one etc. menial stress from accumulated class work due to incessant industrial break, courses that are supposed to be thought in fifteen weeks are thought in a less time.

Stress produces definable mental and physiological reaction in the body¹⁴. Mild stress is beneficial in cognitive last and performance but persistently high stress lead to neuropsychiatric illness like anxiety and depression. Examination acts as a stressor and activate hypothalamic pituitary adrenal axis causing increase in cortisol level¹⁵. When stress is perceived negatively or become excess, it can affect both health and academic performance⁶. Mark et al.¹⁴ and Serkan et al.¹⁵ in two separate studies reported that stress induce elevation in the plasma cortisol level. The stress levels are different among university students and also different between male and female¹⁶. Medical education is perceived as being stressful with negative effects on student's menial health. However, few studies have addressed the influence of

gender on stress in Medical students. Research findings suggested that male students feel stronger stress from family factor than female ones¹⁷. Among other effects, the human Glucocorticoid cortisol is able to permeate the blood-brain barrier, where it influences the activity of the central nervous system by activating central corticosteroid receptors¹⁸.

The production of Reactive Oxygen Species (ROS) and reactive nitrogen species (RNS) is the major effect of this immune-endocrine interaction in stressful situations. The ROS damages vital biological system by forming oxidative modified biomolecule (protein, lipids, and nucleic acids) through peroxidation of lipids^{19, 20}. This oxidation distorts the organization and the relationship in molecules and this forces living organism to develop antioxidant defense system.

Materials and Methods

This study recruited 80 students of Nnamdi Azikiwe University (NAU), Nnewi Campus, between the ages of 21-26 years. Forty of these students were writing examinations and they served as test group while control group (n=40) were also recruited randomly from among students not writing any examination. Questionnaire was administered to all the participants in order to obtain information concerning their age, sex-lifestyle, duration of study, level of study and some other information as regards difficulty encountered in course of study. Based on the information gathered from the questionnaire, the participants were further sub-grouped into two groups.

(i) Group one (Outstanding academic activity): These are the participants who were repeating class, had failed courses to write, reduction on the amount of time spent on studies, accomplished less than they would, had difficulty in understanding and had examination on a regular basis, (n-24)

(ii) Group two (No outstanding academic activity): These are the participants who were not repeating class, had no failed courses to write, had no reduction on the amount time spent on studies, accomplished more than they would, had no difficulty in understanding and had examination on a regular basis (n=16).

Inclusive and Exclusive Criteria

Only students who are writing examinations were

recruited as test group. Those on hormone therapies, psychotic drugs or with diagnosed endocrine disorder were excluded from the study. Also those who are addicted to substances such as alcohol, cigarettes, and females on their menstrual period excluded.

Sample Collection

Venous blood (5ml) was collected from the test group and the control group between 6:30am to 8:30am. After the examination, another sample was collected from the test group between 11:00 am to noon. The 5ml was dispensed into a plain container was allowed to clot and retract and separated using a centrifuge. The samples were stored frozen (-20°C) until the time of analysis. The samples were analyzed for cortisol, progesterone and total antioxidant.

Methods

Cortisol and progesterone estimation were done using Enzyme Linked Immunosorbent Assay by Foster and Dunn,²¹ and Voller et al.²² respectively.

Total Antioxidant status was estimated using colorimetric method by Koracevic et al²³.

Results

The effect of examination on serum concentrations of cortisol, progesterone and TAS

The mean serum cortisol and progesterone levels showed an inverse pattern, cortisol was highest in the pre examination group and lowest in the control group while progesterone was lowest in the pre examination group and highest in the control group and when compared between the groups was statistically significant ($p < 0.05$). Also, the mean serum level of TAS was significantly higher in control group and lower in pre examination group and when compared between the groups ($p < 0.05$) (Table 1).

Sex distribution of the effect of examination on serum concentrations of cortisol, progesterone, and total antioxidants status

The mean serum cortisol was highest in the pre examination group and lowest in post examination group in both male and female participants and when compared between the groups was statistically significant ($p < 0.05$). The mean serum total antioxidant status was low in both male and female in the pre examination groups

and highest in both male and females in control groups, the serum TAS when compared between the groups was statistically significant ($p < 0.05$) (Table 2).

The effect of Out-standing academic activity and No out-standing activity on the biochemical parameters pre-examination

The mean serum cortisol was highest in participants with out-standing academic activity compared to those without outstanding academic activity but was not statistically significant ($p > 0.05$). Also, the mean serum progesterone was lowest in participants with out-standing academic activity compared to subjects without out-standing academic activity but when compared between the groups was not statistically significant ($p > 0.05$). Mean serum TAS in the two groups were almost the same ($p > 0.05$) (Table 3).

Correlation of cortisol in pre- and post-examination

A weak negative insignificant correlation in cortisol was shown in pre- and post-examination while serum concentrations of progesterone and total antioxidant status showed a weak positive insignificant correlation ($p > 0.05$).

Correlation of cortisol pre- and post-examination in both the males and female students

A weak negative insignificant correlation in cortisol was observed in pre- and post-examination in both the males and females participants ($P > 0.05$), while the pre- and post-examination total antioxidant status in males and females show weak positive and yet insignificant correlation ($P > 0.05$). The pre- and post-examination serum progesterone in the males was also found to be insignificantly correlated ($P > 0.05$). The correlation analysis carried out between the post-examination cortisol and post-examination antioxidant status in the males yielded a negative insignificant correlation ($P > 0.05$). The serum concentration of progesterone when correlated with the total antioxidant status post examination showed a weakly positive insignificant correlation ($P > 0.05$). The mean serum concentrations of pre examination cortisol and pre-examination progesterone showed a strong negative correlation ($p < 0.05$). There were no significant correlation in other parameters compared ($p > 0.05$).

Table 1: Biochemical parameters in Pre and Post examination

Group	Cortisol(ng/ml) n=40	Prog (ng/ml) n=24	TAS (mmol/l) n=40
Control (A)	20.40±9.02	1.28±0.70	1.65±0.12
Before Exam (B)	34.84±8.50	0.42±0.32	0.97±0.05
After Exam (C)	21.18±14.53	0.92±0.96	1.02±0.32
F- value	21.152	7.218	405.281
P- value	< 0.001*	0.002*	<0.001*
A/B	< 0.001*	<0.001*	<0.001*
A/C	0.756	0.117	<0.001*
B/C	< 0.001*	0.025*	0.053

Prog-progesterone, TAS- total antioxidant status,* the mean difference is

significant at 0.05 level.

Table 2: Serum cortisol progesterone and TAS before and after examination

Groups	n	Cortisol (ng/ml)	Prog (ng/ml)	TAS (mmol/l)
Control Male (A)	24	18.67±8.45	1.28±0.70	1.63±0.11
Control Female (B)	16	22.63±9.48		1.68±0.14
Pre Exam Male (C)	24	37.70±7.59	0.42±0.32	0.97±0.06
Pre Exam Female (D)	16	31.13±8.35		0.98±0.03
Post Exam Male (E)	24	19.49±14.01	0.92±0.96	1.00±0.03
Post Exam Female (F)	16	23.35±15.30		1.06±0.16
F- value		9.879	7.218	164.283
P-value		<0.001*	0.002	< 0.001*
A/B		0.262		0.263
A/C		<0.001*	<0.001	<0.001*

A/E	0.804	0.117	<0.001*
B/D	0.025*		<0.00*
B/F	0.848		<0.00*
C/D	0.064		0.821
E/F	0.274		0.122
C/E		0.025*	

Prog-progesterone, TAS- total antioxidant status, * the mean difference

is significant at 0.05.

Table 3. Biochemical Parameters of Students with/without Out-standing Academic Activity before Examination

Parameter	Outstanding Academic activity n=24	No outstanding academic activity n=16	T -value	P- value
Cort (ng/ml)	39.54±6.70	34.67±8.06	1.96	0.057
Prog (ng/ml)	0.39±0.20	0.52±0.42	-0.920	0.368
TAS(mmol/l)	0.98±0.03	0.96±0.08	1.20	0.236

Cort- cortisol, Prog -progesterone, TAS-total antioxidant status.

Table 4. Correlation coefficient between cortisol, progesterone and total antioxidant status

Parameters	n	r-value	p-value
Pre cortisol Vs Post cortisol	40	-0.051	0.753
Pre prog vs Post prog	24	0.053	0.807
Pre TAS vs Post TAS	40	0.159	0.326

TAS = total antioxidants status, - = negative correlation

Table 5: correlation coefficient between sex distributions

Parameter	Male (n= 24)		Female (n= 16)	
	r-value	P-value	r-value	P-value
Pre cortisol vs Post cort	-0.139	0.517	-0.123	0.650
Pre prog vs post prog	-0.038	-0.862	-	-
Pre TAS vs post TAS	0.100	0.643	0.080	0.768
Post cort vs post TAS	-0.253	0.233	-0.281	0.298
Post prog vs post TAS	0.030	0.889	-	-
Pre cort vs pre prog	-0.468	0.021*	-	-
Pre cort vs post prog	0.223	0.294	-	-
Pre cort vs pre TAS	0.199	0.351	-	-
Pre cort vs post TAS	-0.245	0.248	-0.274	0.305

P value is significant of $P < 0.05$, *-significant, - =negative correlation, n=40,

Prog -progesterone, TAS-total antioxidant status, cort-cortisol.

Discussion

Stress is a mental or emotional strain resulting from a very demanding circumstance. In recent years, traumatic episode and poor results following school examinations have made stress an issue of major concern in academic. This study evaluated the effects of examination on students in relation to serum concentrations of cortisol, progesterone, and total antioxidants status. In the findings of this study, pre-examination serum concentration of cortisol was found to be higher in examinees when compared to the non-examinees. This reveals the stress which accrued during the preparations for the examination. The significant decline in cortisol level post-examination when compared to the pre-examination cortisol level suggests a relief in mental stress. This further buttresses the fact that examination can induce stress. It has been reported that stress influences the activity of the hypothalamic pituitary adrenal axis and consequently increase the serum cortisol level²⁴. Cortisol is increased in stress and it is a mediator of stress response

because adrenalectomised animals and patients with Addison syndrome lure poorly when stressed²⁵. Vaidya and Mulgaonkar,²⁶ also found increased level of stress and anxiety among first year medical students and they found academic pressure to be responsible for this. Several research works have shown increased levels of cortisol secretion in response to academic stressors or laboratory stressors^{27, 28}. However, Patricia et al,²⁹ in their study observed lower levels of cortisol during examination stress while Larson et al,³⁰ reported no difference in plasma cortisol before, during and after examination. Cortisol affects and enables the coordination of the brain and body functions involved in coping with a stressor³¹. Lecker et al,³² suggested in their study that elevated levels of cortisol if prolonged can lead to proteolysis and muscle wasting. When sex distribution was considered, there was no statistical difference observed. Earlier work published by Verma et al,³³ on the effect of gender difference on cortisol response and Ennis et al,³⁴ reported that while cortisol increased in men anticipating an examination, it

decreased in women. However, the correlation analysis carried out between the pre- and post- examination cortisol level was found to be insignificant both in male and female examinees. The serum cortisol level was found increased in students with out-standing academic activities when compared with students without outstanding academic activities, but insignificant. Imam et al,³⁵ reported increased serum cortisol level with an increase in the intensity of perceived examination stress. A negative correlation was observed between serum concentrations of cortisol pre-examination and progesterone pre-examination. This could be adduced that the decrease in progesterone level leads to increase in cortisol level as a result of examination induced stress. During stress, progesterone secretion is inhibited to conserve energy for the imminent stress response³⁶.

A significant decrease in serum progesterone level was observed in the examinees pre-examination when compared with the control subjects. "This could be linked to stress which developed in the course of the preparation for the examination. The significant increase in progesterone level post examination level further fingers stress as a possible factor that may have lead to the decrease in progesterone level and suggest that progesterone may play a crucial role in regulation of the activities of stress system. Evidences from both human and animal studies suggested that progesterone modulates response to stress. In laboratory animals, plasma levels of progesterone are elevated alter acute stressors³⁷. In human, stress induces increase in progesterone and allopregnenolone^{38,39}. Onyenekwe et al,³⁶ reported a similar finding and further suggested that the decrease in pre-examination progesterone which returns after examination may be to restore homeostasis or due to gradual setting-in of pregnenolone steal phenomena or even due the fact that cortisol and progesterone compete for a common receptor in the cells resulting to impairment in the progesterone activity. The adrenal secretion of progesterone is increased in response to stress, and progesterone secretion by the adrenal glands can become comparable to that of the ovaries in stressed rats⁴⁰. Studies have shown evidence of neuroprogesterone synthesis by neurons and Schwaan cells in the peripheral nervous system⁴¹. The role of progesterone in attenuating the stressed induced increases in ACTH has been reported⁴². According to Sanchez et al,⁴³ there is increase in enzyme that converts progesterone to allopregnanolone. In another study, Crowley and Girdler,⁴⁴ reported the role of

progesterone and its metabolites in restoration of the activity of the hypothalamic pituitary adrenal axis after a stressor. Our findings support the idea that progesterone and possibly its metabolites such as allopregnanolone and pregnanolone play a role in recovery from stress⁴⁴. Stress response is crucial for survival and must be readily activated, but must also be limited in duration to avoid harmful effects⁴⁵. The role of neuroactive steroids in the regulation of the activity of stress systems has been reported⁴⁴. Childs and colleagues⁴² reported that progesterone (50mg and 100mg) attenuated stress induced increase in alertness, arousal and negative mood. Progesterone attenuated stress-induced increases in anger and frustration and promoted recovery from negative mood changes after stress. Lovick⁴⁶ reported that progesterone decreases anxiety-like behaviors. When the pre-examination progesterone level was compared to post-examination progesterone level, an insignificant correlation was observed. The serum concentration of progesterone in the subjects with outstanding academic activity was found to be lower than that found in subjects without out-standing academic activity but not significant. The latter, could be connected to the effect of stress on mental performance. Noreika et al,⁴⁷ found that individual differences in levels of progesterone and its metabolites were correlated with subjective measures and performance in cognitive task; these results suggest that progesterone may preferentially play a role in psychological or subjective responses to stress in humans.

This study showed a significant decrease in the total antioxidant level in the pre examination group. And, when gender distribution was considered, there was no significant difference observed. This finding of decreased total antioxidant status is an indication that examination can induce oxidative stress. Similarly our data of decreasing antioxidant level before examination is in accord with results published by Sivonova et al,⁴⁸ Irie et al^{49, 50} reported an increase in oxidative damage to DNA during the presumed psychological stress before examination. Legard et al,⁵¹ studied an influence of different life style factors on this lest system which measured the resistance of red blood cells to an oxidative challenge, their study showed that psychological stress is a major factor influencing antioxidant status. A similar conclusion was reached by Chalmer

et al.⁵² However; decreased antioxidant capability may be caused by the depletion of antioxidant as a result of oxidation. During psychological stress, increasing circulating level of catecholamine which is a source of reactive oxygen species may play a role in decreasing antioxidants level^{48, 53}. Free radical mediated damage has been incriminated in aging and in the genesis of many chronic diseases such as cancer, cardiovascular diseases, diabetes, and inflammatory diseases⁵⁴. Young and Woodside,⁵⁵ and Xu,⁵⁶ suggested that the classical antioxidant molecule such as vitamins E, C, and A, flavonoids and other phenolic compounds contained in fruits and vegetables play important roles in enhancing plasma antioxidant capacity of humans

Conclusion

The increase in serum concentrations of cortisol and decrease in serum progesterone highlights the tendency of examination to induce stress. The decrease in antioxidants level in students is an indication of oxidative stress. With constant effect resulting from examination conditions, oxidative stress could lead to oxidative damage if not checked. It is pertinent to reduce examination induce stress by increasing the interval between examinations. This will help to prevent eases of oxidative stress culminating the oxidative damage. Further longitudinal studies are required to determine the effect of examination induced oxidative stress in University students.

Ethical Clearance : Ethical approval was obtained from Ethics Committee of Faculty of Health Sciences and Technology, Nnamdi Azikiwe University Nnewi Campus. The participants gave informed consents and no monetary inducement was made to the participant.

Conflict of Interest – NIL

Source of Funding- Self

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Fall Injury and Socio-Demographic Characteristics among House Hold in Ethiopia

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Abstract

Background: Fall injuries are a public health problem throughout the world including Africa. Studies in Ethiopia are health facility-based and do not reflect the communities. Therefore, the aim of this study is to assess association between fall injury and socio-demographic characteristics among house hold in Ethiopia.

Methods: The study was based on the Ethiopian Demographic and Health Survey conducted in 2016. The survey collected information about injuries in the past 12 months among 16,650 households. Households were selected using stratified cluster sampling procedure. Data were collected using a standard interview questionnaire from January 18, 2016 to June 27, 2016. Descriptive statistics and binary logistic regression analyses were used to characterize the data and to identify the factors associated with fall injuries, respectively.

Result: A total of 16,650 (98%) heads of household participated in the study with 152 reported at least one household member injured from a fall in the past 12 months. Among household members who were involved in a fall, 95.4% survived and 5.6% died. Selected socio-demographic characteristics: Household head sex [OR: 1.53, 95% CI (1.05-2.15)], age [OR: 2.4, 95% CI (1.28-4.63)], marital status [OR: 8.14, 95% CI (1.05-63.15)]; family size [OR: 1.93, 95% CI (1.27-2.93)], owns land usable for agriculture [OR: 1.60, 95% CI (1.14-2.27)], owns livestock herds [OR: 1.46, 95% CI (1.02- 2.08)] and household wealth index [OR: 1.77, 95% CI (1.11-1.95)] were variables statistically significant with the fall injury.

Conclusion: Household head characteristics including family size, agriculture-asset and wealth index were variables statistically significant with the fall injury. Injury prevention efforts should focus on falls with special attention among farmer households and low economic status.

Keywords: Falls, Unintentional Injury, Head of Household, Ethiopia.

Introduction

An estimated 646,000 fatal falls occur each year, making it the second leading cause of death after road traffic injuries globally. Over 80% of fall-related fatalities occur in low and middle income countries⁽¹⁾.

Health facility based studies in Ethiopia indicate blunt assault as the most common mechanism of

injury followed by road traffic crashes^(2, 3). These studies revealed mechanisms and associated factors that do not reflect fall injury information among communities. Additionally, individuals injured in falls might not seek health facility care. In Ethiopia, well organized population-based data is scant^(4, 5). Therefore, the aim of this study was to assess the association between fall injuries and household socio-demographic characteristics.

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Materials and Methods

This study was conducted based on readily available

Ethiopian Demographic and Health Survey (EDHS) 2016 data with no sample size estimation for the current study. The household datasets of the EDHS 2016 survey were downloaded from the EDHS Program website in SPSS format ^(6, 7). The analyzed dataset is available from: <https://dhsprogram.com/Data/>.

The EDHS data were collected from January 18, 2016 to June 27, 2016 using standardized and pretested questionnaires. Households were selected from nine regions and two city administrations in Ethiopia using stratified cluster sampling procedures ⁽⁸⁾.

Injuries were assessed by asking the head of household whether any child or adult in the household was killed or injured in the past 12 months by any mechanism resulting in the victim or caregiver not being able to carry out their normal activities for at least a day. In addition, information about the mechanism, length of injury, severity of injury (fatal or not), characteristics of the victim (age, sex), were explored.

Socio-demographic characteristics: head of household sex, age, education, marital status, family size, residential place, agriculture related asset and household wealth index were assessed. The wealth index was given scores based on the number and types of consumer goods they own, properties ranging from a television to a bicycle or car, source of drinking water, toilet facilities, and house flooring materials. These scores were derived using principal component analysis. Association between fall injury and selected socio-demographic characteristics was determined using binary logistic regression analyses and the outputs were provided using odds ratio (OR) with the respective 95% confidence interval (CI). The data were analyzed using SPSS version 20.

Ethical Considerations

The EDHS 2016 study was ethically cleared by the National Research Ethics Review Committee, Ministry

of Science and Technology of Ethiopia. Data were collected after obtained informed consent from the respondents prior to participation ⁽⁸⁾.

Results

Socio-demographic characteristics of participants

Of the 17,067 occupied households, 16,650 household heads (respondents) were successfully interviewed, yielding a response rate of 98%. Weighted sample distributions showed that 68.6% of the households were from rural areas while the remaining 31.4% were from urban areas.

The majority of respondents (68.5%) were men. The mean (\pm SD) age of the respondents was 44.2 (\pm 16.2) years. About half (52.4%) of the respondents had no formal education and very few (9.5%) had attained a higher level of education. The median (inter-quartile range) of household size was 4 (3-6).

Fall injuries among households

Among participants, 152 reported at least one household member injured from a fall in the past 12 months. In addition to falls, the survey collected information about the occurrence of other unintentional injuries in the same reference period. Fall injuries were the most common form of injury (33.2%). The other frequent causes of injury were road traffic accident (21.0%), violence/assault (14.1%), burns (10.5%), bite or kick by animals (5.5%), drowning and poisoning (2.2%). Falls contributed to 9% fatalities of all mechanisms of injury among injured households' members. Among household members who were injured in the past 12 months, 145 (95.4%) survived and 7 (4.6%) died. With respect to length of time, 61(42.2%) injured persons or their caregivers at home were unable to do their daily activities for more than one month (Table 1).

Table 1: Proportion of injury among affected household member in Ethiopian, EDHS 2016.

Injury status (n=152)	Frequency	Percent
Fall injury by sex		
Male	99	65.1
Female	53	34.9
Injury by Age		
0-14	48	31.6
15-24	18	11.8
25-34	14	9.2
35-44	20	13.2
45-54	19	12.5
55-64	15	9.9
64+	18	11.8
Length of time away from daily activities (n=145)		
< 8 days	30	20.7
8 to 30 days	51	35.2
31 day to 6 months	43	29.7
> 6 months	18	12.4
Don't know	3	2.1
Fall injury by place		
Urban	41	27.0
Rural	111	73.0
Fall injury by region		
Tigray	20	13.2
Afar	3	2.0
Amhara	29	19.1
Oromia	25	16.4
Somali	2	1.3
Benishangul	16	10.5
SNNPR	13	8.6
Gambela	7	4.6
Harari	6	3.9
Addis Adaba	16	10.5
Dire Dawa	15	9.9
Injury by household wealth index in quintile		
Lowest	29	19.1
Second	35	23.0
Middle	22	14.5
Fourth	19	12.5
Highest	47	30.9

Socio-demographic factors associated with injury

Selected socio-demographic characteristics: Household head sex, age, marital status, family size, owns land usable for agriculture, owns livestock and household wealth index were variables statistically significant with the injury (Table 2).

Table 2: Association between socio-demographic factors and injury among household heads in Ethiopia, EDHS 2016

Variable name	Injury status (n= 16650)		p-value	Crude OR (95% CI)
	Yes (%)	No (%)		
Sex of household head				
Male	117(1.0)	11296(99.0)	0.026*	1.53(1.05-2.24)
Female	35(0.7)	5202(99.3)		1
Age of household head				
15-29	15(0.4)	3347(99.6)		1
30-64	112(1.0)	10860(99.0)	0.002*	2.3(1.34-3.95)
>64	25(1.1)	2291(98.9)	0.007	2.4(1.28-4.63)
Marital status of household head				
Never married	1(0.1)	1045(99.9)		1
Married	118(1.0)	11946(99.0)	0.02*	10.3(1.44-74.0)
Widowed	22(1.0)	2086(99.0)	0.02*	11.0(1.48-81.9)
Divorced	11(0.8)	1412(99.2)	0.05*	8.14(1.05-63.15)
Education level of household head				
No education Preschool	76(0.9)	8650(99.1)	0.48	1.25(0.66-2.36)
Primary	52(1.1)	4606(98.9)	0.15	1.61(0.84-3.09)
Secondary	13(0.8)	1673(99.2)	0.80	1.11(0.49-2.48)
Higher	11(0.7)	1569(99.3)		1
Type of residence				
Urban	41(0.8)	5191(99.2)		1
Rural	111(1.0)	11307(99.0)	0.23	1.24(0.87-1.78)

Family size in household				
<4	45(0.7)	6413(99.3)		
4-5	47(0.9)	4953(99.1)	0.15	1.35(0.89-2.04)
5-6	17(0.9)	1953(99.1)	0.45	1.24(0.71-2.17)
>6	43(1.3)	3179(98.7)	0.00*	1.93(1.27-2.93)
Owns land usable for agriculture				
Yes	103(1.1)	9344(98.9)	0.00*	1.6(1.14-2.27)
No	49(0.7)	7154(99.3)		1
Owns livestock herds/farm animals				
Yes	109(1.0)	10469(99.0)	0.036*	1.46(1.02-2.08)
No	43(0.7)	6029(99.3)		1

Wealth index in quintile				
Lowest	29(0.6)	4647(99.4)	0.18	0.73(0.46-1.16)
Second	35(1.5)	2313(98.5)	0.01*	1.77(1.14-2.75)
Middle	22(1.1)	2035(98.9)	0.36	1.27(0.76-2.110)
Fourth	19(0.9)	2001(99.1)	0.70	1.11(0.65-1.99)
Highest	47(0.8)	5502(99.2)		1

*p-value less than 0.05

Discussion

A total of 152 respondents reported at least one household member injured from a fall out of 16,650 total household heads surveyed. Out of the total injured household number, males were more affected than females in the study. It is similar to other injury studies from different countries (2, 3, 9-13). The reason might be due to male involvement in risk taking behaviors and social interactions, which are highly correlated with injuries (14-17). Fall injuries were highest among children aged 1-14 years. This may be due to risk taking activities and the lack of parental supervision at home for young

children (18-23).

Among household members who suffered an injury in the past 12 months, 95.5% survived and 4.6% died. This finding indicates that fall injuries result in a higher proportion of injury death when compared to other mechanisms of injury in Ethiopia (four hospitals in Addis Ababa ; < 1%) (24) and Kenya (Provincial General Hospital ;1%) (9).

Among household heads age group of 30-64 years and greater than 64 years have more than twice the odds of fall injury as compared to 15-29 years. This might

be due to a larger family size among age group of 30-64 years in a single home might compromised parental care practice compared with 15-29 years age group. It is explained by family characteristic study that large family size is one of the predictor for injury⁽²⁵⁾. In addition; the current study revealed that households with more than six family members have greater odds of injury than households with less than four members. This result is consistent with other injury studies among children^(25, 26). It might be due to household crowding life condition⁽²⁶⁾. Households with individuals more than 64 years of age might be more affected by fall injury. Falls among those over 64 years might be due to decreased muscle strength, disease and behavioral related problem and problems sleeping^(27, 28).

Marital status of household head was a potential predictor for injury. It might be due to those married, divorced and widowed household heads might have more family members compared with single individuals. Additionally, divorced and widowed household heads might suffer from varying psychological stressors⁽²⁹⁾. These conditions might compromise the safety practice to prevent injury among household heads⁽³⁰⁾.

Households that own land or livestock had higher odds of injury than households that do not possess such assets. This indicates that farming occupations have association with the occurrence of fall injury due to higher occupational risks. This finding is in line with other health facility-based injury studies from the country^(3, 31).

Injury was more common among individuals from household of the second-tier wealth index compared with highest tier. Different injury studies indicate low socioeconomic status as a risk factor for the occurrence of injury^(12, 26, 32, 33). However, this current study found that the lowest wealth index was not a factor. The inconsistency might be due to criteria while computing the wealth index among studies.

This study had its strengths and limitations. The study is population-based and used large data from valid nationally representative information. Such information has not been frequently presented in previous studies in Ethiopia. However, the study data were from household heads and investigation resulted from self-reported data. Also, the study only assessed the socio-demographic

factors of fall injury and did not explore more about household members' risky behaviors and other personal characteristics. Finally, we recommended further study, particularly using case-control design to explore more evidence on determinant factors associated with fall injury in the community.

Generally, household head characteristics, family size, agriculture-related asset and household wealth index were variables statistically significant with the fall injuries. Injury prevention efforts should focus on fall prevention efforts with special attention among farmers and low economic status.

Data Availability

The datasets used and/or analyzed during the current study available from: <https://dhsprogram.com/Data/>.

Conflicts of Interest: The authors declare no conflicts of interest.

Funding statement : Not applicable

Acknowledgment : We would like to acknowledge the DHS for making the Ethiopia EDHS 2016 dataset accessible for use.

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Effectiveness of Targeted Health Education with Focus on Knowledge and Practice among Hospital Sanitation Workers designated in Isolation Wards as Part of the Pandemic Preparedness for COVID-19

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Abstract

Context: Hospital sanitation workers are at the frontlines of the global crisis caused by COVID-19 and face the challenge of lack of awareness about the disease and methods of protecting themselves and others from getting infected. A targeted health education intervention was conducted among them on knowledge and practice regarding basic epidemiology, clinical features and prevention of COVID-19.

Aim: To evaluate effectiveness of targeted health education intervention with focus on knowledge and practice regarding COVID-19 pandemic among hospital sanitation workers

Settings and Design: Quasi-experimental one group pre test, post test design

Methods and Material: Study was done among 46 hospital sanitation workers using structured questionnaire covering demographic variables, knowledge on the basic epidemiological characteristics, clinical features and practice on the prevention of COVID-19. After obtaining informed consent, pre-test was conducted and a targeted health education was given. On the 3rd day, post-test was conducted using same questionnaire. The mean pre and post test scores were calculated and difference between the scores was analyzed.

Statistical analysis used: Data was analyzed using SPSS version 25. Demographic information was tabulated using descriptive statistics. The difference between the mean pre test and post test scores was analyzed using paired t test.

Results: The mean pre test score was 9.39 ± 1.5 , with 35(76%) having good and 11(24%) poor pre test scores. Those in the age group 36-45 years had significantly higher pre test scores compared to other age groups ($p=0.03$). The mean post test score was 10.6 ± 1.13 . There was a statistically significant improvement in the post test scores of the study subjects ($p=0.001$). Hence, the targeted health education intervention was effective in improving the knowledge and practice of hospital sanitation workers regarding basic epidemiology, clinical features and prevention of COVID-19.

Conclusions: Given the heightened vulnerability of hospital sanitation workers to nosocomial infections, all health care institutions should integrate targeted health education intervention into their epidemic response plan.

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Key-words: COVID-19, targeted health education, hospital sanitation workers, pandemic

Introduction

An acute respiratory disease, caused by a novel

coronavirus; “The Coronavirus Disease 2019” (COVID-19), first emerged in December 2019 in Wuhan, the capital of Hubei Province in China and the disease continues to spread globally. On 30th January 2020, World Health Organization (WHO) officially declared the COVID-19 epidemic as a public health emergency of international concern and on 11th March 2020, the disease was declared a pandemic. As of 24th April 2020, more than 2.27 million cases of have been reported in more than two hundred countries and territories, resulting in over 193,000 deaths. More than 760,000 people have recovered from the disease so far¹.

The virus that causes COVID-19 is named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and its emergence marked the introduction of a highly pathogenic and pandemic coronavirus into the human population in this century. COVID-19 spreads from person to person by droplets and contact. The most common symptoms of COVID-19 are fever, tiredness, cough, sore throat. Some patients may have breathing difficulty, loss of smell, runny nose, or diarrhea². Some people become infected but don't develop any symptoms and most people (about 80%) recover from the disease without requiring special treatment and care.

Research into treatment and vaccine development for COVID-19 is ongoing, but are several months away. At the same time, there is intense pressure on the global health care workforce who battle in the frontline, including doctors, nurses, paramedical staff and other health care staff in hospitals. This potentially overwhelming burden of illness poses great stress on the capacity of the health system and also there is risk of infection to the health care staff. Figures from China's National Health Commission show that more than 3300 health-care workers have been infected as of early March and, by the end of February at least 22 had died. In Italy, 20% of responding health-care workers were infected, and some have died³. Transmission to the family members of these health care workers is also widely reported from both symptomatic and asymptomatic individuals. This highlights the urgent need for prevention of cross infection, which requires careful preparedness, extreme vigilance, active management and protection of the frontline health care staff.

Among the hospital staff, the sanitation workers are the often overlooked group of people at the frontlines of the global crisis caused by COVID-19. They put their lives at risk every day and play a critical role in preventing the spread of the virus, by ensuring the hospital wards including the isolation wards, theatres, outpatient departments and hospital toilets are kept clean and hygienic. They are often forced to work in unprotected and stigmatized environment and their contribution often goes unappreciated. Sanitation workers are at high risk like the medical professionals and the community health workers who deal with COVID-19 patients. One of the biggest challenges they face is lack of proper awareness about the various aspects of the disease and methods of protecting themselves and others from getting infected with COVID-19. As health care professionals, it is our duty to equip our hospital sanitation workers by keeping them adequately informed and providing appropriate training to them regarding COVID-19, including the basic epidemiology, signs and symptoms, measures to protect themselves from contracting infection while taking care of patients.

With the above objective, a targeted health education intervention was conducted on knowledge and practice regarding basic epidemiology, clinical features and prevention of COVID-19 among the hospital sanitation workers in our institution.

Objective

To evaluate the effectiveness of targeted health education intervention with focus on knowledge and practice regarding COVID-19 pandemic among hospital sanitation workers

Methodology

The purpose of this interventional study was to obtain hospital sanitation workers' general awareness and practice regarding the basic epidemiology, clinical features and prevention of COVID-19 and to evaluate the effectiveness of targeted health education intervention on the same. The questionnaires were distributed before the health education session and the participants were told to tick the correct answer from given options. The item generation pool of the questionnaire was based on the following areas: Personal information; current knowledge regarding the basic epidemiology and clinical

features and practice on prevention of COVID-19.

We used a quasi-experimental one group pre test, post test design and was carried out in March 2020. The study population consisted of 46 hospital sanitation workers who were assigned to be posted for duty in the proposed isolation ward for taking care of COVID-19 patients/suspects. The inclusion criteria were age between 18-55 years, those who were able to read & write in the local language, Malayalam. The study tool consisted of a structured questionnaire with questions on demographic variables, knowledge on the basic epidemiological characteristics, clinical features and practice on the prevention of COVID-19. The content validity of the tool was assessed by epidemiologist and faculty of the department of community Medicine in our institution and the item level CVI (Content validity index) was found to be 0.8. The reliability of structured knowledge questionnaire was calculated using Kuder Richardson 20 (KR20) and it was found to be 0.75.

Data collection and study procedure

After obtaining informed consent from the participants, pre-test was conducted by using the structured questionnaire and a targeted health education session was given to them. The sessions were conducted by dividing the study group into four batches for ensuring social distancing in view of the COVID-19

outbreak. On the 3rd day, a post-test was conducted using the same questionnaire. For each individual category/ domain, descriptive statistics were used to find out the percentages of respondents for multiple choice questions and yes/no type responses. For questions on awareness about COVID-19, each correct answer, a score of 1 is given and score 0 was given to the wrong answer. Total score was calculated by summing up the scores for each participant. The cut-off cumulative score of 75% (9 points out of 12) was arbitrarily chosen for categorization of good and poor scores. The awareness levels were categorized as good if the score is ≥ 9 and poor if the score is below 9.

Data was analyzed using SPSS version 25. During data analysis, demographic information was tabulated using simple descriptive statistics such as frequencies, percentages, mean and standard deviation. The mean of pre and post test score were calculated and the difference between the scores was analyzed using paired t test.

Results

All the participants, (n=46) were working as hospital cleaning staff. The mean age of the study population was 45 ± 7.6 years. Majority, 18(39.1%) of them were in the age group 36-45 years. The distribution of study participants according to socio-demographic variables is shown in Table 1.

Table 1: Distribution of study participants according to socio-demographic variables

Sociodemographic variables	Frequency	Percentage
Age		
<35	15	32.6
36-45	18	39.1
46-55	13	28.3
Educational status		
Below Secondary	34	73.9
Secondary & above	12	26.1

Socioeconomic status		
Below poverty line	30	65.2
Above poverty line	16	34.8
Duration of working in the hospital setting		
<5 years	19	41.3
≥5 years	27	58.7

The mean pretest score of the study population was found to be 9.39 ± 1.5 . Among the study subjects, 35(76%) had good pretest score and 11(24%) had poor pretest score.

Fig:1: Distribution of study subjects according to their pretest scores.

Those who are in the age group 36-45 years had good knowledge and practice regarding COVID-19 as compared to the other age groups before the health education session. Table 2 shows age-wise comparison of the pretest scores of the study subjects.

Table 2: Age-wise comparison of pretest scores of the study subjects

Age(years)	N	Pretest score		p value
		Mean	SD	
<35	15	9.67	1.45	0.03*
36-45	18	9.72	1.64	
46-55	13	8.62	1.19	

Majority of the study subjects had a good knowledge regarding the basic epidemiology and clinical features of COVID-19, with 87% of them giving correct answers to questions about basic epidemiology and clinical features of the disease. Only 70% of them gave correct responses to questions regarding prevention of COVID-19. Comparison between the age groups and the mean pretest scores was done using ANOVA. Those who are

in the age group 36-45 years were found to have better pretest scores compared to the other age groups, and this difference was statistically significant (p value 0.03). Other socio-demographic variables such as educational qualification, socioeconomic status and years of work experience in hospital setting did not have any association with their knowledge and practice regarding COVID-19 (Table 3)

Table 3: Association between knowledge scores and selected demographic variables

Sociodemographic variables	Pretest score		Chi square value	p value
	Good	Poor		
Age				
<35	13	2	2.46	0.29
36-45	14	4		
46-55	8	5		
Educational status				
Below Secondary	24	10	2.16	0.14
Secondary & above	11	1		
Socioeconomic status				
Below poverty line	20	10	0.08	0.7
Above poverty line	15	1		
Duration of working in the hospital setting				
<5 years	13	6	1.04	0.3
≥5 years	22	5		

The mean post test score of the study subjects was 10.6±1.13. The difference between the pre and post test scores of the study group was analyzed using paired t test. Table 4 depicts that the mean pretest score of study population was 9.39±1.51 and mean post-test score was 10.57±1.13 with the mean difference at 1.17. The computed t value (6.97) was found to be statistically

significant at 0.05 level of significance; from which it can be inferred that the targeted health education intervention was effective in improving the knowledge and practice of hospital sanitation workers regarding basic epidemiology, clinical features and prevention of COVID-19.

Table 4: Comparison of mean pretest and post test scores of study subjects

Scores	N	Mean	SD	Mean Difference	t value	p Value
Pre test score	46	9.39	1.51	1.174	6.97	<0.001*
Post test score	46	10.57	1.13			

Fig 2 shows the distribution of study subjects according to their pretest and post test scores. Before the session, 35(76%) had good pretest score and 11 (24%) had poor score. After the session, the study subjects with good post test score increased to 44(96%) and those with poor post test score was only 2(4%).

Fig 2: Distribution of study subjects according to their pretest and post test scores

We did comparison of the pretest and post test scores of the study subjects based on each domain of COVID-19, namely, the knowledge on the basic epidemiology, clinical features and practice of prevention.

Table 5 shows that the computed “t” value of 2.54 for the domains of knowledge on the basic epidemiology and clinical features and computed “t” value of 6.86 for the domain of practice of prevention of COVID-19 was found to be statistically significant at 0.05 level of significance. This indicates that the difference between the pre-test and post-test knowledge and practice scores in each domain was a true difference and not by chance, therefore it can be inferred that the targeted health education intervention was effective in enhancing the knowledge and practice of hospital sanitation workers regarding basic epidemiology, clinical features and prevention of COVID-19 pandemic in all the domains.

Table 5: Domain wise Mean, Mean difference, standard deviation, and “t” value of pretest and posttest knowledge and practice score of study subjects

Domains	N	Mean	SD	Mean Difference	t Value	p Value
Knowledge on basic Epidemiology & clinical features of COVID-19						
Pretest	46	4.11	0.85	0.304	2.54	0.015*
Post test	46	4.41	0.65			
Practice on Prevention of COVID-19						
Pretest	46	5.28	1.20	0.869	6.864	<0.001*
Post test	46	6.15	0.94			

Discussion

To the best of our understanding, so far, no studies have been done among hospital sanitation workers who are mainly entrusted with maintaining hygienic and clean hospital environment conducive to patient care related to COVID-19. They are the frontline workers and they need to be adequately informed and trained regarding epidemiology, prevention and control of this pandemic in order to ease their worries regarding taking care of COVID-19 patients/suspects and to protect themselves and others from this contagious disease.

In our study, all the participants were working as hospital cleaning staff. The mean age of the study population was 45 ± 7.6 years, 73.9% workers had secondary level of education and majority (58.7%) were having experience above 5 years. In a study done among house keeping staff in Bhubaneswar by NandakumarPaniyadi et al; majority of the subjects belonged to the age group above 32 years, 84% were having work experience above one year and 60% were having secondary level of educational qualification⁴. The proportion of study subjects who were below poverty line (BPL) was 65.2%. In the study done in Haryana by Akoijamsangitadevi and Malar kodiaathi, on knowledge of sanitary workers regarding bio medical waste management, most of the subjects (60%) were having monthly income less than 3000⁵.

The mean pretest knowledge score of our study population was 9.39 ± 1.5 . Among the study subjects, 35(76%) had good pretest score and 11(24%) had poor pretest score. In a study done by AkshayaSrikanthBhagavathula et al about 'Novel Coronavirus (COVID-19) knowledge and perceptions among healthcare workers'; a significant proportion of HCWs had poor knowledge of its transmission (61%) and symptoms onset (63.6%) and showed a positive perception of COVID-19 prevention and control. They found out that, factors such as age and profession are associated with inadequate knowledge and poor perception of COVID-19 and educational interventions are urgently needed to reach health care workers beyond the borders⁶.

Giao Huynh et al, conducted a study about the knowledge and attitude toward COVID-19 among healthcare workers at district 2 hospital, Ho Chi Minh

City Vietnam, which found that healthcare workers had a mean knowledge score of 1.86 ± 0.43 (range 1-5). Approximately two thirds of the participants knew the mode of transmission, the isolation period and treatment. Majority of healthcare workers had good knowledge and positive attitude toward COVID-19 and the study also suggested additional education interventions and campaigns for healthcare workers⁷.

Demographic variables such as education, years of work experience & income were independent of knowledge and practice score regarding COVID-19 pandemic and this finding is similar to the study done by NandakumarPaniyadi et al, where knowledge and practice scores regarding BMW disposal was independent of socio-demographic factors⁴.

The major findings in our study were, those who are in the age group 36-45 years had good knowledge and practice regarding COVID-19 as compared to the other age groups before the health education session and majority of the study subjects had a good knowledge regarding the basic epidemiology and clinical features of COVID-19, with 87% of them giving correct answers to questions about basic epidemiology and clinical features of the disease. Only 70% of them gave correct responses to questions regarding prevention of COVID-19. In another study done by Pranav D. Modiet al about the COVID-19 awareness among healthcare students and professionals in Mumbai Metropolitan region, the major findings were, the overall awareness was adequate and the highest percentage of correct responses were from undergraduate medical students and the lowest was from non-clinical/administrative staff. More than three-fourths of the responders were aware of the various infection control measures like rapid triage, respiratory hygiene, and cough etiquette and they found out that there is a need for regular educational interventions and training programs on infection control practices for COVID-19 across all healthcare professions. Occupational health and safety are of paramount importance to minimize the risk of transmission to healthcare students and professionals and provide optimal care for patients⁸.

In our study, a significant difference was found between the mean pre test and post test scores, in the knowledge and practice domains, which shows that the

targeted health education intervention was effective in improving the knowledge and practice of hospital sanitation workers regarding basic epidemiology, clinical features and prevention of COVID-19. This finding is consistent with most other studies that there is a need for regular intervention and training regarding various aspects of COVID-19^{4,6,8}.

Conclusion

The targeted health education intervention among the hospital sanitation workers designated in isolation wards was effective as evidenced by the significant improvement in their post test knowledge and practice scores across all the areas of COVID-19 pandemic. Given the heightened vulnerability of hospital sanitation workers to nosocomial infections, a proper communication strategy can help in mitigating the risk of infection. The right approach in health education can facilitate their understanding of infection prevention methods. In summary, all health care institutions should integrate the targeted health education intervention into their epidemic response plan

Ethical Clearance: Taken from Institutional Ethics Committee

Source of Funding: Self

Conflict of Interest: Nil

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Depression, Anxiety, and Stress among Medical Students in the Faculty of Medicine Universitas Airlangga Year Batch 2016, 2017, and 2018

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Abstract

Background: Going through college is a stressful life situation. Students are challenged to live independently along with academic challenges. The medicine is known to be more stressful than other professional study programs. **Objectives:** To analyze the depression, anxiety, and stress in medical students of the Faculty of Medicine, Universitas Airlangga Year Batch 2016, 2017 and 2018. **Sampling Methods:** This research was conducted with observational analytic study design, a cross-sectional approach by accidental sampling. The variables used are the socio-demographic characteristics of medical students as an independent variable, and the scale of depression, anxiety, and stress as the dependent variable. Data was collected by visiting each year batch, and giving a questionnaire sheet Depression, Anxiety, Stress Scale - 42 items (DASS-42). The results were then processed and analyzed in SPSS 16. **Result:** Respondents were mostly female (71,0%), Javanese (69,9%), have no history of personal (95,3%) and family mental disorders (94,4%), do not consume alcohol and cigarettes (98,3%), having married parents (91,4%), mean age 19 years, and first child. Year batch of 2016 exposed to depression 26.3%, anxiety 51.5%, and stress 32.3%. Year batch of 2017 exposed to depression 30.2%, anxiety 60.4%, and stress 37.5%. While the year batch of 2018 which is depressed 23.2%, anxiety 54.3%, and stress 30.5%. **Conclusion:** There was correlation between anxiety and stress with gender, which female tend to be more anxious and stressed, there is no difference in depression, anxiety, and stress in the class of 2016, 2017 and 2018.

Keywords: *Depression, Anxiety, Stress, Medical Students, DASS-42*

Introduction

Being a student in university is said to have a stressful life. They are challenged to live independently along with the academic challenges in lectures¹. The medical study program has become the most popular study program when entering university². However, medical study programs are considered more stressful than other professional study programs³. Even the prevalence of psychological distress in medical students is shown to be higher than that in the general population⁴.

Stress is defined as the relationship between a person and his environment, which is when one's resources are no longer adequate, while the environmental

situation is increasingly dangerous for the situation⁵. Research reveals that stress is associated with anxiety and depression⁶. Stress causes interpersonal conflict, decreased attention and concentration, impeded decision making processes, and reduces the ability of students to maintain good relations with patients thereby causing feelings of inadequacy and dissatisfaction in future clinical practice⁷.

Although the prevalence of depression, anxiety, and stress of medical students have been extensively studied, the percentage remains high and has not been fully addressed^{8,9,10,11}. This might occur because students are challenged to live independently so they tend to have less place to tell and express their daily stressors,

which results in a lack of support and social balance¹². Knowing that depression, anxiety, and stress cause a decrease in the quality of life of students, and to improve the quality of the medical education system, author sought to examine the prevalence of depression, anxiety, and stress of medical students at the Faculty of Medicine, Airlangga University.

Material and Methods

This was an observational analytical cross-sectional study by accidental sampling using the DASS-42 questionnaire conducted at medical students of the Faculty of Medicine Universitas Airlangga year batch 2016, 2017, and 2018. The variables used are the socio-demographic characteristics of medical students as an independent variable, and the scale of depression, anxiety, and stress as the dependent variable. This study started from April-May 2019 and had certified ethically before.

Participants. Total participants were 359 students, consist of 95, 89, 164 students from year batch 2016, 2017, and 2018 respectively. All of the subjects have agreed to be participants by signing participants and aged not less than 17 years old.

Measurements. All participants would be given a self-administered questionnaire, consist of a socio-demographic sheet and a DASS-42 questionnaire Indonesian version by visiting each year batch class.

Outcomes. The correlation between socio-demographic characteristics with depression, anxiety, and stress, would be analyzed with Spearman correlation. This study also compared depression, anxiety, and stress each batch using the Kruskall Wallis test, Mann-Whitney test, and Chi-Square or Fisher’s Exact test if the data scale were nominal.

Findings

This study selected 359 medical students to be given self-administered questionnaires.

1. Socio-demographic characteristics

Table 1. Socio-demographic characteristics

Socio-demographic characteristics (N = 359)		Year Batch			N (%)	P
		2016 n (%)	2017 n (%)	2018 n (%)		
Sex	Male	26 (26,3%)	22 (22,9%)	56 (34,1%)	104 (29,0%)	0,123
	Female	73 (73,7%)	74 (77,1%)	108 (65,9%)	255 (71,0%)	
Ethnicity	Javanese	81 (81,8%)	72 (75,0%)	98 (59,8%)	251 (69,9%)	0,003
	Non Javanese	14 (14,1%)	18 (18,8%)	51 (31,1%)	83 (23,1%)	
	Not Filled	4 (4,0%)	6 (6,3%)	15 (9,1%)	25 (7,0%)	

Cont... Table 1. Socio-demographic characteristics

Personal History of Mental Illness	Yes	5 (5,1%)	3 (3,1%)	5 (3,0%)	13 (3,6%)	0,705
	No	94 (94,9%)	92 (95,8%)	156 (95,1%)	342 (95,3%)	
	Not Filled	0 (0%)	1 (1,0%)	3 (1,8%)	4 (1,1%)	
Family History of Mental Illness	Yes	7 (7,1%)	6 (6,3%)	3 (1,8%)	16 (4,5%)	0,098
	No	92 (92,9%)	89 (92,7%)	158 (96,3%)	339 (94,4%)	
	Not Filled	0 (0%)	1 (1%)	3 (1,8%)	4 (1,1%)	
Recent History of Consumption of Cigarettes or Alcohol	No	99 (100%)	94 (97,9%)	160 (97,6%)	353 (98,3%)	0,190
	Cigarettes	0 (0%)	0 (0%)	3 (1,8%)	3 (0,8%)	
	Alcohol	0 (0%)	2 (2,1%)	1 (0,6%)	3 (0,8%)	
Parent's Marital Status	Married	94 (94,9%)	83 (86,5%)	151 (92,1%)	328 (91,4%)	0,122
	Divorced	1 (1,0%)	4 (4,2%)	4 (2,4%)	9 (2,5%)	
	Spouse's Death	4 (4,0%)	3 (3,1%)	6 (3,7%)	13 (3,6%)	
	Not Filled	0 (0%)	6 (6,3%)	3 (1,8%)	9 (2,5%)	
Birth Order		1,67 ± 0,857	1,78 ± 0,954	1,82 ± 0,939	1,77 ± 0,921	0,356

Based on table 1., year batch 2016 and 2017 had proportion of male and female in ratio 1:3, slightly different than year batch 2018 which had proportion of male and female in ratio 1:2.

The is a difference between Javanese ethnicity and non-Javanese ethnicity with $p < 0,05$, because non-Javanese ethnicity consists of Sunda, Batak, Bali,

Aceh, Madura, and many other ethnics. There were no differences in personal history of mental illness, family history of mental illness, alcohol or cigarette consumption, birth order, and marital status of parents in the all year batch. This shows the homogeneity of the socio-demographic conditions of the year batch of 2016, 2017 and 2018.

2. Correlations of Socio-demographic Characteristics with Depression, Anxiety, and Stress

Table 2. Correlations of Socio-demographic Characteristics with Depression, Anxiety, and Stress

	Depression	Anxiety	Stress
Sex	P : 0,620 Mann-Whitney Test	P : 0,001* Mann-Whitney Test	P : 0,023* Mann-Whitney Test
Age	P : 0,913 Spearman Test	P : 0,725 Spearman Test	P : 0,685 Spearman Test
Ethnicity	P : 0,686 Mann-Whitney Test	P : 0,089 Mann-Whitney Test	P : 0,107 Mann-Whitney Test
Personal History of Mental Illness	P : 0,069 Mann-Whitney Test	P : 0,523 Mann-Whitney Test	P : 0,250 Mann-Whitney Test
Family History of Mental Illness	P : 0,251 Mann-Whitney Test	P : 0,187 Mann-Whitney Test	P : 0,247 Mann-Whitney Test
Recent History of Consumption of Cigarettes or Alcohol	P : 0,081 Kruskall Wallis Test	P : 0,606 Kruskall Wallis Test	P : 0,888 Kruskall Wallis Test
Parent's Marital Status	P : 0,500 Kruskall Wallis Test	P : 0,744 Kruskall Wallis Test	P : 0,567 Kruskall Wallis Test
Birth Order	P : 0,197 Spearman Test	P : 0,212 Spearman Test	P : 0,791 Spearman Test

*p<0,05 is significant

From table 2. above it was found that anxiety and stress have a relationship with sex ($p < 0.05$). In further statistical calculation female are found to experience higher level of anxiety and stress than male.

3. Prevalence of Depression, Anxiety, and Stress among Medical Students of the Faculty of Medicine year batch 2016, 2017 and 2018

Table 3. Prevalence of Depression, Anxiety, and Stress among Medical Students of the Faculty of Medicine year batch 2016, 2017 and 2018

		Year Batch			P
		2016 n (%)	2017 n (%)	2018 n (%)	
Depression Me = 4,00	Normal	73 (73,7%)	67 (69,8%)	126 (76,8%)	0,240*
	Mild	9 (9,1%)	13 (13,5%)	18 (11,0%)	
	Moderate	9 (9,1%)	10 (10,4%)	15 (9,1%)	
	Severe	0 (0%)	2 (2,1%)	2 (1,2%)	
	Very Severe	8 (8,1%)	4 (4,2%)	3 (1,8%)	
Anxiety Me = 8,00	Normal	48 (48,5%)	38 (39,6%)	75 (45,7%)	0,592*
	Mild	8 (8,1%)	9 (9,4%)	9 (5,5%)	
	Moderate	26 (26,3%)	28 (29,2%)	50 (30,5%)	
	Severe	9 (9,1%)	15 (15,6%)	22 (13,4%)	
	Very Severe	8 (8,1%)	6 (6,3%)	8 (4,9%)	
Stress Me = 11,00	Normal	67 (67,7%)	60 (62,5%)	114 (69,5%)	0,374*
	Mild	11 (11,1%)	13 (13,5%)	17 (10,4%)	
	Moderate	16 (16,2%)	15 (15,6%)	22 (13,4%)	
	Severe	2 (2,0%)	5 (5,2%)	8 (4,9%)	
	Very Severe	3 (3,0%)	3 (3,1%)	3 (1,8%)	

*Kruskall Wallis test, abnormal distribution

Based on the above table, there are no differences in depression, anxiety, and stress in each year batch. The three year batches also showed a consistent distribution of depression, anxiety and stress. This might indicate that there are triggers of depression, anxiety, and stress of medical students in every school year and a consistent reaction to these triggers.

Discussion

Research in various countries about medical students revealed that there were more female medical students than male students with different ratios^{13,14,15,16,17}. Female naturally have a caring and friendly attitude so they can communicate better with patients. Female doctors also spend their time educating and developing patient self-efficacy. Female physicians are commonly associated with low hospital admission rates and post-hospitalization mortality, low postoperative mortality rates and high patient-centered communication rates¹⁸. From this study it was found that the majority of medical students at the Faculty of Medicine, Airlangga University were Javanese. The author assumes this is due to the location of Universitas Airlangga located in the city of Surabaya, East Java¹⁹.

Alvi et al., found that sex has a significant correlation with the incidence of depression ($p = 0.016$) and anxiety ($p = 0.007$). Women experience more anxiety, depression, and stress than men^{20,13}. In line with this study which revealed that women were more prone to anxiety ($p = 0.001$) and stress ($p = 0.023$). This is because women think things that are challenging and threatening are stressful²¹. Other research also states that female medical students tend to be more competitive, tend to work hard to secure high scores on examinations, and care more about their academic performance¹⁴.

Nearly half of the medical students in this study were exposed to anxiety and stress. This is in line with previous research on depression, anxiety, and stress of medical students conducted in India. Research shows that perceptions of self-performance in academics are strongly associated with high amounts of depression, anxiety and stress scores¹³. For college students, there are 3 main causes of depression, anxiety, and stress, namely: academic performance, pressure for success, and post-graduate plans. So that most exposed to depression, anxiety, and stress are upper

semester students²². A subjective opinion states that the academic burden imposed on the curriculum and a busy schedule is the cause of the high DASS score on medical students²³. Academic activities at the Faculty of Medicine, Universitas Airlangga have been arranged systematically in the Kurikulum 2016. The total study load of graduating from the Medical Study Program is 155 credits with, 68 credits of sub-program I, 44 credits of sub-program II, and 43 credits of sub program III²⁴. Along with this research which was held in April-May 2019, students of year batch 2018 were in semester 2, students of year batch 2017 were in semester 4, and students of year batch 2016 were in semester 6. If lectures were carried out according to schedule, students of year batch 2018 were in Anatomical Pathology Block (3 SKS), Clinical Pathology (3 SKS), and Empathy Effective Communication and Social Accountability (2 SKS) modules, year batch 2017 students are in Research Module 1 (2 SKS), and Musculoskeletal System Block (4 SKS), and year batch 2016 students are in the Health Services Management Block (2 SKS), Public Health Sciences - Preventive Medicine (2 SKS), and part of the Research Module (6 SKS). If added up, the 2018 students receive a load of 8 SKS, 2017 class students receive a load of 6 SKS, and 2016 class students receive a load of 7 SKS²⁴.

Although academic burden is the most talked scourge, there are certainly many other factors related to student depression, anxiety and stress. Depression was stated to have a correlation with students living in boarding houses ($p < 0,0001$)²⁵. Other studies add that extracurricular activity is associated with anxiety and stress⁴.

Conclusion

This study concludes that there were significant differences in ethnicity ($p = 0.003$) among the three year batches. There was correlation between sex with anxiety and stress, female are found to experience higher level of anxiety and stress than male. This study also found that each year batch has the same risk to experience depression, anxiety, and stress. Further studies are needed to explore predisposing factor which influence risk of depression, anxiety, and stress among medical students.

Conflict of Interest: There was no conflict of interest in this study.

Source of Funding : This study was supported by the authors.

Ethical Clearance: This study was ethically certified by Komite Etik Penelitian Kesehatan (KEPK) Fakultas Kedokteran Universitas Airlangga.

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Early bonding, Parenting Styles and Temperament: Association between three-generational Aspect of Parenting

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Abstract

Background: Parenting styles differ with individuals. Early experiences play an important role to determine the nature of parenting. However, studies do not highlight dyadic views of partners as a unit in their parenting styles. Further, the critical age between 3-6 years is found to be vulnerable to environmental influences. Thus, the transactional influence in a three-generational viewpoint needs to be studied. The aim was to understand the three-generational aspect of parenting. The primary objective included understanding the relationship of early parental bonding on current parenting styles and its association with the temperament of pre-school aged children.

Method: 15 couples with children in preschool, aged between 3-6 years, of age range 20-40 years using a convenience sampling were recruited. The participants were assessed by the Parental Bonding Instrument (PBI), Parental Styles and Dimensions Questionnaire (PSDQ) and Child Behaviour Questionnaire- Very Short Form (CBQ-VSF). The data was further analyzed using descriptive statistics for the socio-demographics and the association between the variables was assessed using Spearman's rank correlation.

Conclusion: Correlational analysis showed an authoritative parenting style positively correlated with effortful control and a negative correlation with the surgency dimension of temperament. No significant relationship between parental bonding and parenting styles was found.

Keywords: Parental bonding, Parenting styles, Pre-school, Temperament, Three-Generations

Introduction

An individual's first exposure to the world around them is through the family they are born into. The relationship between parent and child is the most important when compared to the different relationships formed through the course of life¹. Parenting is a continuous process from infancy to adulthood promoting and supporting the development (physical, emotional, social, and intellectual) of a child. Brooks rightly suggests

that the intricacies of raising a child are not limited to only a biological relationship.² Parenting practices have three major goals recognized throughout the world: providing for children's health and safety, instil skills to be productive adults, and impart cultural values.

Parker proposed a construct of parental bonding to understand this formation of bond that children form with parents. Despite a lack of a satisfactory definition, *bonding* may be defined as "the formation of a mutual emotional and psychological closeness between parents (or primary caregivers) and their newborn child".³ Factor analytical studies have conceptualized it based on bipolar factors such as "acceptance versus rejection", "psychological autonomy versus control" and "firm control versus lax control".³

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Parenting style defined by Baumrind refers to “a pattern of child-rearing that is the result of parents’ reactions to their child or children”⁴. Three parenting styles i.e. authoritative, authoritarian, and permission forms were identified. Authoritative parenting style is identified as a democratic form of parenting. Baumrind suggested that these parents “monitor and impart clear standards for their children’s conduct”⁵. Permissive parenting style is referred to apply very few rules or boundaries, allowing children to dictate their life events and outrightly refuse compliance with the choices of others.⁵ Authoritarian parenting style is the domineering and dictatorial form of parenting.⁶

One of the major influencing factors in a child’s development is their innate dispositions i.e temperament which might evoke different parenting styles.⁷ Temperament is the building blocks of adult personality and can be broadly referred to the physical basis for expression and arousal of emotions and regulation components of personality.⁸ A dimensional approach used by Rothbart to understand these biological rooted individual differences resulted in three broad domains namely (1) Surgency i.e, factors of sociability and expressions of positive emotionality, (2) Negative affect encompasses discomfort, anger/frustration, sadness, fear, and low soothability and (3) Effortful Control is related attentional, inhibitory and activational control.⁷

Secure attachment bonds with parents pave the path to better interpersonal relationships as adults. However, factors such as gender and culture play a significant role in determining the establishment of a parental bond as well as the style of parenting chosen by these adults. Eastern cultures (such as in Japan) have been reported to be superior in the parent-child relationship as compared to western countries.⁹ Gender difference studies indicate females have a stronger perceived bond with both the parents and higher score of domains of care vs overprotection.^{3, 9, 10}

Authoritative mode of parenting is suggestive to be the most optimal form of parenting style and studies have indicated that adolescents, as well as parent perceived form of parenting, is also on similar strategies.^{3,10} Research on parenting styles suggests that while authoritarian parenting has indirect effects on happiness, authoritative styles can predict constructs

of self-awareness and optimism domains of emotional intelligence.¹¹ Authoritative parenting can also predict effortful control and behavioural inhibition dimensions of temperament. E.g. a study done in 2008 showed mothers using commands and disciplinary statement in a positive tone as compared to a neutral tone had a higher score of effortful control on their pre-school children.¹² The focus of studies in the relationship of parenting and temperament has not remained on causality but also a bi-directional relationship was suggested.¹³

There is growing evidence to understand the presence of intergenerational continuity of parenting style; the understanding of developmental ‘sequelae’ of parenting.¹⁴ Prospective studies following the same individual through the years have found significant continuity of harsh or positive parenting across the two generations.¹⁵⁻¹⁷ These findings also can be considered valid when teen pregnancy is considered. The intergenerational adverse parenting may, in turn, indicate poor decision making as well as unadjusted mothers.¹⁸ A study on teenage mothers with postpartum depression suggested that adolescents who reported low paternal care and high maternal control could predict impaired postpartum maternal bonding.¹⁸

These studies point strongly to long term outcomes of parent-child exchange and the bi-directional process to development. That is, a child’s developmental trajectory can be influenced by parenting in early childhood along with, the child influencing the nature of parenting received in return; an interplay of psychological, social and/or genetic factors.¹⁸ However, there is a lack of depth in understanding how different factors of parenting styles affect the temperament differently and determining factors that can be helpful in the developmental phase of children. Further, the critical age between 3-6 years is found to be vulnerable to environmental influences and Indian research of this three-generational aspect has not been studied.

The current study aims to understand the association of early bonding on current parenting styles of the participants and look further into the relationship between the parenting and the temperamental aspects of pre-school children. Two primary objectives were tested. The first goal is to understand whether early parental bonding of participants with their parents (both mother

and father) has any connection to their chosen form of parenting. Early childhood is understood as a vulnerable period of development. This brought forward the second objective of the study i.e, to examine the association between the said parenting styles on the temperament of their pre-school aged children.

Method

Sample size: 15 married couples

Study design and participants:

Based on convenience sampling techniques, individuals with the age group of 20-40 and at least one child currently enrolled in pre-school (3-6 years) were considered. Participants with a minimum 10th standard education were included in the study. Participants with any psychiatric illness or single or divorced couples were excluded from the study. The study was approved by the institutes' ethics committee. Participants' were recruited through contacting pre-schools in and around Manipal and Udupi district, Karnataka, India as a secondary mode of contact through their children.

Procedure:

After clearance from the institute ethics committee, pre-schools were contacted, and permission was sought for the recruitment of participants. The project was also registered with the Clinical Trial Registry of India (CTRI). For the process of convenience in data collection, the measures were translated in the regional language i.e, Kannada. During data collection, the school authorities and respected coordinators were oriented to the process and nature of the study. Based on participants who met the inclusion criteria, the parents were contacted by the school authorities, and questionnaires were distributed along with a participant information sheet and informed consent. Confidentiality was assured to the participants and they were asked to report as honestly as possible.

Measures:

The questionnaire consisted of a socio-demographic profile with Details about participants age and birth order,

education and occupation, type of marriage, and years of being married. They further provided information regarding the number of children they have, the age and birth order of the child currently in the pre-school. The variables were assessed using (i) Parental Bonding Instrument (PBI) for Parental Bonding, Parental Styles and Dimension Questionnaire (PSDQ) for Parenting Styles and Child Behaviour Questionnaire-Very Short Form (CBQ-VSF) for Temperament.

PBI is a 25-item retrospective measure to assess parental styles, individually of both the mother and father, as perceived as a child. It is based on how they remember their parents during their first 16 years of life. The scale has two domains of care and protection on a 4- point Likert scale.¹⁹ PSDQ measures the three types of parenting styles: authoritarian, authoritative, and permissive based on a 32-item version 5-point Likert scale.²⁰ CBQ-VSF is a 36-item questionnaire assesses three broad domains of temperament namely, surgency, negative affect and empathy based on a 7-point Likert scale with responses ranging from Extremely Untrue of your child (1) to Extremely True (7), and Not Applicable.²¹

Statistical Analysis

The data were subjected to analysis using IBM Statistical Package for Social Sciences (SPSS 24.0). Descriptive statistics were used for socio-demographic variables. Spearman Rank Correlation was used to understand the relationship between the three variables.

Results

The results showed that the mean age of parents was found to be $M = 33.73 \pm 4.3$ years. Majority of the participants were post-graduates (50%), identified as Hindus (86.7%), lived in a nuclear family (60%) and had had an arranged marriage (60%). The average years of the couple's marriage were $M = 7.9 \pm 3.5$ years and the age of pre-school children was $M = 3.65 \pm 0.65$. (Table 1)

Table 1: Demographic characteristics

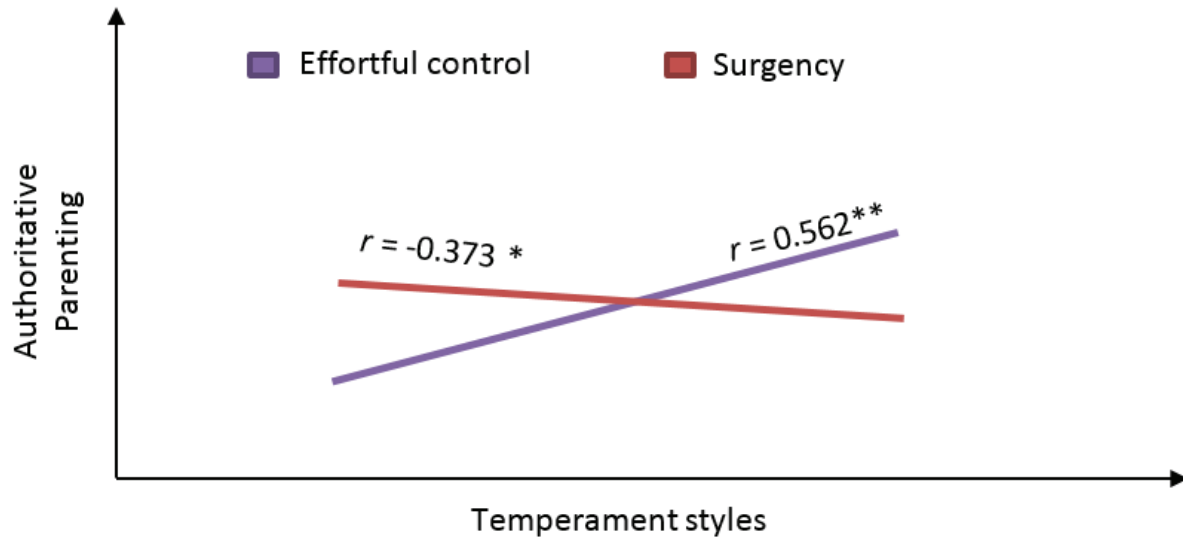
Characteristics		N= 30 (15 couples)
Age (in years)		33.73 ± 4.3
Education	Post-Graduates	50%
	Graduates	40%
	Other	10%
Religion	Hindu	86.7%
	Others	13.3%
Duration of Marriage (in years)		7.9 ± 3.5
Type of marriage	Arranged	80%
	Love	20%
Family type	Nuclear	60%
	Extended	40%
No. of children	Single	60%
	Two or more	40%
Pre-school child's age (in years)		3.65 ± 0.65

Correlational analysis between early parental bonding and current parenting styles did not have any significant results (Table 2). Analysis of parenting styles and temperament indicates that there is a moderate positive correlation ($r = 0.562$) of authoritative parenting style with effortful control dimension in children. On the other hand, there is a negative correlation ($r = -0.373$) between authoritative parenting style and surgency dimension of temperament (Figure 1)

Table 2: Relationship between Early Bonding & Parenting Styles

Correlations		Parenting Styles		
		Authoritative	Authoritative	Authoritative
Parental Bonding	Mother (Care)	-.231	.236	.024
	Mother (Control)	-.095	-.302	-.233
	Father (Care)	-.216	.252	.098
	Father (Control)	.118	-.210	-.098

at 0.05 level; ** at 0.01 level of significance



* at 0.05 level; ** at 0.01 level of significance

Figure 1: Relationship between Authoritative parenting and temperament.

Discussion

The study focused on understanding the generational aspects of parenting and find associations of the same with the temperament of pre-school aged children. The current study adds to our current knowledge in the field of parenting.

The study findings indicate that the first hypothesis stands true, i.e., there is no significant relationship between early bonding of participants with their current parenting styles. Regarding the second hypothesis, the authoritative style of parenting was associated with changes in temperament during early childhood. With greater authoritative parenting style greater is the effortful control of the child. It could be possible that positive emotions such as warmth and support given by the parents help develop self-regulation in children. The moderation of responsiveness and demandingness of parental domains as suggested by Baumrind indicates an easier temperament. Previous research has similar findings wherein positive parenting practices have high effortful control whereas negative coercive parenting predicts more of externalizing factors.^{22, 23}

However, a low negative correlation was found between the authoritative style of parenting and surgency domain of temperament. Based on previous understanding, the predicted finding would be a direct

positive correlation. However, the current finding could be attributed to the skewed data where the children's age was as young as an average of 3.3 years. Thus, in most of the cases, the children have not had adequate exposure for socialization and responsibility. Another possible explanation based on previous literature is the recent evidence pointing to a bi-directional explanation between the two variables based on the transactional model of development.¹³

Limitations and future directions

Even though the preliminary findings of the study have interesting findings, there are certain limitations. Firstly, the sample size was small and skewed with most participants children around 3 to 3.5 years of age. Further, there was no direct contact with the participants to communicate the purpose of the study. Future studies can focus on conducting interviews with parents on a firsthand basis. Secondly, the objectives of the study limited data collection to couples only. Objective measures of temperament from children themselves could be taken up as a future target. Also, the data collection was from a restricted geographical location limiting generalization.

Conclusion

In conclusion, the authoritative style of parenting

has an association with the temperament of the children. Also, there is a likelihood of a bi-directional relationship between the two variables i.e., parenting styles and temperament. Thus, early interventions strategies that focus on both parental training as well as targeting specific developmental targets for children can facilitate easy regulatory mechanisms for children. The study also highlights the need for further research on the impact of generations on parenting.

Acknowledgement: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors. The authors would like to sincerely thank the participants who gave us consent to be part of the research.

Declaration of Conflicting Interests

The authors declare no conflict of interest.

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Current Prevalence of Malaria Knowledge and Practices among Residents of a Rural Community in South India

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Abstract

Introduction: Malaria is a major public health problem in India. The prevention of Malaria is mainly dependent on knowledge and beliefs of people. The National Framework for Malaria Elimination (NFME) 2016-2030 in India insists to eliminate malaria in India and for this to achieve the current malaria awareness on causes and protection in the region where malaria was a major problem about 7 years back is very important. In this background this study was undertaken to know the current Knowledge of Malaria in this area.

Objectives: To know the knowledge and practices of Malaria which was problem in the area about 7 years back.

Methodology: It is a Cross-sectional study conducted in a rural community. Since the proportions of knowledge and practices regarding malaria transmission in this setting was unknown, a 50% proportion was assumed to ensure the maximum sample size. The total number of houses visited was 110 to achieve the sample size of 384. The information of malaria with respect to Socio-demographic, knowledge and practices has been collected from the adult respondent (aged >18 years) of the households in the villages of field practice area of the medical college. Data was collected by semistructured questionnaire method. Frequencies, proportions and chi-square test are the test of significance.

Results: Among the 384 subjects interviewed 73% (i.e. 280) knew about malaria and were assessed for Knowledge and practices regarding malaria. About 32.8% (i.e. 126) said that malaria is a communicable disease, Majority 74.7% (i.e. 287) said that malaria is transmitted from mosquito bite. About 19% (i.e. 72) were not aware regarding mode of transmission of malaria. About 74.7% (i.e. 287) respondents informed that mosquito nets were used in the night to protect from mosquito bites.

Conclusions: The study revealed that knowledge and practices about malaria was satisfactory and there was varied perception about causes, spread of disease, symptoms and protection from mosquitoes. Health personnel and medical students were the major source of knowledge in this the population. Since the malaria is not a problem from the past 5 years, but still the overall awareness regarding malaria was good in this area.

Key-words: Malaria, awareness, transmission, mosquitoes, Knowledge

Introduction

The South East Asia Region is the second largest contributor to the global malaria burden and estimated

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cases were 11.3 million in 2017 according to World Malaria Report 2018. India accounted for 68% reported cases and 65% of malaria deaths. India also recorded its incidence rate fall, recording the largest decline globally when compared to other countries where incidence remained same or little increase noticed.¹The National Vector Borne Disease Control Programme reported 0.84 million cases and 194 deaths due to Malaria in 2017. In the meantime, the API (Annual Parasite Incidence)

in the so called high burden states namely were about 91% of malaria cases and 99% of deaths due to malaria are reported from high disease burden states namely Northeastern (NE) States, Andhra Pradesh, Chhattisgarh, Gujarat, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Rajasthan and West Bengal. The API rates have declined from 168 to 0.65 from 2005 to 2017. ²Malaria is a unique disease and has roots deep within human communities.³Beliefs and practices of malaria are often related to culture which can influence the effectiveness of control strategies.⁴Thus, local knowledge and practices related to the disease are key to implementation of culturally appropriate, sustainable, and effective interventions.⁵Community perception, beliefs, and attitude about malaria control, symptom identification, treatment, and prevention influence efforts to address malaria and are often overlooked in control efforts.⁶ It will also vary from country to country and individual to individual.

To achieve the targets of reducing malaria prevalence and preventing malaria epidemic, it is imperative to have active community participation which in turn depends on people's knowledge and attitude towards the disease. The major public health problems are the contaminated water supply which leads to the unhealthy surroundings paving way for vector breeding and other communicable diseases in these rural and tribal regions. In fact human behavior as a major contributing factor has been largely neglected in research all over the globe on vector borne diseases in part because of the long-standing separation of the behavioral disorder from the physical and biomedical disciplines. ⁷

Malaria is an endemic disease in our rural field practice area of Department of Community Medicine covering 20 villages with Annual Parasite Incidence (API) of 2.9 for the year 2012. Hence this area is categorized as high risk area. This area has reported malaria cases every year and has become a point of discussion in state and district level meets. The cases has reduced significantly by sustained efforts by health workers, medical students and nursing students of the medical college. Due to its high incidence in this area the awareness with respect to malaria was good on aspects of malaria transmission, signs and symptoms of malaria.⁸ However zero cases of malaria has been reported in this area since 2017. The National Framework for Malaria

Elimination (NFME) 2016-2030 in India has been initiated to eliminate malaria as major public health problem.

This study has been conducted to see the current malaria awareness on causes and protection in the region where malaria was a major problem about 7 years back.

Methodology

It's a Cross-sectional study conducted in a rural community of Devarayasamudra Village in Kolar District. Since the proportions of knowledge, attitudes and practices regarding malaria transmission in this setting was unknown, a 50% proportion was assumed to ensure the maximum sample size. A sample size of $n = 384$ was calculated using Open epi 3.01 version. ⁹The information of malaria with respect to Socio-demographic, knowledge and practices has been collected from the adult respondent (aged >18 years) of the households in the villages of field practice area of the medical college. The total number of houses visited was 110 to achieve the sample size of 384.

Statistical Methods: The data was compiled in Microsoft excel and Open EPI info 3.01 software was used to analyze the data. Descriptive statistics like proportions and confidence intervals was computed. Chi-square test is the test of significance for qualitative data and a p value of <0.05 was considered significant.

Results

Among the 384 subjects interviewed 73% (i.e. 280) knew about malaria and were assessed for Knowledge and practices regarding malaria. About 32.8% (i.e. 126) said that malaria is a communicable disease, Majority 74.7% (i.e. 287) said that malaria is transmitted from mosquito bite. About 19% (i.e. 72) were not aware regarding mode of transmission of malaria. Head ache and chills 31.5% (I.e. 121) was the main symptoms of malaria. About 50.7% of the respondents said that during the night mosquito bite is common. There was a significant difference between males and females with respect to malaria transmission. (Table 1)

About 74.7% (i.e. 287) respondents informed that mosquito nets were used in the night to protect from mosquito bites. 15 % (i.e.57) of respondents were not using any methods to protect from mosquito bites.

25%(i.e. 96) of the individuals had habit of sleeping outdoors. 50.7% (i.e. 195) of the respondents informed that they had slept inside the mosquito net in the last night. Blood smear was done among 77% (i.e.7) of the individuals who had fever in the past fortnight.(Table 2)

Majority 50%(i.e.55) of the house hold income belonged to class 1 income group were using bed nets in the night. (Table 3)

* Modified BG Prasad Socio-economic Classification, Update – 2019.¹⁰

Tables 1: Knowledge about Malaria

Characteristics		Female n=183	Male N=201	Total	P-Value
Know about Malaria	Yes	135	145	280	0.71
	No	48	56	104	
Malaria communicability	Yes	62	64	126	0.67
	No	121	137	258	
Malaria transmission	Mosquito bite	130	157	287	0.0008
	House fly	4	10	14	
	Don't Know	47	25	72	
	More than one source	2	9	11	
Symptoms of Malaria	Fever	33	41	74	0.78
	Chills & Head ache	58	63	121	
	More than one symptom	54	53	107	
	Don't Know	38	44	82	
Time of Mosquito bite	Night	89	106	195	0.42
	During dusk	53	52	105	
	More than one time	41	43	84	

Table 2: Practices and health care deliver about Malaria

Characteristics		Female n=183	Male N=201	Total	P-Value
Protection from Mosquito bites	Mosquito Net	106	109	217	0.52
	Mosquito mat/ Coil/ Agarbatti	16	20	72	
	Fan/ Covering body	37	39	11	
	Not using any method	24	33	57	
Sleeping Habits	Inside house	141	145	286	0.34
	Outside house(Roof top/cattle shed)	42	54	96	
Sleeping with bed net – last night or last one week	Yes	108	124	195	0.59
	No	75	77	105	
Blood smear performed for fever case in the last fortnight	Yes	3	4	7
	No	1	1	0	

Table 3: Bed-net use according to socioeconomic status

Socio-Economic Status*	Bed net use Yes-68	Bed net use N0-39	Total	P-Value
>7008	36	19	55	0.674
3504-7007	22	12	37	
2102-3503	5	5	10	
1051-2101	3	2	5	
<1050	2	1	3	

Discussion

The present study was conducted in malaria endemic area to assess knowledge and practices about the cause, prevention and treatment of malaria and their bearing on the control of the disease. The rural practice area namely Devarayasamudra Village about 8 years back in the year 2012 the Annual Parasite Incidence (API) was more than 3.3. But in the recent years from 2016 onwards there was no malaria has been reported in the area.¹¹ Being endemic area earlier and with the launch of National Framework for Malaria elimination in India,¹² it is necessary to know the current knowledge on Malaria transmission, causes and protection for the National Malaria control Programme where the strength of the study captures the current scenario and future implications with respect to Malaria.

The age of the respondents ranged from 18 to 90 years, with a mean age of 35 years. It was observed that majority were in age group 18 to 35 yrs i.e. 57.5%. 52.4% were males and 47.6 were females. 57% were illiterates, unskilled occupation was found in majority i.e. 63.8%. Interestingly it was found that majority 50% of the families belonged to class 1 socio-economic status according to Modified B G Prasad classification. There was a significant association between males and females with respect to occupation. Gaurav Dhawan et al, in their study observed that the mean was 35 years and ranged from 18 to 80 years and 75% of the respondents belonged to middle and higher class which was similar our study.¹³ Majority 74.7% of respondents had excellent knowledge regarding the mosquito bite as the means of transmission which is very close, where 73% of the respondents knew mosquito bite is the mode of transmission of malaria in a study conducted by Joshi A B et al.¹⁴ About 72.9% of the respondents heard about malaria which is closer to the study R K Gupta et al, the fact might be endemic area and majority of the respondents received health education through health workers, nursing students, medical students and inters about malaria.¹⁵ Majority of the respondents (78.6%) had good knowledge about malaria symptoms namely fever, chills and headache and more than one symptoms and this finding was comparable with Joshi AB et al and Gupta RK et al.^{14,15} Majority 54.6% of the respondents informed that during night and dusk is the time where mosquito bites will take place.

Among the total, 96.7% respondents replied that people could protect from malaria. Regarding the method to protect from malaria, 56.5% replied mosquito net to use as precaution to prevent mosquito bite. 18.7% of the respondents informed that by using mosquito mat or coil can be used for protection and 3 % of the respondents used fans as a measure to protect from mosquito bites in the night. 15% of the respondents are not using any methods to protect themselves from mosquito bite. In a study by Joshi et al, the protection from mosquito bites was 92% and from mosquito coil is 7.4%.¹⁴

About 25% of the respondents opined outdoor sleeping behaviour in the night. R K Sharma et al showed that outdoor sleeping behaviour by 59 % of the population had malaria positive results among 22.9 % of individuals. The odds ratio(1.7) was also high with respect to malaria positive cases among the individual who are sleeping outside compared to sleeping inside the house. This shows that malaria is associated with individual behaviour.

In our study the 77% of the individuals blood smear was taken for fever cases in the fortnight. It indicates that active surveillance for malaria is good. This may be due the high incidence of malaria earlier in this region.

The main reasons for the endemicity in this area earlier was not clearly known but according to health workers were, there are construction sites where in workers tend to migrate from various parts of the country who can act as a reservoir and transmit infection. Their surrounding mountains where the accumulation of water takes place in the shallow gutters which leads to breeding of mosquitoes.

Conclusions

The study revealed that knowledge and practices about malaria was satisfactory and there was varied perception about causes, spread of disease, symptoms and protection from mosquitoes. Health personnel and medical students were the major source of knowledge in this the population. Since the malaria is not a problem from the past 5 years, but still the overall awareness regarding malaria was good in this area. The perception and knowledge regarding malaria is very essential as malaria is not a focal or local condition. The current

National Malaria Control Programme always expects a good awareness among the people to malaria for the future elimination of malaria in India. Low education status is one of the major drawbacks for effective control and intervention measures. Though majority of the subjects were practicing one or other protective measures the use of bed nets must be widespread for malaria control.

Ethical Clearance- Taken from Institutional Ethical Committee Sri Devaraj Urs Medical College, Kolar.

Source of Funding- Nil

Conflict of Interest - Nil

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Incident Location Distance and Transportation to Hospital Delayed Arrival Patients Post-Acute Ischemic Stroke Attack in Emergency Department East Java-Indonesia

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Abstract

Introduction: The main problem faced by patients suffering from acute ischemic stroke for acquiring an immediate treatment is hospital-delayed arrival. Delays are defined as the onset action for stroke starting from the stroke onset to arrival at the ED. The study aimed to investigating the influence of incident location distance and transportation to arrival delay of patients with acute ischemic stroke attack in the ED.

Methods: The study was employed cross sectional designed with the total samples were 58 respondents. The samples were relatives of patients suffering from acute ischemic stroke. Observation sheet and interview guide were used as the instruments, while *Google Maps* application was utilized to measure the distance of the incident locations to the hospital.

Results: The results have shown that the average distance between the hospital and the incident location was 3.5 – 18.4 kilometres, whereas the delayed rate was from 2.4 to 48.4 hours. Multiple linear regression analysis has shown that the means of transportation significantly influenced the arrival delay in the ED, which was 0.015. The result in line with the fact that around 67.25% patients were using their private transportation means (vehicles) and 32.75% patients were using ambulance to reach the ED.

Conclusion: The village ambulance is supposed to be initiated and programmed in respond to hospital-delayed arrival during emergency conditions as well as to established technology through communication system for emergency referral network for local inhabitant.

Key words: *hospital delayed arrival, incident location distance, transportation*

Introduction

Stroke constitutes one of the medical urgencies that can predominantly cost people death and disabilities compared to other illnesses, both in high-income countries (HICs) and in low-to middle-income countries (LMICs) ¹. One of the low-to middle-income countries is Indonesia, in which stroke happens to increase significantly; indeed, Indonesia has now belonged to one of numerous countries that shows the highest number of the stroke patients in the world.

The effectiveness of stroke management is obviously dependent on the onset action for stroke, which means that the effectiveness of the actions will decrease along the delay for acquiring immediate treatment^{2, 3}. As a consequence, the success of the treatment as well as the improvement of clinical outcome is completely dependent on the efforts taken for minimizing delayed arrival in ED⁴⁻⁶, in spite of the fact that most of patients of acute ischemic stroke experience arrival delay in ED⁷⁻¹⁰. Study showed that in 28 hospitals throughout Indonesia that has shown nearly 78% of patients arrive in ED around 3 hours after stroke attack¹¹. The arrival delay of the patients can also be caused by other factors, such as education, geographic location, demography, and cultures that turn to be interesting issues to further investigate¹².

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In accordance with the results of interview to some relatives of the stroke patients who failed to take the post-stroke patients to the ED, it has shown that they find it hard to find the effective transportation to immediately take the patients to the ED. Moreover, this is supported by the less availability of transportation facility that can be utilized to take the patients to the hospitals due to the fact that most of areas in Blitar regency are rural, that cannot be easily reached out by any public transportation. The medical record has reported that as many as 80% patients with the acute ischemic stroke make use of their own transportation means (vehicles) to get to the ED of Ngudi Waluyo Public Hospital; while only 20% of the patients make use of ambulance. The ambulance is not an emergency ambulance, but usually a referral ambulance from local health centres. In the ED Ngudi Waluyo Public Hospital there is 3 ambulances available; one is supported with emergency devices and the other two are not equipped with supporting utilities for emergency.

Differences in distances are presumed to cause differences in arrival time of the patients with the pre-acute ischemic stroke attack. The study finding that distance as far as ≤ 10 km and or ≤ 15 km between the residences and the hospitals contributes to the early arrival of the patients with the post-acute ischemic stroke attack^{13, 14}. In contrary, the farther distance, constituting more than 51 km from the residences to the hospitals, significantly correlates to the transportation problem that results in arrival delay in the ED^{15, 16}. Therefore, a study about the influence of incident location distance and transportation to hospital arrival delay of patients post-acute ischemic stroke in the ED is of major importance to conduct in order to investigate if the two mentioned variables contribute to the hospital delayed arrival of the patients post-acute ischemic stroke attack.

Material and Methods

Our research looked at two variables, which were the incident location of distance and transportation; and hospital delayed arrival. The incident location of

distance was stated as distance between the residences and the hospitals, whereas transportation was the kind of vehicle (transportation) that being used to take the patient to the hospitals. In addition, the hospital-delayed arrival was defined as the onset action for stroke starting from the stroke onset to arrival at the ED.

This current study used cross sectional design and was conducted in the ED of Ngudi Waluyo Public Hospital from May- June 2016. Consecutive sampling was employed with an inclusion criterion, which was nucleus family/grand child/or purely relatives who happened to know and directly involved in taking the patients to the ED within 72 hours after the attack; the respondents have to be ≥ 18 years old; healthy as well as able to communicate verbally and well written. Meanwhile, the exclusion criterion referred to those relatives who the patients were not diagnosed with acute ischemic stroke and had stroke history detected 6 weeks beforehand.

Observation sheet was used as the instruments to investigate the kinds of transportation means, the time of the attack, and the arrival in the ED; whilst interview guide used to examine patient relatives. Meanwhile, to measure the distance of the incident locations to the hospitals, *Google Maps* application was utilized, by accessing the site of <http://maps.google.com>. Every participant was informed about the purpose of the study and written consent to participate in the study was obtained, as well as confidentiality was assured.

Findings

The characteristics of family members with acute ischemic stroke can be seen on **Table 1**. They were the family members of the 58 patients. Approximately 46.5% of the family members graduated from primary school and precisely 50% did not work. The most answers accounted for 32.8% of family members who noticed the signs of stroke, but just waited and did nothing. However, 20.7% of the family members immediately took the patient to emergency room.

Table 1: Characteristics of Family Members of Patients with Acute Ischemic Stroke

Characteristics	n (%)
Education	
Elementary	27 (46.5)
Junior High	13 (22.4)
Senior High	12 (20.7)
University	6 (10.4)
Occupation	
Unemployed	29 (50)
Farmer	18 (31)
Entrepreneur	5 (8.6)
Teachers	5 (8.6)
Civil Servant	1 (1.8)
Respond	
Wait and see	19 (32.8)
Immediately go to ER	12 (20.7)
Call medical help or find medical help	10 (17.2)
Go to the doctor	6 (10.3)
Go to public healthcare	5 (8.6)
Call family or neighbor for help	2 (3.4)
Refer to the nearest hospital	2 (3.4)
Call the doctor	1 (1.8)
Find traditional treatment	1 (1.8)

Source: Primary data (2016), N= 58

Table 2. Out of 58 relatives who happened to know and directly involved in taking the patients to the ED, as many as 50% of whom were the children of the patient; 32.8% of whom were only waiting and letting the patients who experienced the stroke symptoms not treated; and only 20.7% of whom immediately took the patients to the ED. Whereas, **Table 3.**, as many as 36.2% patients arrived in the hospital averagely 6-24 hours after the stroke attack; while as many as 27.6% took more than 48 hours after the stroke attack to arrive in the ED.

Table 2: The characteristics of the respondents (relatives of the patients with acute ischemic stroke)

Characteristics	N (%)
Relationship with the patients	
Child/Children	29 (50)
Wife	15 (25.9)
Husband	6 (10.3)
Grandchild	4 (6.9)
Relative	4 (6.9)
Response	
Waiting and letting	19 (32.8)
Taking the patients immediately to the ED	12 (20.7)
Calling the nurse/midwife	10 (17.2)
Taking the patients to the general practitioner	6 (10.3)
Taking the patients to the local public health center	5 (8.6)
Calling the closest neighbors or relatives	2 (3.4)
Taking the patients to the closest hospital	2 (3.4)
Calling the doctor	1 (1.8)
Taking the patients to the traditional medication center	1 (1.8)

Source: Primary Data (2016), N= 58

Univariate analysis has resulted that the average distance between the incident location and the ED of Ngudi Waluyo Public Hospital was from 3.5 to 18.4 kilometres. In addition, around 67.25% patients were using their private transportation means (vehicles) to reach the ED. Furthermore, the average delayed arrival of the patients post-acute ischemic attack to the ED was 2.4 hours – 48.8 hours (Table 4).

Table 3: The arrival time of the patients post-acute ischemic stroke attack in the ICU of RSUD Ngudi Waluyo Wlingi

The Characteristics	N (%)
Arrivals	
0-3 hours	7 (12.1)
3-6 hours	9 (15.5)
6-24 hours	21 (36.2)
24-48 hours	5 (8.6)
>48 hours	16 (27.6)

Source: Primary Data (2016), N= 58

In terms of the distance between the incident location and the hospital, the result of the linier regression analysis has shown 0.570 in significance. The significance that was higher than 0.05 implied that there was no influence caused by the incident location distance to the arrival delay of the patients post-acute ischemic stroke attack in the ED. On the other hands, the transportation variable has revealed 0.015 in significance, which means that there was a significant influence of transportation to the delayed arrival of the patients post-acute ischemic stroke attack in the ED of Ngudi Waluyo Public Hospital.

Table 4. Univariate analysis on the trasportation and arrival delay of the patients post-acute ischemic stroke attack

Variable(s)	n	Mean	Standard of Deviation	Median (minimum-maximum scores)
Transportation means	58			
Referral ambulance	19			32.75*
Private transportation	39			67.25*
Arrival delay	58	23.2	25.60	8.6(0-69)

Source: Primary Data (2016), *Percentage

Based on the results of the analysis, it has been shown that there was no significant influence of the incident location distance to the delayed arrival of the patient’s post-acute ischemic attack in the ED of Ngudi Waluyo Public Hospital. This is caused by the fact that most of the patients or their relatives do not even

know the symptoms of stroke attack, have a limited understanding on stroke, and there are some patients who reach the general practitioners initiatively before heading to the hospital. Consequently, it might be summed up that in spite of the far distance between the incident location and hospital, the distance itself did not

contribute any influence to the arrival delay. This was in line with the study carried out by Remya contending that despite the distance between the hospital and the incident location ranging 3-80 kilometres or with the average distance signifying 45.37 km, there is not any significant influence of the incident location distance to the arrival time to the hospital¹⁷.

Another study conducted by Kunisawa *et al* has unveiled that there is another factor that causes an absence of influence from geographical factor (the distance between the incident location and the hospital) to the patients' arrivals¹⁵. The factor was the response on what to do or any different action to search for immediate medical help. In this case, the action to search for medical help refers to every action to undergo certain medication or look for medical treatments. Those who suffer from any disease, but do not feel ill (*disease but no illness*) will not take any action for their disease. In contrary, if people suffer from certain disease and feel ill, they must do various actions and attempt to deal with their disease¹⁸.

This current study has shown the data that when there were stroke symptoms detected, as many as 32.8% relatives were waiting and letting the symptoms to occur while hoping that the symptoms would disappear. On the other hands, when the symptoms still existed, the patients would be taken to the health centre or the ED. However, when the symptoms seem to be serious, the relatives will immediately take the patients to the ED. Another response is to do a self-treatment or to seek another treatment in the traditional healing centres. The society's point of view on being healthy-sick tends to be more cultural, not being considered as a physical problem. Accordingly, it makes the society search for socio-culture oriented cure¹⁸.

The cultural pattern throughout Blitar regency of which major societies are Javanese is the reliance on discussion with the relatives such as parents, kids or purely family before taking a decision. The common issue for discussion session refers to where the patients should be treated or hospitalized, how to pay, who will look after the patients in the hospital, and how far the hospital is. At the end of the discussion, the oldest child or the most influencing relatives in the family is responsible for taking the patient to the medical health centres. This issue is completely influential if their children's houses are far from their parents' so that it will take so long for waiting. As a consequence, the patients' arrival in the

hospital will be delayed.

In this current study, it has also shown that transportation constitutes the factor that influences the arrival delay to the hospital. Most of the patients utilizing their private transportation and referral ambulance have delayed their arrival in the hospital. This is happened due to the incomplete EMS facility which is only about 12% patients utilize EMS ambulance as the transportation to get to the hospital and as many as 49% patients utilize their own/private transportation.

Conclusion

The less influence of stroke incident location to hospital-delayed arrival was caused by the pre-hospital delay in which the patients were not immediately admitted to the ED. The difficulty of transportation has significantly contributed to hospital-delayed arrival. Village ambulance is supposed to be initiated and programmed so as to facilitate potential patients and their families during emergency conditions.

Conflicts of Interest: The authors declare there are no conflicts of interest.

Source of Funding: This study was funded by the researchers itself.

Ethical Clearance: Taken from Malang Health Polytechnique Committee with number 080/KEPK POLKESMA/2016.

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Socio Demographic Profile of Late Childhood and Adolescence Abusing Cannabis

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Abstract

Adolescence is a transition period from childhood to adulthood. Along with many other conflicts, students at this age group are likely to encounter drug abuse for the first time. Identifying the socio demographic profile will help in prevention of substance use disorder to some extent. Objective: Identify the socio demographic profile of adolescents abusing cannabis. Methods: Data were collected from 100 patients from two de-addiction centres using a survey questionnaire after getting consent. Results: The demographic findings revealed that the majority 63% belonged to the age group of 15-20 years and the highest 64% of the samples were hailing from the urban area. Significantly, the prevalence of substance use is high among children from a nuclear family. Majority (42%) were belonging to high income family group (>30,000/month). Analysis of the family status revealed that among 100 samples, fathers of 62 patients were working abroad. In 92% of the cases there was family history of substance abuse. All these findings suggest that an in-depth study is needed to identify the role of demographic factors in cannabis abuse.

Key words: *Socio demographic profile, cannabis abuse, childhood and adolescence*

Introduction

Adolescence is a period of ongoing neurodevelopment that is linked with an increase in risk-taking behaviours, including the onset of substance use.¹⁻¹² Substance use causes problems related to increased mortality and morbidity among adolescents and contributes to various forms of mental illness and social complications.¹³⁻¹⁶ Moreover adolescence is a period with significant brain development. Cannabis use may be a risk factor which will affect the neurological development and cognitive function of adolescents adversely.¹⁷⁻¹⁹ Some studies found that association with friends who exhibited behavioural deviation including substance use lead to the early onset of substance use which may extent to adulthood as well. This substance use related morbidity can be reduced by early screening and implementation of treatment interventions.²¹ Researchers have identified that an ongoing survey is very relevant in the case of the identification of substance abuse as well as the socio demographic profile of children abusing substance^{22,23}.

Therefore, the researcher tried to examine socio-demographic profile among patients diagnosed with cannabis abuse admitted to a de-addiction centre.

Objective

To identify the socio demographic profile of patients seeking treatment in selected deaddiction centres

Methodology

Research design and sampling

A descriptive survey approach was undertaken to identify the socio demographic profile of patients seeking treatment for cannabis abuse in two de-addiction centres. A convenient sampling technique was adopted to select 100 samples who are attending the outpatient department of two de-addiction treatment centres. Informed consent was obtained from the participants as well as parents and those who are not willing to participate as well as those who have severe comorbid psychiatric disorders were excluded from the study.

Delimitation

The study is delimited to the patients seeking treatment from two deaddiction centres, Kozhikode district, Kerala

Tools and techniques

The socio-demographic questionnaire was used to collect the baseline information of study participants such as age, place of living, education, monthly income, and type of family, family history of substance use, parent’s marital status, and reason for substance abuse. Further, a survey questionnaire was used to collect details about cannabis abuse. The tools were developed after getting opinions from the experts.

Data collection and analysis

After obtaining permission from the institutional ethical committee, the researcher approached the participants. The participants were also given a detailed description of the study and informed consent was taken. Informed consent was taken from parents in case of patients who are less than 18 years of age. The questionnaire was distributed at the time of admission among the patients who satisfied the inclusion criteria.

The collected data were analysed using descriptive statistics.

Major findings of the study

The results revealed that the majority (64%) of the samples belonged to the age group of 15-20 years and 36 % of the sample belonged to the age group of 21-25 years. Most of them (64%) were hailing from an urban area and the remaining were from a rural area. Around 49% of the samples belonged to a high-income group. Their monthly family income was more than rupees 30,000. On examination of the type of family, 78% of the samples were belonging to the nuclear family. The remaining 22% were coming from a joint family. Almost 92% of the samples suggested a strong family history of substance abuse. For almost 62% of the samples, the duration of cannabis use is less than six months. In most of the cases, 62%, father working abroad to earn a livelihood. About 63% of the samples were staying in the hostel with friends. Among the family members who are abusing cannabis, 81% were fathers. For 80% of the samples, classmates were abusing cannabis. Peer pressure (36%) and curiosity (33%) were the two reasons for abusing cannabis.

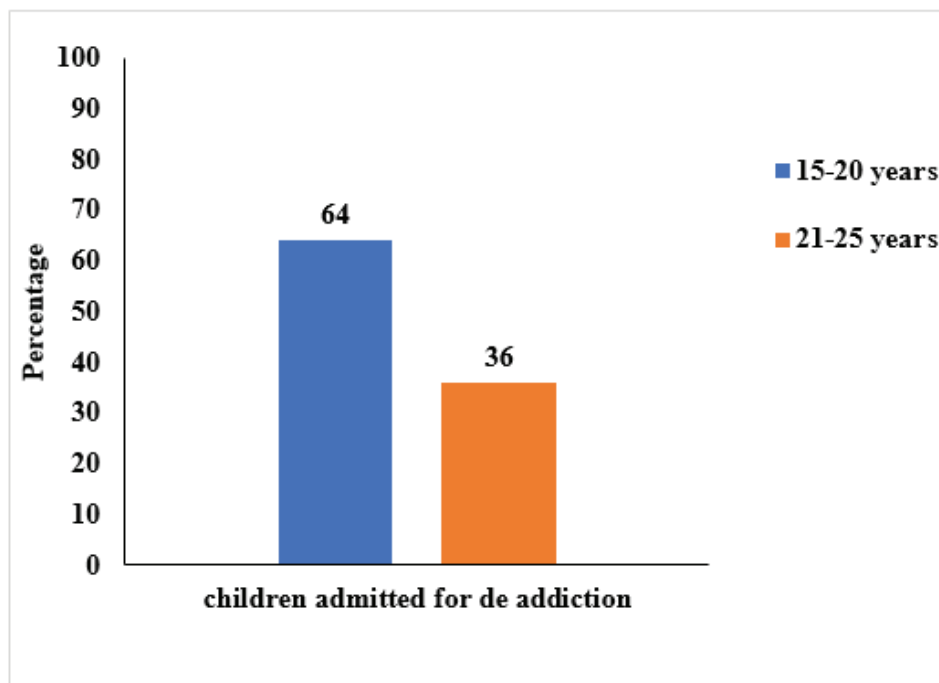


Figure 1: Bar chart projects the age group of children admitted for deaddiction treatment.

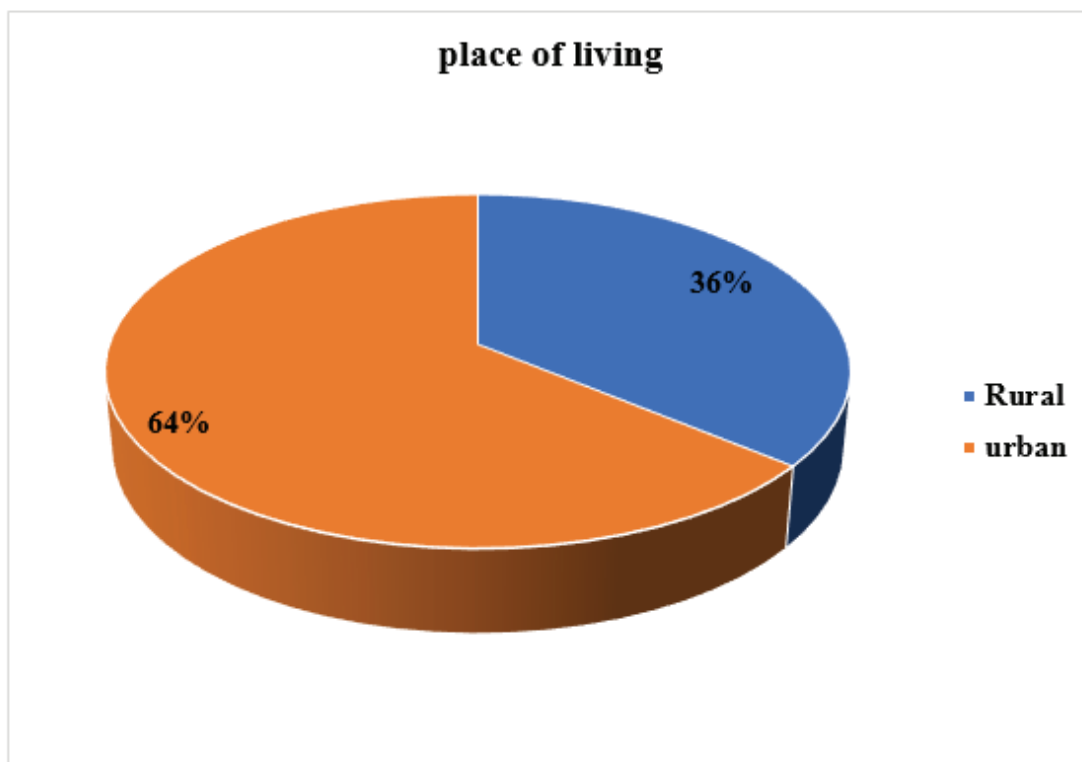


Figure 2: Pie chart illustrates the place of living of the participants

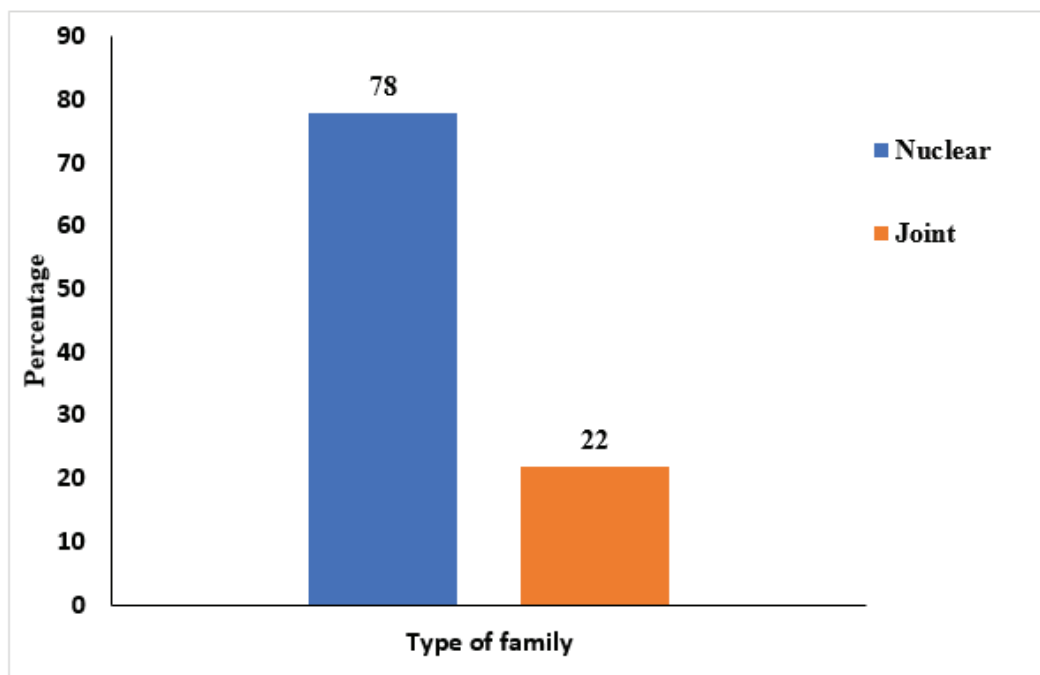


Figure 3: Bar chart exhibits the type of family the participants belong

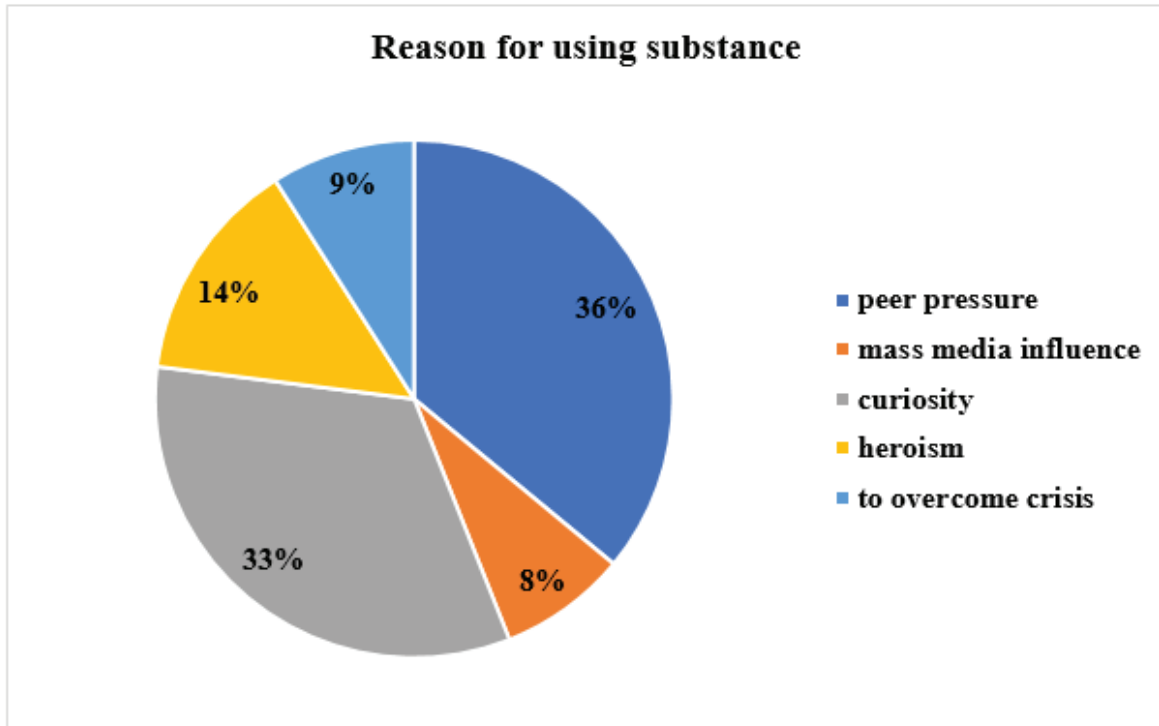


Figure 4: Pie chart shows reason for cannabis abuse.

Discussion

Current study findings show that substance abuse is highest among children hailing from the urban area. Out of 100 subjects, 64 were coming from an urban area. This finding is consistent with the findings of a previous study.²³The findings of the present study were correlated with a study conducted in 2013 in which it was found that peer pressure is an important reason for initiating substance use.²⁴ In the present study, peer pressure is an important reason for drug abuse (36%). Another important aspect is projected by many researchers were the age group of people abusing the substance. It was found that the age group of 15-25 years are at high risk for abusing the substance.^{25,26} This finding also can be correlated with the findings of the present study.

According to another study factors including parental rejection and family conflict, ineffective monitoring and parental discipline strategies, and compromised parental functioning due to substance abuse and mental health problems are among the strongest and most consistent predictors of adolescent problem behaviours such as substance abuse and conduct disorder.^{27,28}The findings

of the present study are consistent with this findings. According to the present study, 92% of the children had a family history of substance abuse. This findings can be correlated with another study.²⁹ Parents especially fathers of 62% of the children were working abroad. The study findings are consistent with another recent study conducted in 2020. According to this study, children who are not living with parents were using cannabis compared to those who live with their parents³⁰.

Conclusion

The researcher identified some important socio-demographic factors among children with cannabis abuse which include nuclear family type, urban life, parents working abroad, staying away from home, peer pressure, and curiosity. It’s very important to diagnose and treat cannabis abuse as it may lead to further complications like poly substance use, criminal behaviour, and antisocial activity. The prosperity of a nation lies in the youth. It’s important to up bring them in a socially responsible manner. They have to lead a productive life. By the time they realize the adverse effects of drugs, they could end up in other complications and even

suicide. So, it is important to maintain abstinence and improve the outcome of the de addiction treatment. The medical treatment should be supplemented with some interventions which will help to improve the outcome of the treatment.

Ethical Clearance: Ethical clearance was obtained from the ethical committee of Iqraa International Hospital and Research Centre, Kozhikode, Kerala.

Source of Funding: Self

Conflict of Interest: Nil

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Assessment of Oral Health Related Quality of Life in Obsessive Compulsive Disorder Patients in Saudi Arabia

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Abstract

Background - Oral Health-related Quality of Life (OHRQoL) has been defined as “the absence of negative impacts of oral conditions on social life and a positive sense of dentofacial self-confidence. Obsessive compulsive disorder (OCD) is a chronic, heterogeneous, neuropsychiatric anxiety disorder, characterized by the presence of either obsessions, compulsive rituals or more commonly both.

Materials and Methods - A cross sectional descriptive study was conducted in a Psychiatric clinic in University Medical Centre, Riyadh. The subjects were diagnosed with OCD by the consultant psychiatrist (investigator) through structured clinical interview using Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5). The subjects were given a questionnaire in their native language Arabic and consisted of demographic details and two scales, first scale is the OHIP-14 (Oral Health Impact Profile-14) measuring oral health related quality of life and the second YBOCS (Yale Brown Obsessive Compulsive Scale) to measure the severity of OCD.

Results - the mean OHIP score for female was 1.60 SD 0.95 and for the male it was 1.48 SD 0.77, that 8% of subjects always had trouble pronouncing any words because of problems with their teeth, 36% had painful aching of the mouth some of the times, majority (56%) of the study subjects OCD were diagnosed as mild

Conclusion - This study showed the moderate impact of oral health related quality of life among subjects with OCD. There was a significantly positive correlation between OHIP and OCD; also there was a significant correlation between obsessive thoughts and compulsive behaviors.

Key Words - *Quality of life, oral health, OCD, anxiety disorder*

Introduction

Any health issues that interfere with the daily routine activities may have a negative influence on the general

quality of life. The diseases of the oral cavity are not life threatening, but certainly can interfere in the daily activities like eating, speaking, personal relationships and socializing and can affect general wellbeing of the person, and in turn can have an impact on the quality of life. Hence, the term oral health-related quality of life (OHRQoL) is the outcome of numerous health researches about the impact of oral diseases on quality of life.¹

Oral Health-related Quality of Life (OHRQoL) has been defined as “the absence of negative impacts of oral conditions on social life and a positive sense

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of dentofacial self-confidence, Theoretical models characterize OHRQoL as multidimensional, including physical, psychological and social dimensions. Among the various OHRQoL instruments, the Oral Health Impact Profile (OHIP) was developed with the aim of providing a comprehensive measure of self-reported dysfunction, discomfort and disability attributed to the oral condition.²

Oral health-related quality of life (OHRQoL) is considered as an important outcome of dental care.³ Oral-health-related quality of life (OHRQoL) evaluates the extent that oral health interferes on daily life activities in different dimensions as functional, emotional, social and even economic impact as the generated by dental treatment, etc. Knowledge of these aspects allow care professionals to identify what the patient really perceived and feel about their own oral health and how much it influence them in their daily activities.⁴

Obsessive compulsive disorder (OCD) is a chronic, heterogeneous, neuropsychiatric anxiety disorder, characterized by the presence of either obsessions, compulsive rituals or more commonly both. The OCD was once considered a relatively rare condition until about two decades ago, but is now viewed as not only one of the most prevalent psychiatric disorder.⁵

Obsessions are unwelcome or distressing ideas, thoughts, images or impulses that repeatedly enter persons mind. They may seem to occur against his/her will. They may be repugnant to them, are often senseless, and may not fit their actual personality at all. Compulsions are behaviors or acts that they feel driven to perform, even though they may recognize them as senseless or excessive. At times, they may try to resist doing them, but this may prove difficult. They may experience anxiety that does not diminish until the behavior is completed

Obsessive compulsive disorder (OCD) is egodystonic and cause significant distress to the patients and their families. Life time prevalence of OCD in general population is between 2 to 3 %.⁶

Little is known about the impact of OCD on OHRQoL, research on this aspect is limited and scarce, especially in Saudi Arabia there is no such research has been done before to assess its effects, hence a study was

planned to assess the Oral Health Related Quality of Life in Obsessive Compulsive Disorder patients in Riyadh, Saudi Arabia.

Materials and Methods

A cross sectional study was conducted in psychiatric department of a hospital in Riyadh city, the subjects were diagnosed with OCD by the consultant psychiatrist (investigator) through structured clinical interview using Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5). The subjects who agreed to participate in the study were included and those who were unwilling to participate or reluctant to give consent were excluded from the study.

The present study was approved by the Ethical and Research committee, College of Medicine, Majmaah University. The necessary permissions were taken from the hospital, and informed consent was taken from the participating subjects. The present study was done during October to December 2016.

The study was conducted on 50 subjects, which were decided conveniently, consisting both male and female, with the age range of 16 to 46 years. The subjects were given a questionnaire in their native language Arabic and consisted of demographic details and two scales, the first one the OHIP-14 (Oral Health Impact Profile-14) measuring oral health related quality of life and the second YBOCS (Yale Brown Obsessive Compulsive Scale) to measure the severity of OCD. Both the scales were assessed using 5 point Likert scale. Both the scales were translated by a professional translator.

The OHIP-14 consisted of 14 items that focuses on seven dimensions of impact (functional limitation, pain, psychological discomfort, physical disability, psychological disability, social disability and handicap) with participants being asked to respond according to frequency of impact on a 5-point Likert scale. The YBOCS consisted of 10 items/questions, the first 5 questions relate to obsessive thoughts, the last 5 questions relate to compulsive behaviors, which were also assessed through 5-point Likert scale, based on cumulative score from all the 10 questions the subject would be categorize for severity for OCD as 0–7 Subclinical, 8–15 Mild, 16–23 Moderate, 24–31 Severe, and 32–40 Extreme.

The data collected was analyzed using IBM SPSS version 23, t test was used to compare the equality of means, chi square test was used to compare qualitative variables, and Pearson correlation test was used to correlate OHIP and OCD parameters.

Results

The sample consisted of 50 subjects with the age range of 16 to 46 years and a mean age of 30.92 SD 8.70 (Table 1), females were 34 (68 %) and male were 16 (32%).

Table 1. Age of the Subjects

	N	Minimum	Maximum	Mean	Std. Deviation
Age	50	16	46	30.92	8.708

Table 2. distribution of responses in percentages for all OHIP items

	Never	Occasionally	Some times	Most times	Always	Total %
Trouble pronouncing any words	18	36	20	18	8	100
Sense of taste has worsened	22	32	26	18	2	100
Painful aching in mouth	10	26	36	26	2	100
Uncomfortable to eat any foods	6	36	32	24	2	100
Been self-conscious	6	36	34	22	2	100
Felt tense	12	34	30	22	2	100
Diet has been unsatisfactory	38	40	12	8	2	100
Had to interrupt meals	18	40	26	14	2	100
Difficult to relax	12	40	28	18	2	100
Been embarrassed	8	42	28	20	2	100
Been irritable with other people	10	44	30	14	2	100
Difficulty doing your usual jobs	12	38	32	16	2	100
Felt life is less satisfying	14	36	30	18	2	100
Totally unable to function	18	38	24	18	2	100

Table 2 shows the distribution of responses in percentages for all OHIP items. It was found that 8% of subjects always had trouble pronouncing any words because of problems with their teeth, mouth or dentures. 32% occasionally felt their sense of taste has worsened, 36% had painful aching of the mouth some of the times, when asked if they were uncomfortable to eat any foods 36% replied occasionally and 24% replied most of the times, 36% occasionally felt self conscious and 34% occasionally felt tense, 38% replied their diet was never unsatisfactory, 40% had interrupted meals occasionally same percentage were also said they

were difficult to relax occasionally, 20 % said they are embarrassed most of the times and 30% says sometimes they are irritable with other people, 16% said most of the times its difficult of them doing usual jobs, 30% sometimes felt life is less satisfying and 38% were totally unable to function occasionally.

Table 3. shows the mean scores of oral health impact profile between male and female, the mean OHIP score for female was 1.60 SD 0.95 and for the male it was 1.48 SD 0.77, there was no statistical difference of mean score between male and female OHIP.

Table 3. Mean OHIP scores between male and female					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
OHIP	Female	34	1.6092	.95593	.16394
	Male	16	1.4866	.77688	.19422

Table 4. Showing the frequency measuring the severity of subscale obsessive thoughts in OCD, 19 (38%) of the study subjects were diagnosed as subclinical, 28 (56%) as mild and 3 (6%) as moderate.

Table 4. Obsessive Thoughts subscale of OCD					
		Frequency	Percent	Valid Percent	Cumulative Percent
OT	Sub-clinical	19	38.0	38.0	38.0
	Mild	28	56.0	56.0	94.0
	Moderate	3	6.0	6.0	100.0
	Total	50			

Table 5. Shows the frequency measuring the severity of subscale compulsive behavior in OCD, 20 (40%) of the study subjects were diagnosed as subclinical, 28 (56%) as mild and 2 (4%) as moderate

Table 5. Compulsive Behavior subscale of OCD					
		Frequency	Percent	Valid Percent	Cumulative Percent
CB	Sub-clinical	20	40.0	40.0	40.0
	Mild	28	56.0	56.0	96.0
	Moderate	2	4.0	4.0	100.0
	Total	50	100.0	100.0	

Table 6. Shows the correlation between OHIP and OCD and its subscales, there was a statistically significant positive correlation between OHIP and OCD and its subscales. But the correlation between the two subscales of OCD that is Obsessive Thoughts and Compulsive Behavior was seen to be high.

Table 6. Correlation between OHIP and OCD				
		OHIP	Obsessive Thoughts	Compulsive Behaviors
OHIP	Pearson Correlation	1	.455**	.400**
	Sig. (2-tailed)		.001	.004
	N	50	50	50
Obsessive Thoughts	Pearson Correlation	.455**	1	.763**
	Sig. (2-tailed)	.001		.000
	N	50	50	50
Compulsive Behaviors	Pearson Correlation	.400**	.763**	1
	Sig. (2-tailed)	.004	.000	
	N	50	50	50
**. Correlation is significant at the 0.01 level (2-tailed).				

Discussion

An integral part of the health of an individual, of all ages, is his or her oral health status. Significant oral disease or a poor oral status can be significant factor leading to either physical or psychological incapacitation, or even both. For this reason Oral Health Related Quality of Life (OHRQoL) research has continually grown in

importance. Primarily to increase our knowledge of the impact of oral health but what is more important as a guide to preventive and therapeutic measures.

The present study was conducted to measure the impact of Oral Health Related Quality of Life (OHRQoL) in subjects with Obsessive Compulsive Disorder (OCD). As this is the first study measuring the

impact and correlation between the two, to compare we used general population as well as subjects with other conditions.

In this study the ratio of prevalence of OCD between male and female was found to be 1:2, where as the another study reported the ratio 1:1.⁷ The prevalence of OCD was found to be 3.% in this study which was high as compared to the other study which reported 1.8%.⁸ There might be multiple factors involved for this difference in prevalence. The diagnostic criteria which we used was based on DSM-5 unlike other studies which used DSM-3 and 4, further more OCD can be fairly diverse in its clinical presentation and systems may change over time with an individual.

One study reported the equal occurrence of OCD in boys and girls in contrast to our study where we found female to be affected more than males, this finding have been supported by other researchers where female predominance is seen above 18 years of age was reported and mentioned in the same study.⁹

This study found the medium impact of OHRQoL these results are similar to the study which also saw the medium impact of OHRQoL.¹⁰ We found that oral health did impact the quality of life where majority were reporting for painful aching of the mouth similar results have been reported by the study.¹¹ Emphasizing the importance of oral hygiene care, home measures and follow up of oral hygiene instructions.

This study found that females were statistical significantly more embarrassed and bit irritated to other people because of the problems of the teeth, mouth or dentures, as compared to male, this can be explained on a common notion that females are more esthetics demanding and if it's not met may be psychologically driven and get irritated with others. The prevalence of OCD was also seen high in this study, the gender may be a relevant factor to determine the OCD clinical presentation and course.¹²

This study also saw the influence of occupation of OCD subjects on OHRQoL with statistical significant findings, subjects were irritated to others and totally unable to function because of the problems of the oral cavity and among them the people who are unemployed displayed the maximum level of impact on oral health

related quality of life. OCD commonly starts in childhood causing significant distress and impairment and can persist through adult life leading unemployment many a times. World Health Organization ranks OCD as one of the most impairing illnesses.¹³

This study also presented a statistically significant correlation between OHIP and OCD indicating the impact of OCD on oral health and quality of life, the obsessive thoughts and compulsive behaviors were also statistically significant to one another though the majority of participants in this study were classified as mild. The existence of OCD in patients with psychotic disorders has been well recognized.¹⁴ But the reports measuring the influence of OCD on OHRQoL are not available as of now. OHRQoL has a great potential for substantive application in the field of health care.¹⁵

I made an attempt to bridge the gap between OHRQoL and OCD and to the best of my knowledge there is no study reporting the relationship between the two yet. The perception of quality of life is subjective and hence varies from one culture to another.¹⁶ Therefore research at conceptual level is needed in countries where OHRQoL has not been described like Saudi Arabia.

Conclusion

This study showed the moderate impact of oral health related quality of life among subjects with OCD. The majority of OCD subjects were classified as mild; there was a significantly positive correlation between OHIP and OCD, also there was a significant correlation between obsessive thoughts and compulsive behaviors. Gender was statistically related with the feeling of embarrassment and getting irritated for other people, which was high in females, the unemployed OCD subjects showed high levels if irritability for other people and totally unable to do their functions. However it is suggested that there is a need for more studies in this regard for more information and better understanding of OCD and its impact on OHRQoL.

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Cervical Proprioception and Dynamic Balance in Computer Users: A Comparison between Male and Female Healthy Adults

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Abstract

Background: Nowadays, individuals are utilizing a computer for different tasks daily and the use of computers has increased rapidly worldwide. The impact of prolonged computer usage may lead to balance problems and disturbed cervical proprioception due to faulty posture of the neck. The purpose of this was to compare the impact of prolonged computer usage on cervical proprioception and dynamic balancing ability in the male and female gender.

Methods: 100 healthy adults' computer users were recruited for the study. The subjects were classified into two groups: male computer users (n=50) and female computer users (n=50). Neck proprioceptions were assessed by Head Repositioning Accuracy (HRA) test and dynamic balances assessed by the Y Balance Test (YTB), 3 trials were performed and the mean values were calculated.

Results: There were no statistically significant differences in age, weight, height, and body mass index between all subjects in the groups ($p>0.05$). There is significant differences between males and females participants as females had more decreased in their neck proprioception and dynamic balance ability than males ($p<0.05$). The male computer users showed better performance than the females.

Conclusion: Prolonged usage of computers (more than four hours per day) could negatively affect cervical proprioception and dynamic balance ability in healthy adults. The results may be used to promote awareness about the normal duration of computer use and develop programs for good postural education and stretching exercises to prevent its negative effects on cervical proprioception and balance ability, especially for female computer users.

Keywords: joint repositioning error, dynamic balance, computer usage, gender.

Introduction

Nowadays, the use of computers and other electronic devices has increased worldwide rapidly. The use of computers for both occupational as well as leisure activities includes processing of large data, maintaining of the global database, checking social media, games, access to the internet, and other communications.¹ The forward Head Posture (FHP) is the most common

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adapted posture by the prolonged computer users. FHP causes increase anterior curvature of the lower cervical spine and posterior curvature of the upper thoracic spine for compensation and maintaining of balance and posture.²⁻⁵ The FHP primarily affects the cervical spine and also affects the shoulder blade, thoracic and lumbar spine which produce overall musculoskeletal and balance problems.⁶ Constant stress on cervical spine joints due to forward head posture⁷ results disturbing signals to the brain that might cause decrease neck proprioception and balance ability.⁸⁻¹⁰

Previous studies showed that prolonged usage of a computer with poor sitting posture is associated with neck pain due to musculoskeletal disorder.¹¹ Due to severe neck pain causes decreased balancing ability.¹² Pain or inflammation decreases sensory input in joints which affect proprioception and balance ability.¹³ The sensitivity of neck proprioception also affected by continuous pressure or tension on the neck muscles, which affect dynamic balance ability.¹⁴ Several studies stated that long-term usage of computers may cause a reduction in cervical proprioception and dynamic balancing ability. Regarding gender, these findings are conflicting. So, the purpose of our study was to compare the impact of long-term usage of computers on cervical proprioception and dynamic balancing ability in male and female healthy adults.

Methods

It was an observational study, the total number of subjects was 100, 50 in each group with the age of 18-35 years. The subject was chosen based on a sample of convenience. Subjects were assigned to Group A (males computer users) and Group B (female computer users).

The subjects were selected from the computer science department of Galgotias University, after signing the informed consent. The subjects were selected only if they met the inclusion and exclusion criteria. Inclusion criteria: Male and female aged 18-35 years with normal BMI. Who use onscreen computer for more than 4 hrs per day over the past two years. Exclusion Criteria: Traumatic neck injuries, inflammatory joint disease, history of recent trauma and surgery, neurological disorders, vestibular disorders, underweight and overweight, any psychiatric disorders, Pregnancy, communication problems.

Ethical approval and consent to participate

The study was approved by the Institutional Ethical Committee, Galgotias University, and Date: January 2020. All procedures followed were by the institutional ethical standards for human experimentation and the Helsinki Declaration and written consent was obtained.

Head repositioning accuracy (HRA)

The LASER Method was applied to measure proprioception by assessing cervical joint position error (JPE). This method has shown good test-retest reliability and has excellent correlation with an ultrasound technique for measurement of JPE.¹⁵ Four cervical spine movements (flexion, extension, right and left rotation) were assessed using the HRA test.¹⁶ a laser was attached to a lightweight headband on the participant's head. The participant's eyes enclosed with a blindfold so that the participants could not monitor the laser pointer. The participants were instructed to move to half the reported normal range of motion of all four cervical spines (flexion 30 degrees, extension = 35degree, right rotation = 40degree, left rotation = 40degree) to avoid any potential end-range pain or stretch provocation. Goniometry was used to measure this cervical range of motion. The difference between the starting and relocation positions of each cervical movement was measured and recorded. Each cervical movement was performed 3 times and averaged. 10 seconds of leisure time was allowed between attempts of the same movement and 60 seconds between different cervical spine movements. The value was recorded in centimeter.^{15, 16}

Y- Balance Test (YBT)

The Y Balance Test (YBT), derived from the Star Excursion Balance Test (SEBT), has been demonstrated to be a good test-retest, reliability, and validity for dynamic balance measurement.¹⁷⁻²⁰ all the participants thoroughly warmed up before the commencement of the test. A recovery period of 3-5 minutes was administered following the warm-up and before the beginning of the test. The participants stood with their hands firmly placed on their hips on the center platform, behind the red line, and awaited further instructions. The test was performed in the following order: Anterior, Posteromedial, and Posterolateral directions for both lower extremities. Reach distances were recorded to the nearest 0.5cm.¹⁹⁻²⁰

Statistical Analyses

The SPSS program version 17.00 software were used to measures all statistical. T-test was used for comparison of participant’s general characteristics (age, weight, height and BMI). Continuous variables were analyzed by mean and Standard Deviation (mean±SD). T-tests were carried out to compare the mean values of the HRA and Y balance test between the groups. The level of significance was usual at p<0.05. The Shapiro-Wilk test has used the normality of the data.

Results

General characteristics of the subjects

General characteristics (mean± SD age, weight, height, and BMI) of the male and female subjects showed in (Table-1). There were no statistically significant differences between both groups. All the subjects of the groups had similar mean age, weight, height and BMI (p>0.05).

Head repositioning accuracy (HRA)

The Comparison of HRA between the male and female computer users (Table 2): the descriptive statistical analysis of all four movements of the cervical spine showed significant differences between male and female computer users (p-value<0.05). Female computer users have more decrease in their neck proprioception than male users.

Y-Balance Test (YBT)

The descriptive statistical analysis of comparison of Y balance test (YTB) scores between male and female computer users (Table 3): There were no significant differences in anterior, posterolateral and posteromedial direction of the YBT between male and female computer users, whereas significant differences showed between the groups in their left and right composite scores (p-value<0.05). Female users more decrease in their dynamic balance ability than male computer users. The male computer users showed better performance than the females.

Table 1: Comparison of the characteristics of the subjects: mean age, weight, height and BMI of smartphone and computer users groups

Variable	Female computer users mean±SD (n=50)	Male computer users mean±SD (n=50)	t-value	p-value
Age(y)	23.62+3.7027	23.16+2.2889	0.558	0.456
Weight(kg)	65.44+10.755	64.138+11.1347	0.353	0.553
Height(cm)	169.958+11.3422	169.718+10.4644	0.012	0.912
BMI(kg/m2)	22.0212+2.506	21.978+2.1881	0.008	0.927
SD: Standard Deviation, p-value: Level of significance				

Table 2: Comparison of the mean value of HRA between smartphone and computer users

Variable	Female computer users mean±SD (cm)	Male computer users mean±SD (cm)	t-value	p-value
Flexion	10.18+3.1854	7.578+2.891	18.293	0.000
Extension	10.288+6.3473	7.0932+4.4009	8.554	0.004
Right rotation	9.494+4.7239	7.3426+3.3082	6.958	0.009
Left rotation	9.854+5.2621	6.7206+3.0403	13.295	0.000
SD: Standard deviation, p-value: level of significance				

Table 3: Comparison of the mean value of Interlimb differences and composite score in the Y Balance Test performance between smartphone and computer users groups

Variable	Female computer users Mean±SD (cm)	Male computer users Mean±SD (cm)	t-value	p-value
Anterior	7.416+6.7397	6.076+3.5429	1.491	0.224
Posteromedial	7.6+5.1884	8.462+5.8846	0.603	0.439
Posterolateral	8.086+6.869	7.028+5.6786	0.704	0.403
Composite score right	95.4912+13.506	101.836+12.3134	6.025	0.015
Composite score left	93.16+10.9161	101.025+10.2088	13.85	0.0003
SD: Standard deviation, p-value: level of significance				

Discussion

The purpose of this study was to compare the effect of prolonged computer use on cervical proprioception and balance measures in male and female healthy individuals. The result of the study showed that there is no significant difference between males and females

as regard age, weight, height, and BMI. The result of our study showed a significant difference in cervical repositioning errors and dynamic balance measures when the comparison was made between both the group individuals. The female computer users had the largest cervical repositioning error than male users. However, we found that female computer users had significantly

reduced balance measures as compared with male users. The HRA test and left composite score of YBT showed better performance of the participants with male computer users than female users. The results of our study are in agreement with the finding of previous studies. Jung ho Kang et al. studied that the impact of FHP on postural balance in prolonged computer users, and the study showed that healthy adults computer-based workers decrease their balance ability as a result of forwarding head posture.²¹ Ming et al. concluded that prolonged uses of computer cause neck and shoulder pain.²² Poole et al. stated that patients with neck pain had reduced their ability to maintain balance and gait pattern.²³

Previous studies showed that the risk of musculoskeletal symptoms in computer or tablet users is highly correlated to their abnormal position & gender e.g. poor sitting position.²⁴ Both risk factors, gender, and awkward postures affected the prevalence of neck and upper back/shoulder musculoskeletal symptoms. In the current review, Tittiranonda et al found that differences in anthropometrics causes females required more muscles work for maintaining balance and posture than male.²⁵ In VDT users, females had most commonly complained of musculoskeletal symptoms in their body regions than males and more involved in physical and psychosocial conditions which affect their overall functions.²⁶ The results of our study agreed with Oya, et al.²⁷ the results showed that the balance ability of males had superior to the females whereas Fotini and Antonis²⁸ stated that there was no significant difference between men and women participants in balance ability. Differences between male and female participants in our study as the male subjects showed better performance than females. Males are involved more in physical activities and have more muscular strength than females which might improve their physical performance.

Future Perspective and Limitations

The sample size was small. The research does not specify the difference between computer and laptop users. This study was conducted on young adults; the further study can be conducted on adolescents or any other age group who use the visual terminal display for a long period of neck flexion. Further research can be performed on both dynamic and static balance on computers as well as laptop users.

Conclusion

This study suggests that the prolonged usage of computers could negatively affect cervical proprioception and dynamic balance ability, especially in female healthy adults. The current data suggest that peoples who are using computers for more than four hours may need used to more awareness about good posture and normal duration of computer use and develop programs to minimize its negative effects on cervical proprioception and balance ability. Therefore, this study further emphasizes the importance of ergonomics, stretching, and strengthening exercises in case of computer usage for a long duration.

Relevance to clinical practice

These results showed that neck proprioception and dynamic balance ability more affected in prolonged computer users, which could need appropriate guidance and require treatment to prevent the progression of symptoms. Furthermore, suggestions should be given to patients to a reduction of time spent on computers or, when using them, try to maintain the head in a neutral position or less flex position.

Conflict of Interests: The authors declare that they have no competing interests.

Funding: No financial help was obtained for this study.

Acknowledgment: The authors would like to thank all the participants involved in the study and acknowledge the contribution of the staff at the Department of Physiotherapy and Computer Science for facilitating data collection for this study.

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