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Are We Ready For The Paradigm Shift In The Health Care System Of Pakistan?

Inayat H. Thaver, Nadia Khalid

Pakistan's health care indicators and accomplishment of its national as well international goals/targets though improving but are lagging the expected achievements[1]. The country is at a crossroads of having the demographic as well the epidemiologic transitions; besides these, social as well as mental issues are also increasing[2]. There is also a challenge of urbanization[3] with its consequent flourishing of squatter settlements adding to burden on the health system.

Our health care systems have been traditionally focused on rural areas and catering for mother and child health, including the communicable diseases (especially in children) as they had been the main causes of mortality and morbidity[4]. Therefore, both curative and preventive (including promotive) care in the form of various levels of care from primary to tertiary and the famous Primary Health Care (in the aftermath of Alama Ata Declaration) have targeted mainly Communicable Diseases and some of the Non-Communicable Diseases (NCD)[5]. The selective NCDs that were considered such as cardio-vascular and metabolic disorders are mainly being treated and not prevented.

Similarly, demographically, we have moved on to 'population bulge' with a maximum proportion of adolescents and increasing trend of longer survival having older people[6]. Both these groups (adolescents and old) have got their emotional, social, reproductive and health requirements. The situation is further aggravated by the mushrooming but unregulated private (for-profit sector); perverse health-seeking behaviors, indiscriminate use of antibiotics and self-medication. The old-age health delivery systems, stereotype (and focused on selective health issues) training institutions (and trainers) and lop-sided human resource production are not even mentally ready to think about these new emerging challenges. Besides, our EPI (Expanded Program for Immunization) and the vertical programs such as TB, Malaria, HIV/AIDS and others are yet to be controlled; the Polio eradication efforts are still not satisfactory[7]. We are also encountering epidemics of Dengue, HIV/AIDs, and Congo Fever etc. The geographical spread of these as well NCDs such as Diabetes, Hypertension, Cardio-vascular Diseases and mental/psychological problems are alarmingly increase with its health and financial consequences in terms of both treatment and rehabilitation and productive years lost.

The current malnutrition status, illustrates a combination of both undernutrition as well as the over nutrition or obesity[8]. Both male and female and even adolescent besides small children are victims of this status. Thus according to Epidemiological Transition, we are in the third phase of transition, wherein we are faced with the challenges of both communicable as well as non-communicable diseases along with old age and the big group of adolescent and malnourished population.

Pakistan's current government health care service delivery system is mostly focused for rural areas, with the probable exception of having the 'tertiary hospitals' located in larger cities[9]. Thus the 40%+ population residing in urban areas (half of which are in squatter settlements) have the main access to the tertiary hospitals; this is leading to the overcrowding and taking extra load of hospitals for just primary level health care facilities. Since there are inadequate outreach facilities in urban areas (especially in squatter areas), people are more used to seeking care by the nearby General Practitioners (GPs) or quacks, adding to their out-of-pocket expenditure[10]. Let us not forget the emerging trends in morbidity & mortality due to trauma and injuries including various disasters which are posing another burden to our ailing health system[11].

Pakistan has original data sources in health, through various surveys such as Multiple Indicator Cluster Survey (MICS), Pakistan Demographic Health Survey (PDHS), National Nutrition Survey (NNS), Survey of Bureau of Statistics and other government supported institutions. We also have documented health policy and strategic approaches, however until now all of these have not been translated into implementation plans and improved health systems to address these emerging problems. The paradigm shifts are bound to happen, and we can already see the indicators related to high population growth, malnutrition, rapid urbanization, uncontrolled communicable and increasing proportions of non-communicable diseases all being addressed by same old system having human resource who emphasize more on curative care[12]. The usual approach of having another "vertical" program is not going to make a big difference, as there is a growing feeling of having integration of programs; one example has been the IRMNCH (Integrated Reproductive Maternal & Neonatal Health) Program. Unfortunately, there is no organized program for addressing the urban poor living in sums; the attention to over nutrition is the least; the old-

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age people are being neglected; common psychiatric problems (such as anxiety, depression) are treated as having somatic symptoms related to physical problems and for non-communicable diseases, we are building the hospitals or specialized/state-of-art departments in hospitals.

How long should we be treating these above diseases and their consequences by neglecting the basic premise that, all of them, with few exceptions, can fairly well be prevented at an early stage; and healthy life style approaches can be easily promoted and implemented. We cannot take an ostrich approach and either ignore or wait for a miracle to happen through some international donor. We have to bring order to our own house. Each day wasted is accumulating more and more problems with consequent disastrous health and development outcomes. Considering the current socio-political, economic and security situations, the paradigm shift by the government may not be forthcoming though the WHO guidelines, recommendations and approaches are available. This may be because, "True paradigm shifts represent drastic, sometimes uncomfortable change. It is not surprising, therefore, that these events can be met with resistance as organizational leaders step outside their comfort zones".

We have traditionally been waiting for the government to take some action; let us also not forget that "Health is also each one of us' responsibility". A large difference can be made, If the medical, health and paramedic fraternity can make just an extra effort to spend some time to talk about (health education) how to prevent a disease that the patient has presented; and also encourage him/her for maintaining a healthy life style. Inspired by the quote of Gabriela Mistral I wish to extend it to all the population, by saying "To them, we cannot answer 'tomorrow', their (people) name is today".

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Original Article

Effect Of *Citrullus Lanatus* Juice On Hemoglobin, Red Blood Cells And Liver Enzyme; An Experimental Study

Shahid Ali, Nuzhat Sultana, Muslim Abbas, Zareen Naz, Muhammad Akbar Hassan, Muhammad Abid

ABSTRACT:

Objective: To determine effect of citrullus lanatus juice on hemoglobin and Serum Glutamic Pyruvic Transaminase (SGPT) level.

Study design and setting: It was an experimental study conducted on healthy rabbits for sixty days in the research department of pharmacy University of Karachi.

Methodology: Current study was planned to evaluate effect of *Citrullus lanatus* juice on red blood cells, hemoglobin and liver enzyme. 60 days study was performed at 2 different doses i.e 3and 6ml/kg on rabbits. These rabbits were from either gender and were divided into 3 groups their weight ranges from 1200 to 1800 grams. Group A is control group (Normal saline 6ml/kg), Group B is treated group (3 ml/kg), Group C is treated group (6ml/kg). After taking mean of all values they are compared with control group. Significance of mean can be estimated by Tukes Post Hoc Test. $P<0.05$ estimated as significant.

Results: It was found that count of red blood cells rises significantly along with rise in hemoglobin level. As far as liver enzyme serum glutamate pyruvate transaminase (SGPT) was concerned its concentration decreases slightly.

Conclusion: Citrullus lanatus juice contain ingredients which are important for RBC hemoglobin and synthesis .It also contains important antioxidants that have organoprotective role due to which SGPT level decreases even in healthy animals as compared to control groups.

Key words: *Citrullus lanatus*, Red Blood Cells, Hemoglobin, SGPT

INTRODUCTION:

World health and food agriculture organization propose better diet for every person which should includes diet rich in fiber, less amount of fat, carbohydrates in the form of fruits and vegetables and their daily intake should not be less than 400gm, daily diet should also include cereals and legumes not less than 30gm[1]. Vegetables and fruits are the major source of vitamins for human being and animals. Only fresh pulp of fruit consumed while leaving seeds and rinds in most countries. Fruits comprise of 85% water, small varying amount of fats proteins and carbohydrates are also present, carbohydrates comprises of cellulose while small amount of starch and sugar is also present. Micronutrients are richly present in fruits which includes carotene or provitamin A, Ascorbic acid, Vitamin k, Riboflavin, Iodine, Iron and other minerals[2].

Citrullus lanatus fruit is also called as Egusi watermelon, Egusi melon, Desert watermelon, West African watermelon and cooking melon[3]. It belongs to *Cucurbitaceae* family[4]. The plant of *Citrullus lanatus* is ascending or scramble up nature. It is yearly plant with many herbaceous. Stem of plant is hard and sturdy having length of about 3 meter; older part of plant is lacking hair while young fresh parts have yellow to brownish dense woolly hairs. Leaves of plant are 60 to 200mm in length and 40 to 150mm in breadth having both rough surfaces, these leaves are usually lobed or double lobed having largest central lobe. Stalks of leaves are hairy having length of 150mm. single plant contains flowers of both male and female sex (Monoecous). Stalk of flower is hairy having length of 40mm. Shape of fruit is usually subglobose having diameter of about 200mm and its stalk is 50mm in length[5,6,7,8].

It is evident from history that watermelon was first harvested 5000 years ago in Egypt and then it spreads to different parts of world. China is considered as highest grower of watermelon presently followed by other countries like Korea, Turkey, Iran and USA[9,10,11].

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Nutritional values of 100gm of watermelon consumption yields 30 kcal. Water content is 92%, carbohydrates 7.55% out of which sugar is 6.2% and dietary fiber includes 0.4%. It is also rich source of Caretnoids, Flavonoids and Citrulline. Watermelon is cholesterol and fat free therefore considered as fruit of low calories[12,13]. Watermelon also contains different minerals like calciu about 8mg, phosphorus 9mg and iron 0.17 mg vitamins include ascorbic acid 9.6 mg, folate 2mg, niacin 0.2 mg, riboflavin 0.02 mg and thiamine 0.08 mg[14].

Concentration of different amino acids in watermelon juice in mg/l includes: Arginine, 1150; Citrulline, 2014; Glutamine, 172; Phenylalanine, 89; Histidine, 88; Isoleucine, 87; Valine, 78; Cysteine,Above distribution shows that 71% of amino acids in *Citrullus lanatus* juice consist of Arginine and Citrulline[15]. Caretnoid is sufficiently present in fruits and vegetables it is bright red in color and play its major role as anti.oxidant. *Citrullus lanatus* yield high amount of caretnoids such as beta cryptoxanthine, lycopene, beta carotene, and vitamin E, these caretnoids are proved to protect body from damage to free radicals[16].

Natural anti-oxidants are sufficiently present in watermelon which includes lycopene citrulline and ascorbic acid. These anti-oxidants protect human body from chronic diseases such as tumor and heart diseases[17,18,19]. *Citrullus lanatus* can also be used in herbal medicine for prevention of some pathological conditions like erectile dysfunction, as antihypertensive and as an antioxidant. It can be used for the treatment of jaundice, hepatomegaly and act as source of energy[20]. Based on above beneficial ingredients of *Citrullus lanatus* juice like iron which takes part in hemoglobin synthesis, ascorbic acid which facilitates its absorption study was done to check its effects on blood and liver enzymes.

METHODOLOGY

Citrullus lanatus juice was given orally at 2 different doses i.e. 3ml/kg and 6ml/kg respectively[21]. Watermelon (Citrullus lanatus var. lanatus) brought from local fruit market. Sample was taken when it was present in large amount and available in fresh state for experimental analysis. Fresh watermelon juice prepared on daily basis with the help of muslin cloth.

For long term biochemical effects like hematological and liver function healthy rabbits were used for study. These rabbits were from either gender. Animals were divided into 3 groups their weight ranges from 1200 to 1800 grams.

Group A = control group (Normal saline 6ml/kg).

Group B =Treated group (3 ml/kg).

Group C = Treated group (6ml/kg).

Fresh watermelon juice was administered on two different doses for 60 days. All animals were allowed to acclimatize for period of 1 week under laboratory environment for noticing any lack of activity, edema, hair loss, Diarrhea and ulceration. 7 ml of blood test gathered from rabbits at 7^{th}, 30^{th} and 60^{th} day of study.7 ml sample used for hematological study and liver enzymes. EDTA K3 tubes were used and filled with 2 ml blood for hematological study. Gel tubes were used for liver enzymes and 5ml of blood were taken in each bottle.

After taking mean of all values they are compared with control group. Significance of mean can be estimated by TUKES POST HOC TEST. $P<0.05$ estimated as significant, $P<0.01$ estimated as very significant.

$P<0.001$ estimated as highly significant.

RESULTS:

The results of one-way ANOVA in complete blood count test showed a significant difference between three groups of rabbits in erythrocyte levels ($F_{2, 6}=39.7$, $P < 0.0001$) (Table 1). Tukey's *post-hoc* test indicates that the erythrocyte count was significantly increased in treated groups (CLJ 3 ml/kg and CLJ 6 ml/kg) in comparison with the saline-treated animals (Figure 1).

Animals after 07, 30 and 60 days dosing of *Citrullus lanatus* showed significant rise in Erythrocyte level as correlated with control group. Pre-test count of erythrocytes is 3.8 M/ULwhile post study count is 5.8 M/UL.

The results of one-way ANOVA, in complete blood count test, showed a significant difference between three groups of rabbits in hemoglobin levels ($F_{2, 6}=153.4$, $P < 0.0001$) (Table 2). Tukey's *post-hoc* test indicates that the hemoglobin levels were significantly increased in treated groups (CLJ 3 ml/kg and CLJ 6 ml/kg) in comparison with the saline-treated animals (Figure 2).

Animals after 07, 30 and 60 days dosing of *Citrullus lanatus* showed significant rise in hemoglobin level as correlated with control group. Hb level of pre-test animals was 7.3mg/dl while post study value is 10.8 mg/dl.

The results of one-way ANOVA, in liver function test, show insignificant difference between three groups of rabbits in SGPT levels ($F_{2, 6}=1.899$, $P < 0.2296$) (Table 3).

Tukey's *post-hoc* test indicates that the SGPT levels were insignificantly decreased in treated groups (CLJ 3 ml/kg and CLJ 6 ml/kg) when correlate with control group (Figure 3). Pre study level of SGPT was 101 U/Land post study level is 95 U/L.

DISCUSSION:

Blood is the part of extracellular fluid, it is a specialized type of connective tissue consist of cellular part and plasma. Cellular part comprises of erythrocytes (RBCs), leucocytes (WBCs) and platelets. Most copious cells are red blood cells which contain iron containing red pigment called as hemoglobin (Hb) [22].

Main function of Hb is to deliver oxygen to tissues from lungs it also maintains pH of blood. Juice of *Citrullus lanatus* contains important nutritional components which can increase level of Hb and erythrocytes. Iron present in its juice can

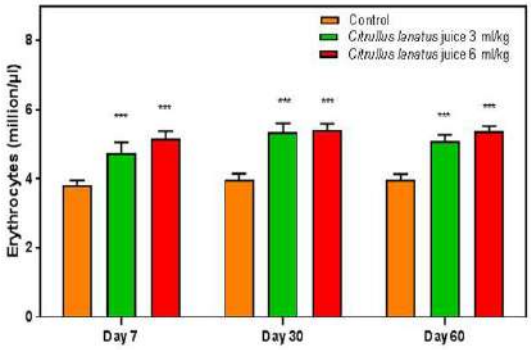

Figure 1: Impact of Citrullus lanatus juice on erythrocytes count.
Total Number of animals per bunch (n) = 10.
The perceptions written as mean ± Standard error of mean.
***P < 0.001, **P < 0.01, *P < 0.05; ANOVA took after by Tukey's test

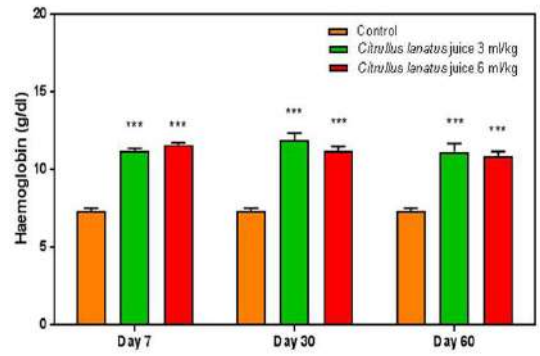

Figure 2: Impact of *Citrullus lanatus* juice on hemoglobin level
Total Number of animals per bunch (n) = 10.
The perceptions written as mean ± Standard error of mean.
***P < 0.001, **P < 0.01, *P < 0.05; ANOVA took after by Tukey's test.

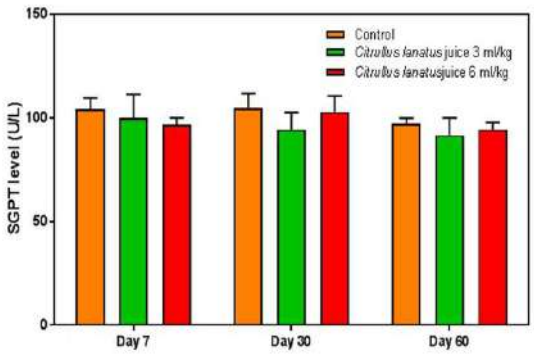

Figure 3: Impact of *Citrullus lanatus* juice on SGPT level
Total Number of animals per bunch (n) = 10.
The perceptions written as mean ± Standard error of mean.
***P<0.001, **P<0.01, *P<0.05; ANOVA took after by Tukey's test.

raise level of Hb and vitamin C which act as anti-oxidant and prevent damage of erythrocytes also facilitate absorption of iron as mentioned above by Shiundu, (2004). It is evident from results that highly significant rise in erythrocytes count and Hb level occur in treated groups compared with control. Pre-test count of erythrocytes is 3.8 M/ULwhile post study count is 5.8 M/UL. Hb level of pre-test animals was 7.3mg/dl while post study value is 10.8 mg/dl.

Liver is the important vital organ, it perform many biochemical functions. Cells of liver i.e hepatocytes contain many enzymes which perform these biochemical reactions. In acute liver injury enzymes present in hepatocytes release into blood and act as marker of hepatic damage. Aminotransferases are widely used markers for hepatocyte injury. There are 2 types of aminotransferases SGPT also called as ALT (serum glutamic pyruvate transaminase or Alanine Aaminotransferase and SGOT or AST (serum Glutamic Oxaloacetic Transaminase or Aspartate Aminotransferase). SGPT enzyme is sufficiently present in liver cells. Its level starts to rise in blood after damage to liver hepatocytes. Rapid rise of SGPT level in blood occur most commonly after acute viral infections[23]. *Citrullus lanatus* juice contains natural anti-oxidants which prevent damage to vital organs from reactive oxygen species. It is evident from results obtained that SGPT level slightly decrease in treated groups as compared to control group. Pre study level of SGPT was 101 U/Land post study level is 95 U/L

Important natural anti-oxidants present in *Citrullus lanatus* are Caretnoids, lycopene, vitamin E and beta carotene. These anti-oxidants act as defending role in body and protect different organs from oxidative stress as reported by Pinto *et al*., (2011). *Citrullus lanatus* also contains alkaloids, flavonoids, steroids and tannins as reported by [24]. These tannins, steroids and alkaloids also help in protecting liver from oxidative stress [25]. Considering the importance of all these constituents it can be estimated that long term use of *Citrullus lanatus* juice will produce beneficial effects on liver.

CONCLUSION:

Red blood cells and hemoglobin level markedly increased as compared to control groups, this rise occurs due to its important constituents i.e. iron and ascorbic acid Its juice posses excellent anti-oxidants which have organoprotective role on liver cells evaluated and that liver contains SGPT reduced in healthy animals.

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Original Article

Risk Factors Associated With Health And Wellness of Professional Automobile Drivers Of Karachi, Pakistan

Samira Faiz, Farhan Muhammad Qureshi, Sehrish Zahra, Seema Nigah-e- Mumtaz

ABSTRACT:

Objective: To identify the health status and well-being of the professional automobile drivers and associated risk factors that affect their health.

Study Design and Setting: A cross-sectional study was conducted among 350 professional automobile drivers operating on local and long routes in Karachi, Pakistan

Methodology: The study was done at various locations in the city of Karachi from September to November 2017. The subjects were asked for their personal health related complaints and medical illnesses. Further, this research also has the complimentary purpose to measure anxiety and depression among professional drivers. Anxiety was measured using the Generalized Anxiety Disorder-2 Item Scale (GAD-2) and Patient Health Questionnaire2-Item Depression Module (PHQ-2) was used to measure, depression. SPSS version 21.0 was used for data entry and its analysis. A written informed consent about the study was provided to the subjects with questionnaire. This study was approved by the Institutional/Ethical review board of Karachi Institute of Medical Sciences (KIMS).

Results: Amongst the 350 participants 48% were long route and 52% were local route automobile drivers. The result indicate that professional automobile drivers were suffering from backache (56%), Joint pain (36%), Hypertension (44%), Diabetes Mellitus (21%), Anxiety (87%) and Depression (38%). Tobacco addiction was found in (94%) of total respondents.

Conclusion: Health status of the professional drivers and their well-being was found unsatisfactory. Multiple factors such as working environment and sociodemographic factors are inevitably linked to their health status and wellbeing.

Keywords: automobile drivers, professional drivers, joint & backache, anxiety, depression, tobacco addiction

INTRODUCTION:

Professional automobile driving, undoubtedly, a very complex and demanding task. A professional automobile driver is a term used for the drivers who are skilled and qualified to drive vehicles and earns their income from driving. Transportation industry which requires healthy and skilled drivers, plays a vital role not only in the daily human life but, also contributes largely to the state's economic development. Millions of people are linked to the commercial transport business across the globe by adding their contribution to this industry, hence sharing economic growth.[1] Most of the developed countries have a highly competitive transport system and the governments invest a lot in every sector for its advancement. [2] Continuous monitoring and evaluation help to make better policies and a continuous data is always available. Unfortunately, many developing countries are still struggling to establish a stable transportation system. However, the most common problem being observed in this profession, throughout the world, is the poor health status (physical and mental) of drivers. [3,4,5] Multiple factors that contribute in deteriorating the mental and physical health are continuous driving (for more than 8 hours), long waiting for passengers or for refilling or reloading, difficult and stressful driving conditions, monotonous and repetitive work, lack of education and low socio-economic status.[6] Moreover, transport of hazardous materials and wastes (the nature of which is often not known to workers), exposure to noise, vibration and pollution are some very important health risk factors. [7] In addition to the above, irregular timings and unavailability of proper and quality meal lead to malnourishment and frailty in professional drivers. [8] There is also a huge burden of ergonomic hazards especially musculoskeletal disorders among these drivers like back and joint pain, cervical problems and other injuries caused by lifting weights. Poorly designed driving seats that cannot be adjusted according to comfort, often result in chronic backaches or other musculoskeletal problems that worsen with time. [9]

Since long, numerous studies are being carried out throughout the world to observe the health status of drivers. [10, 11] Mental illnesses among professional drivers are found highly prevalent, out of which the most common are job related

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stress, anxiety and mild to moderate depression. [5] However, these problems get worse when either, they are not taken seriously as health issues or, if primary health care centers lack the facilities to cater mental health problems. Compromised physical health is itself a contributing factor towards deteriorating mental health. [12] All these issues not only lead to miserable life of such families but also contribute a lot to the increased incidence of road traffic accidents. [13] Hence, the current study aimed to identify the health issues among professional automobile drivers and their health status in the metropolitan city of Karachi. The findings of this study may be helpful to reduce the sufferings and upgrade the life style of drivers which ultimately will contribute to the state's economic growth.

METHODOLOGY:

This cross sectional survey was performed among professional automobile drivers working on a transportation industry from September 2017 to November 2017. Sample size was calculated using Epi Info – 7 for cross sectional studies. A total of 350 drivers were recruited through non-probability, purposive sampling technique randomly without consideration of their health status from various location of commercial areas of Karachi, Pakistan. Data was collected from drivers from loading trucks stands, passengers buses points (inter or intra city both) and taxi stands of different areas of Karachi, irrespective of the drivers city of residence. Only male and adult drivers between 18 -60 years of age with valid national identity cards and driving license were included in the study. Respondents were explained about the purpose of the study and asked to sign a consent form to participate in the study. Keeping in view the aims of the study a specially designed detailed questionnaire was prepared. The first section comprised demographic information such as age, gender, area of residence, education, income and driving experience etc. The second section consisted of variety of open and closed ended questions regarding their health issues such as hypertension, diabetes, heart disease, lower back pain, joint pain or generalized body aches and disturbed sleep. Severity of pain was assessed by WHO criteria. [14] The drivers were also screened for anxiety and depression. For this purpose Generalized Anxiety Disorder-2 Item Scale (GAD-2) and Patient Health Questionnaire2-Item Depression Module (PHQ-2) were used to screen out anxiety and depression respectively. GAD-2 [15, 16] and PHQ-2 [17, 18] are well validated measures to screen out and monitor depression and anxiety. Due to construct and criterion validity, PHQ-2 is a proven attractive measure for depression screening. Each ranges from a score of 0-6. The operating characteristics of these ultra-brief measures are quite good; the recommended cut points for each when used as screeners is a score of 3 or greater. Higher the score, the more likely there is an underlying anxiety or depression. Therefore, those who scored high were counseled about their condition and were advised to consult psychiatric outpatient department for further evaluation. The data was collected by health workers and essential instruction were directed to the subjects. The questionnaire of each and every driver were thoroughly seen and checked by the investigators for missing data/information. The study was carried out after approval of Institutional and Ethical Review Board of Karachi Institute of Medical Sciences, Karachi. SPSS-21 was used for data entry and analysis of data collection. The traits of study population were observed through frequencies and percentages, as assessed descriptively.

RESULTS:

Sociodemographic characteristics of the participants (350) are shown in Table 1.

Table 2 depicts the types of vehicles used by the drivers and their regular routes of driving. Almost comparable numbers of the vehicles in the sample were running on long and local routes i.e. 48% and 52% respectively. Amongst both of these groups, buses were most common.

The physical and mental health status of the study participants is shown in table 3. More than half (56%) of the drivers suffered from lower back pain with varying degrees of severity and 36% mentioned joint pain. 44% of them had hypertension whereas known diabetics were 21%. Majority of the sample population (94%) was cigarette smokers while 40% chewed naswaar among which mostly were Pathans (Pashto speaking). Regarding the mental health status, Anxiety was found to be most prevalent in the sample population (87%).

DISCUSSION:

Professional driving has been shown widely a challenging in terms of health outcomes and its associated risk especially in urban cities of the world. Health status and wellbeing of the drivers has a significant impact on the safety of the drivers [19] as well as the passengers. Driver's health status plays an important role in the occurrence of the accidents that makes professional driving a potentially high risk activity. [20] Various researchers have found the relationship between physical, mental and social stressors with the wellbeing and professional performance of the drivers.[19,20,21,22,23] The analysis of the gathered information of this study revealed that lower back pain, joint pain and other posture related musculoskeletal disorders are common among professional automobile drivers. Results of National Health survey of Iran highlighted musculoskeletal disorders as the most prevalent in professional automobile drivers. [21] The findings were consistent with previous work in other countries and found symptoms related to lower back and joints are common in drivers. [20 22,23] The space of the driver's cabin might be the reason which usually does not have enough space for the movements of his limbs and body and they must restrict to driving cabin throughout the journey.

Table 1: Sociodemographic Characteristics of the participants n= 350

Characteristics	Descriptive
Age, years, mean (SD)	38.0 (9.2)
Marital status, n (%)	
Married	315 (90.0)
Unmarried	21 (6.0)
Divorced/widower	14 (4.0)
Education, n (%)	
Not able to read/write	74 (21.14)
Primary, = 5 years	98 (28.0)
Secondary, 6-10 years	126 (36.0)
High school up to 14 years	52 (14.85)
Religion, n (%)	
Muslims	311 (88.85)
Hindus	18 (5.14)
Christians	21 (6.0)
Ethnicity, n (%)	
Urdu speaking	45 (12.85)
Sindhi	21 (6.0)
Punjabi	91 (26.0)
Pathan	126 (36.0)
Sariki	39 (11.14)
Others	28 (8.0)
Monthly income in PKR n (%)	
< 20,000,	224 (64.0)
20,000-40,000	84 (24.0)
40,000-80,000	29 (8.28)
> 80,000	13 (3.71)
Years of driving, n (%)	
1-5 years	46 (13.14)
6-10 years	68 (19.42)
11-20 years	140 (40.0)
>20 years	96 (27.42)
BMI, (kg/m²),mean (SD)	22.8 (5.3)

Table 2: Types of vehicles regarding local and long routes (n=350)

Types of vehicles	*Descriptive*
Long route vehicles	***n=168(48.0%)***
Bus, n (%)	*81 (23.14)*
Truck, n (%)	*52 (14.85)*
Trailer, n (%)	*35 (10.0)*
Local route vehicles	***n=182(52.0%)***
Bus (mini/coach), n (%)	*63 (18.0)*
Taxi, n (%),	*56 (16.0)*
Mini trucks, n (%)	*35 (10.0)*
Rickshaw, n (%),	*28 (8.0)*
Total, n (%)	*350 (100.0)*

This immobile position causes joints and muscles stiffness that further aggravates and worsens from spending long duration behind the wheels.

Strain due to working environment can be related to engaging in harmful health behaviors that leads to developing diabetes mellitus and hypertension. Unavailability of healthy meals with disturbed pattern of timings and duration are common among drivers. As a result poor food choices that are low in nutrition value but high in calories, fat and sugar along with sedentary environment lead to excessive energy intake and nutrition related morbidities such as hypertension and type-2 diabetes mellitus. [24,25] The results of the foregoing study also indicates 44% and 21% drivers suffer from hypertension and diabetes mellitus. Evidence supported that unhealthy eating patterns, life style and stressful environment are the common risk factors in developing hypercholesterolemia, cardiovascular diseases and type-2 diabetes mellitus among professional automobile drivers. [24, 25, 26]

Table 3: Physical and mental health status (n=350)

Health Problems	Frequencies n (%)	*Health Problems*	Frequencies n (%)
Lower Back Pain		***Tobacco Addiction***	
Mild	*14 (4.0)*	*Smoker*	*329 (94.0)*
Moderate	*49 (14.0)*	*Non-Smoker*	*21 (6.0)*
Severe	*91 (26.0)*	***Naswar*Addiction***	
Very severe	*42 (12.0)*	*Yes*	*141 (40.28)*
No pain	*154 (44.0)*	*No*	*209(59.71)*
Joint pain		***Difficulty in sleep***	
Yes	*126 (36.0)*	*Yes*	*105(30.0)*
No	*224 (64.0)*	*No*	*245 (70.0)*
Hypertension		***Anxiety***	
Yes	*154 (44.0)*	*Yes*	*305 (87.14)*
No	*196 (56.0)*	*No*	*45 (12.85)*
Diabetes		***Depression***	
Yes	*74 (21.14)*	*Yes*	*133 (38.0)*
No	*276 (78.85)*	*No*	*217 (62.0)*

**Naswar: Naswar is a moist, smokeless powdered tobacco snuff. Usually, it is stuffed in the floor of mouth under the lower lip or inside the cheek, for extended period of time.*

According to the World Health Organization (WHO) cigarette smoking has been identified as an epidemic worldwide [27] and were described a stress relieving devices. [28] Despite the growing awareness regarding association of tobacco consumption with a range of adverse health effects tobacco consumption has been considered as a stress reliever either in the form of cigarette smoking or in chewable form. Results of this study showed that 95 and 39 percent of participants were addicted to tobacco and Naswar. The main reasons that may explain why higher number of drivers smoke are; stress caused by the working environment, peer and social influence and socioeconomic status and education. The socioeconomic status and education of the study participants was unsatisfactory as more than half of them (57%) earned less than 20 thousands/month and majority (85%) have education below secondary. Use of tobacco might be a way of stress management and a mode of taking out and coping

with the stressful environment due to above mentioned circumstances.

Consumption of tobacco either in the form of smoking or in chewable form, is known to be harmful to brain. [29] Many epidemiological studies have demonstrated smoking as being prospectively associated with increased rates of anxiety disorders [29, 30] Similar results were reported in this research, as 78 and 39 percent of the participants were suffer from anxiety and depression, respectively. Moreover, the findings support the epidemiological evidences regarding increase risk of developing anxiety due to tobacco consumption, although confirmation of this causality is yet to be confirmed.

This study compels all the stakeholders of the transportation industry to take relevant measures and the health authorities to enforce road transport workers ordinance, 1961, (amended in 1974), the West Pakistan Industrial and Commercial Employment (standing orders) Ordinance 1968. The ILO (International Labor Organization) suggest hours of work and rest periods (road transport) Convention (no. 153), 1979, that requires a break after 4 hours of driving, limits total driving time to 9 hours per day and 48 hours per week and recommends at last 10 hours of rest in each 24- hour period, need to be followed which is not yet ratified by Pakistan.

The cross sectional design and survey was used to measure parameters of this research. Scientifically, the cross sectional design does not clarify the cause and effect. However, the outcomes of the study complies with the data of the existing literature. The results of this research will explain and clearly interpreted with use of longitudinal methods and is recommended for future research.

CONCLUSION:

This study aimed to ascertain health issues experienced by drivers related to their profession. The findings provides further support to the existing researches from other countries. Multiple factors such as working environment and sociodemographic factors are inevitably linked to their health status and wellbeing of the drivers.

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Original Article

Perception Regarding Oral Health Among Patients Visiting Dental Outpatient Department

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ABSTRACT:

Objective: To assess knowledge, attitude and practice regarding oral health among patients visiting dental OPD in hospitals of district Malir, Karachi.

Study Design and Setting: A cross-sectional study was conducted at dental outpatient departments of two hospitals of district Malir, Karachi.

Methodology: A total of 393 participants were randomly interviewed by the principal investigator with the help of structured questionnaire developed specifically for the study after obtaining written informed consent over the study of 6 months. Data was entered and analyzed in SPSS version 21. Inferential analysis was performed using chi-square test whereas binary logistic regression was used to develop a risk assessment model for the study outcome. The significance level was set at 0.05.

Results: Overall 31.8% of the study participants had adequate knowledge, 25.2% had adequate attitude whereas 32.2% had adequate practices with regards to oral health. Furthermore, multivariable analysis revealed that higher qualification of the study participants had significant positive associations with adequateness of all of the knowledge, attitude and practices of the study participants regarding oral health at p-value of <0.05.

Conclusion: The level of knowledge and appropriateness of attitude and practices of the study participants was less than satisfactory. The higher education level had a positive impact over the oral health of the participants. It is recommended that healthcare providers and government, in their respective capacities, educate and persuade people to take better care of their oral health.

Key words: Attitude, Knowledge, Oral Health, Outpatients

INTRODUCTION:

Oral health is essential to general health and quality of life. According to World Health Organization "it is a state of being free from mouth and facial pain, oral and throat cancer, oral infections and sores, periodontal disease, tooth decay, tooth loss and other diseases and disorders that limit an individual capacity in biting, chewing, smiling, speaking, and psychosocial well-being."[1]

Oral health is considered a fundamental to general health, but it is often taken for granted. Mouth is like a window into the health of body. Oral health can reveal signs of nutritional deficiencies or general infections and many systemic diseases show oral manifestations. Oral diseases and non-communicable diseases are found to be closely interlinked by sharing common risk factors such as excess sugar intake and tobacco use and underlying inflammatory pathways.[2,3]

The most common oral diseases are dental caries, periodontal diseases, oral cancer, oral infectious disease, trauma from injuries and hereditary lesions. Dental caries involves the softening of hard tooth tissues and proceeding to the formation of a cavity, nearly 100% of adults have dental cavities.[1]It is a disease with considerable economic and quality-of-life burdens[4],and can be arrested and prevented by using constant low level fluoride in mouth.[5]

Tooth loss can be due to caries, eruption problems, and periodontal diseases.[6] Due to poor oral hygiene, plaque can build up along gum lines which lead to many diseases like gingivitis, periodontitis. Long term gum infections and periodontitis leads to detachment of supporting structures from the teeth and eventual tooth loss. Diseases commonly related to tooth loss include cardiovascular disease[7] cancer,[8] osteoporosis,[9] and diabetes mellitus.[10] Therefore it is important to not only maintain good oral hygiene but also overall good health.[7]

The burden of oral diseases is higher among poor and disadvantaged population group and is also dependent upon the geographical area and services provided to community.[1] Globally about 30% of persons aged 60-74 have no natural teeth.[1]In 2010, it was estimated that untreated caries in

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permanent teeth was the most prevalent condition globally, with 2.4 billion people affected, while untreated caries in deciduous teeth was the 10th-most prevalent condition globally, with 621 million children affected.[11]It has also been estimated that severe periodontitis affects approximately 10% of the global population.[12]Moreover, oral cancers are more common in people over 40, particularly men. It has been estimated that half a million cases of oral cancer are currently present around the globe with the trends rising in the young individuals particularly.[13, 14]Traditional habits in some cultures for instance, chewing tobacco, betel quid, gutka and paan are significantly dangerous. Dental trauma is another major health problem in children and adolescents and its incidence has been reported to peak at 9 years of age.[15]It is more frequently observed in males as compared to females with falling, fight, sports, accidents, and hitting objects are among common causative factors.[16]

Due to lack of public health programs and shortage of dentists in low and middle income countries, oral diseases are dramatically increasing; though they are on the rise even in high income countries but the causes and risk factors are different. In developing societies people are not aware of the importance of regular dental check-ups and believes that they need to see a dentist only if they are in pain. One can practice good oral hygiene by brushing teeth twice a day with fluoride tooth paste, cleaning between teeth once a day with floss or another interdental cleaner, replacing your tooth brush every 3 or 4 months and by eating a balance diet and limiting between snacks.

Therefore it is imperative that dental patients should have adequate awareness, attitude and practices regarding oral health, but to the best of authors' knowledge, the available local data is scarce.[17-19]This study was therefore conducted to assess knowledge, attitude and practice regarding oral health among patients visiting dental OPD in hospitals of district Malir, Karachi.

METHODOLOGY:

This cross sectional study was conducted after getting ethical approval of Baqai Institute of Health Sciences. The study was conducted among 393 conveniently sampled patients from two randomly selected hospitals of District Malir, Karachi for the period of six months. Using 50% prevalence of related knowledge, attitude and practices with 95% confidence interval and 5% precision the calculated sample size was 385 patients. The study population consisted of dental patients of either gender aged 18 years and above visiting government and private hospitals in District Malir, Karachi. Patients with serious illness and disabled patients were excluded from the study. After getting written informed consent patients were interviewed by the principal investigator with the help of a structured questionnaire developed specifically for the study. The questionnaire was pre-tested on 5% of the sample size to check for face validity and internal reliability and was modified accordingly to yield a Cronbach's alpha value of 0.755.The questionnaire contained questions about demographic characteristics, knowledge, attitude and practice regarding oral health of the participants. Once the data were collected and entered in SPSS version 21, knowledge, attitude and practice scores of the study participants were calculated separately by giving a score of 1 to a correct response and 0 to an incorrect response. These scores were then used to classify knowledge, attitude and practice of each participant as either adequate if they were above the selected cut off 70% or inadequate if they were not.Multivariable analysis using binary logistic regression was done to develop risk assessment models for the outcome variables while controlling for the potential effects of confounding variables. The significance level was set at 0.05. Those participants who were found to have inadequate knowledge, attitude or practice regarding oral health were given necessary awareness at the completion of the interview.

RESULTS:

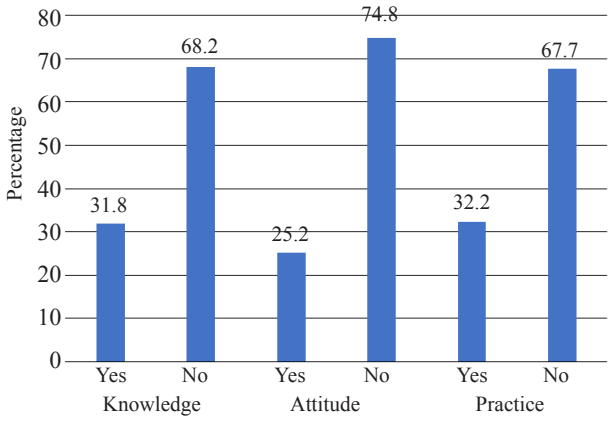
A total of 393 participants were included in the study with the response rate of 100%. The study results revealed that the mean age of the study participants was 38.29±13.20 years, n=230 (58.5%) of them were males, n=261 (66.4%) were married, n=238 (60.6%) lived in joint family system, n=233 (59.3%) were urdu speaking, only n=112 (28.5%) were graduates or had higher education whereas n=244 (62.1%) had monthly income between 15000 to 75000 rupees.

The study results showed that overall 31.8% participants had adequate knowledge, 25.2% had adequate attitude whereas 32.2% of them had adequate practices with regard to oral health (Figure 1).

The logistic regression model revealed that after controlling for all other demographic variables only family system, qualification and monthly household income had significant associations with adequateness of knowledge where those who lived in joint family system had lesser odds of having adequate knowledge than those who lived in nuclear family system (AOR=0.578, p=0.024); those who were able to read and write, were intermediate or graduate or above had greater odds of having adequate knowledge than those who were illiterate (AOR=10.867, p=0.033, AOR=8.195, p=0.044 and AOR=19.791, p=0.005 respectively) and those who had monthly household income between 15000-75000 or 76000 and above had greater odds of having adequate knowledge than those who had monthly household income of less than 15000 (AOR=2.013, p=0.014 and AOR=4.911, p=0.007 respectively)-Table 1.

The logistic regression model revealed that after controlling for all other demographic variables only mother tongue and qualification had significant associations with adequateness of attitude where those who were Sindhi speaking had greater odds of having adequate attitude than those who were Urdu

Figure 1: Adequateness of knowledge, attitude and practice



speaking (AOR=2.284, p=0.022) and those who were graduate or above had greater odds of having adequate attitude than those who were illiterate (AOR=15.901, p=0.008)-Table 2.

The logistic regression model revealed that after controlling for all other demographic variables only gender, qualification and monthly household income had significant associations with adequateness of practice where females had greater odds of having adequate practice than males (AOR=2.515, p<0.001); those who had secondary education and were intermediate or graduate had greater odds of having adequate practice than those who were illiterate (AOR=5.262, p=0.037, AOR=8.36, p=0.006, AOR=8.837, p=0.006, respectively); than those who had monthly household income 76000 and above had greater odds of having adequate practice than

Table 1: Adjusted Associations between demographic Characteristics and Adequateness of Knowledge

Variables (n= 393)		AOR	95% C.I.		P
			Lower	Upper	
Family System	Joint	0.578	0.359	0.93	0.024
Educational Status	Able to read and write	10.867	1.219	96.894	0.033
	Primary	1.817	0.153	21.581	0.636
	Secondary	4.421	0.534	36.627	0.168
	Intermediate	8.195	1.054	63.718	0.044
	Graduate and above	19.791	2.514	155.812	0.005
Monthly Household Income	15000-75000	2.013	1.029	3.939	0.014
	76000 and above	4.911	1.552	15.536	0.007

Table 2: Adjusted Associations between Demographic Characteristics and Adequateness of Attitude

Variables (n= 393)		AOR	95% C.I.		P
			Lower	Upper	
Mother Tongue	Sindhi	2.284	1.127	4.628	0.022
	Punjabi	1.806	0.942	3.462	0.075
	Seraiki/Balochi	2.09	0.989	4.417	0.054
Educational Status	Able to read and write	8.111	0.926	71.063	0.059
	Primary	1.44	0.121	17.112	0.773
	Secondary	7.27	0.902	58.595	0.062
	Intermediate	6.998	0.899	54.5	0.063
	Graduation and above	15.901	2.053	123.165	0.008

Table 3: Adjusted Associations between Demographic Characteristics and Adequateness of Practice

Variables (n= 393)		AOR	95% C.I.		P
			Lower	Upper	
Gender	Female	2.515	1.576	4.015	<0.001
Educational Status	Able to read and write	1.529	0.229	10.191	0.661
	Primary	3.283	0.563	19.156	0.186
	Secondary	5.262	1.107	25.016	0.037
	Intermediate	8.36	1.836	38.069	0.006
	Graduate and above	8.837	1.871	41.737	0.006
Monthly Household Income	15000-75000	1.227	0.679	2.22	0.498
	76000 and above	3.624	1.241	10.581	0.018

those who had monthly household income of less than 15000 (AOR=3.624, p=0.018) -Table 3.

DISCUSSION:

The study findings revealed that 72.2% of the study participants correctly knew about the relationship between oral health and systemic well-being. Similarly, Nagarajappa R et al., in 2015 reported that 64.5% of the participants correctly knew about the relationship between oral health with systemic illness.[20] Likewise, Singh A et al., in 2014 also reported that 68% subjects were aware that dental health has an effect on general health.[21]

Regarding impact of regular tooth brushing on teeth 87% of the participants were found to have accurate knowledge in our study whereas Khan F et al., in 2013 reported that 58% of the participants correctly knew about the significance of tooth brushing.[17] This difference in findings could be due to difference in study populations and to the smaller sample size of the later study.

With regards to using different types of cleaning methods, 60.3% of the participants correctly knew about other oral cleaning aids than brushing whereas Kaira LS et al., in 2012 reported that only 30% of the participants had accurate knowledge regarding other oral hygiene aids.[22] This difference in finding can be attributed to different characteristics of the study populations as the later study was conducted on nurses.

In our Study; 86.2% of the study participants correctly knew that smoking, betal nut chewing, paan and gutka cause oral cancer. Similarly Kaira LS et al., in 2012 reported 95% of the participants were known about harmful effects of tobacco and its products.[22]Interestingly, this repeated finding shows a good level of awareness among the study participants about the harmful effects of commonly used addictive substances on oral health.

Our study revealed that 78.6% of the participants were found to have correct knowledge that consumption of sugary foods and drinks causes tooth decay. Khan F et al., in 2013 reported that 90% of the study participants correctly knew that sugar promotes tooth decay[17] whereas Dawani N et al., in 2013 reported that 74% of the subjects were interviewed and identified sugar as an etiological factor for caries.[23]

In our study 57% of the participants knew that bleeding gums is a disease and needs consultation of a dentist. But contrary to these findings, Dawani N et al., in 2013 reported that only 7% of participants were aware of gum diseases.[23]This difference in finding can be attributed to different study populations as the later study was conducted in school teachers. The 45.3% of the study participants thought that it was necessary to visit dentist every 6 months for regular dental checkup. Kapoor D et al., in 2014 reported that only 9.3% of patients interviewed felt the need to visit the dentist on regular basis i.e. once in 6 months.[43] This difference in finding in study can be attributed to the difference in population characteristics as the later study was conducted in India.

Regarding frequency of brushing teeth, 42.8% of study participants were found to brush their teeth more than once a day. Similarly another study reported that 51.3% and 50% of the study participants respectively brushed their teeth twice a day.[17, 18] But literature reports contrary findings as well. Nagarajappa R et al., in 2015 and Kapoor D et al., in 2014 reported that only 23% and 18.5% of the study participants respectively brushed their teeth twice a day.[20,24] These mix findings might be due to different methodological approaches of the aforementioned studies. Nevertheless, it is intriguing to observe such differences in reported findings.

Only 13.2% of the study participants were found to have correct practice regarding time spent on brushing teeth whereas Nagarajappa R et al., in 2015 reported that 41.5% of study participants had correct practice regarding time spent on brushing teeth.[20] This difference in finding could be due to the difference in population characteristics because both studies were conducted in different countries.

Moreover, 67.2% of the respondents replied that they never smoke. Likewise Khan F et al., in 2013 reported that 70% of respondents were not smoking.[17]

In our study; 80.9% of the study participants used tooth paste to clean their teeth and these results were analogous with another study in which 90% of the respondents used tooth paste and tooth brush as tooth cleaning aid.[18]Kapoor D et al., in 2014 were reported that 92.2% of the male while 87.6% of the female respondents preferred tooth brushing with tooth paste.[24] Likewise Kaira LS et al., in 2012 reported 70% whereas Verma S et al., in 2019 found almost 60%of the participants were using tooth paste with tooth brush, a recommended oral hygiene practice.[22, 25]Goryawala SN et al., in 2016 also reported 92.2% of the patients were using some type of tooth paste for oral hygiene maintenance.[26]

In the following study; 49.9% of the participants were changed the tooth brush within 3 months and these results were corresponding with the results of Younus A & Qureshi A in 2016 in which 65.5% of participants change their tooth brush every 3 months.[17] Unlike these results, Ahmed ZUet al., in 2016 reported that 4.5% of the male while 6.31% of the female participants changed their tooth brush within 3 months.[18] These different finding of the later study can be attributed to lower socioeconomic status of that study's population.

Furthermore, with regard to the study findings about standard brushing technique, whether professional cleaning of teeth weaken tooth structure, harmful effects of boring water on teeth, importance of brushing teeth after every meal, significance of fillings of decayed teeth, frequency of consuming paan and visiting dentist in case of dental pain, a comparison could not be made with the published literature as a thorough search did not reveal any relevant published

data. It is acknowledged that being a cross-sectional study, the study results might have suffered from limitation in recall. Moreover, the use of convenience sampling technique might have affected the generalizability of the study results.

It is recommended that people should be made aware of oral health related adequate knowledge, attitude and practices by all stakeholders, especially by healthcare providers, that will help them to lead a healthy and longer life. Furthermore, more efforts are required for the awareness campaign in public and private sectors to take better care of oral health of masses.

CONCLUSION:

The level of knowledge and appropriateness of attitude and practices of the study participants with regard to oral health was less than satisfactory. Furthermore, higher qualification of the study participants was positively associated with adequateness of all of their knowledge, attitude and practices regarding oral health

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Original Article

Neonatal Outcomes In Cord Clamping And Its Association With Hematological Parameters.

Zara Jamali, Shazia Naseeb, Saba Khan, Khadija Bano

Objective: To compare the neonatal outcomes in early and delayed cord clamping and to find Its association with hematological parameters in neonates of Jinnah Postgraduate Medical Centre, Karachi.

Study Design and Setting: It was a cross sectional study conducted from 1st July 2016 to 31st December 2016 at Department of Obstetrics & Gynaecology, Jinnah Postgraduate Medical Centre, Karachi.

Methodology: 342 pregnant women were selected through convenient sampling technique meeting inclusion criteria after obtaining ethical approval all pimigravida with age range of 25 to 45 years with singleton term pregnancy delivered through normal vaginal delivery, in 3rd stages of labour were included in the study. Multi-gravid women or any women with a Systemic disease such as hypertension, diabetes mellitus thyroid disorder, and cardiac disease were excluded. Demographic variables, blood parameters, were recorded. SPSS version 20.0 was used for data analysis. Neonatal outcomes were assessed in terms of neonatal haemoglobin, haematocrit, platelet count and bilirubin level with respect to early and delayed cord clamping. Descriptive statistics were calculated. P-value = 0.05 was taken as significant.

Results: the total of 342 pregnant women selected for this study, divided into 2 groups depending upon early (gp-1) or late clamping(gp-2). The mean haemoglobin in group 1 was 13.2 mg/dl and in group 2 was 13.4 mg/dl. Mean haematocrit in group 1 was 40.8 % and in group 2 were 41.3 %. (P-value=0.03). Polycythemia in group 1 was found to be present in 5 (2.92%) neonates while in group 2, 19 (11.11 %) neonates had polycythemia (p-value=0.003). High bilirubin in group 1 was present in 7 (4.09 %) of neonates while 33 (19.30 %) neonates in group 2 had high bilirubin.(p-value=0.001)

Conclusion: Our study showed that neonates with late clamping had lower incidence of anaemia, higher haematocrit as compared to early clamping but were prone to a higher levels of bilirubin as well as polycythemia. Significant variations for haematocrit, polycythemia and bilirubin were found.

Key Word: neonatal outcome, cord clamping, haematological parameters

INTRODUCTION:

Umbilical cord clamping is one of the oldest interventions that humans have done. Timing of Cord clamping is still controversial and debatable. It may be early cord clamping (ECC) (clamp Of cord <60 seconds after delivery) or delayed cord clamping (DCC) (Clamp of cord 60-180 Seconds after delivery) [1]. Nowadays DCC is thought to be a new intervention. Through placental Transfusion new born can achieve 30% rise in blood volume and 60% rise in red blood cells[2].

Several theories about the potential benefits and risks of delaying cord clamping of the umbilical Cord have been postulated and studied in recent years. Chief advantages of DCC are Increased haemoglobin and haematocrit level not only for neonatal period but there is ultimate Reduction of iron deficiency anaemia and its consequences like impaired cognitive. Functions and low immunity with resultant increased risk of infections in Infancy[3].

Prior physiological studies have demonstrated that about 25-60% of total fetoplacental blood Volume found in placental circulation which is equivalent to 54-160ml or 60% of fetal red cells[4].And blood is a well known source of hematopoietic stem cells[5]. Many studies conducted in past have proved that by delayed cord clamping newborn can get 20-40ml of extra blood which is About 30-35 mg of Iron[6,7] so hypovolemic damage, Iron loss and, as well as of several blood Disorders and type 2 diabetes, as a consequence of loss of hematopoietic stem cells[8]. Early cord Clamping has been supposed as a prime origin of anemia in infancy. So some of Researchers are in favour of DCC and endorse that delayed cord clamping as a low-cost. Intervention to reduce anaemia during first six months of life[9]. Others realize that blood overload from delayed cord clamping can produce respiratory distress, polycythemia and jaundice[10,11]. while with early cord clamping maternal blood loss following birth can be reduced significantly[12].

Several reviews have studied the potential benefits and risks of late vs early clamping of he umbilical cord. In a recent

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study of cord clamping in the preterm population, late lamping showed some potential benefit in terms of decreased need for blood transfusion nd lower risk of intra-ventricular haemorrhage[13]. Reviews to date of studies in term infants provided no strong evidence for the superiority of either clamping strategy[14].

The objective of this study was to compare the neonatal outcomes in early and delayed cord clamping and to find their association with different haematological parameters in neonates of Jinnah Postgraduate Medical Centre, Karachi.

METODOLOGY:

This is cross sectional observational study . three hundred forty two patients were selected through non- probability Convenient sampling. Sample size was calculated on the prevalence of 50 % This study was conducted in department of obstetrics and gynaecology Jinnah postgraduate medical center Karachi. All primigravdas with age range of 24-45 with Singleton pregnancy present in 3rd stage of labour at 37 or more weeks of gestational age were included in the study. Women with history of medical disorders like hypertension, diabetes, thyroids dysfunctions and hematological disorders were excluded from the study. Pregnant women were divided in two groups in group cord was clamped within 1 minute after the birth while in group 2 cord was clamped between 1-3 minutes. All other aspects of obstetric care was managed according to standard practice in the hospital. Data was entered and analyzed in SPSS version 20. Descriptive analysis was performed. Mean and standard deviation were calculated for quantitative variables such as maternal age, gestational age, haemoglobin level, hematocrit, serum bilirubin level, and cord clamping time. Frequencies an percentages were calculated for quantitative variables i-e polycythemia, low Hematocrit, high serum bilirubin and anaemia. Chi square and t- Test were applied and p-value of less than and equal was taken as significant.

RESULTS:

Total 342 patients were selected for this study. Patients were divided equally in two Groups each group comprises of 171 patients. early cord clamping was done in group 1. Patients while delayed cord clamping in group 2 patients. The mean maternal age in group 1. Was 35.63=+5.99 years and in group 2 was 34.80+5.98 years. The mean gestational age in group 1 was 38.54+0.95 and in group 2 was 38.46+0.95. The mean cord clamp time in group 1 Was 45.32+1.07 seconds while in group 2 was 118.63+33.18 seconds. Mean hemoglobin level in group 1 was 13.11+1.33mg/dl and in group 2 was13.44+1.07mgdl. Mean hematocrit in group 1 was 40.89+3.77% and in group 2 was 41.39+3.02%. The mean bilirubin in group 1 was9.15+5.76 mg/dl while in group 2 was13.11+10.13mg/dl mentioned in (Table 1). In group1

12(7%) neonates were anemic while 159(92.98%)of neonates were normal. In group2 only 5(2.92%) neonates were anemic while 166 (97.08) had no anemia(p-value0.08). in group 1 there were 19(11.11%) neonates having low hematocrit while 152(88.89%) of neonates were anaemic.in group 2 only 8(4.68%) neonates had low hematocrit while163(95.32.%) did not (pvalue0.03). Polycythemia in group 1 was found to be present in 5(2.92%) of neonates while 166(97.18%) did not. In group 2 19(11.11%) neonates had polycythemia while 152(88.89%) did not (p-value 0.003). High bilirubin in group 1 was found to be present 7(4.09%) of neonates While 164(95.91%) did not. In Group 2 33(19.3%) neonates had high bilirubin while 138(80.70%) did not. (P-value 0.001) Table2.

DISCUSSION:

The impact of Iron deficiency anaemia has serious implication on newborn health like impaired neurodevelopment, which can affect individual's cognitive, motor and behavioral abilities[15]. Many studies proved that with delayed cord clamping, Anaemia and its detrimental effects can be avoided in the period of infancy[16] and it is accepted generally as low cost effective intervention[17].By delaying cord clamping the amount of total Iron reaches in newborn circulation is enough for the period of three months of life[18]. We noticed in our study that in DCC group there is slight decrease in anaemia

Table 1: Baseline characteristics of the two groups and their mean difference

Variable	Groups	n	Mean	Standard deviation	P-value
Age of Mothers (Years)	Group 1	171	35.63	5.99	0.86
	Group 2	171	34.80	5.98	
Gestational Age (weeks)	Group 1	171	38.54	0.95	0.94
	Group 2	171	38.46	0.94	
Cord clamping Time (seconds)	Group 1	171	45.32	7.94	0.001
	Group 2	171	118.63	33.18	
Hemoglobin level (mg/dl)	Group 1	171	13.29	1.33	0.12
	Group 2	171	13.44	1.07	
Hematocrit (%)	Group 1	171	40.89	3.77	0.02
	Group 2	171	41.39	3.02	
Bilirubin (mg/dl)	Group 1	171	9.15	5.76	0.001
	Group 2	171	13.11	10.13	

Table 2: Frequency of different hematological variation in each group.

Variable	Group 1 n=171		Group 2 n=171		P-value
	Yes (%)	No (%)	Yes (%)	No (%)	
Anaemia	12(7%)	159(93%	05 (3%)	166(97%)	0.08
Low hematocrit	19(11%)	152(89%)	08(5%)	163(95%)	0.03
Polycythemia	05(3%)	166(97%)	19(11%)	152(89%)	0.003
High bilirubin	07(4%)	164(96%)	33(19%)	138(81%)	0.001

that is 5 out of 171 babies had anaemia while in group of ECC 12 Newborn had anaemia while increased hyperbilirubin(33 out of 171), hematocrit (41 out of 171) and polycythemia (19out of 171) were found in group 2 . Similar finding was noted in study by Nesheli HM[19], it was reported the mean hemoglobin in early cord clamping group of 30 neonates to be 10.68 mg/dl while in delayed cord clamping group of 30 neonates to be 11.56 mg/dl. Mean hematocrit in early cord clamping group was 31.36and in delayed cord clamping was 34.26 was noted in, Another study supports the same finding by Cernadas JM et al[20], anemia in early clamping group of 90 neonates was reported to be present in 8 (8.9%) of neonates while none of the neonates in delayed clamping group reported anemia. Polycythemia was found in 5 (4.4%) of neonates in early clamping group and 13 (14%) neonates with delayed clamping was found to have polycythemia. Early clamping group had a mean hematocrit of 51.1 % while in late clamping group it was 56.4 % and the mean hematocrit in early clamping to be 53.50% among 92 neonates while in the late clamping group it was 59.40 % among 90 neonates.

Another study by Chaparro CM et al recorded the mean hematocrit among 155 neonates of early clamping to be 59.50 % while in 166 neonates of late clamping it was 62 %. No neonates were reported to have polycythemia[21]. In a study byNelle M et al mean hematocrit of 15 neonates with early clamping was 43% and 15 neonates with late camping was 59%. No neonates were reported to have polycythemia in both early and late clamping group[22]. Mean bilirubin in early clamping group was 6.1 mg/dl while in late clamping it was 5.8 mg/dl. No neonates were reported to have polycythemia in the early clamping group while only 3 neonates were found to have polycythemia in the late clamping group[23].

Aziz SF et al recorded a mean hematocrit of 43% among 15 neonates with early clamping while in 15 neonates with late clamping it was reported as 59%[24]. In a study by Linderkamp O et al the mean hematocrit in early clamping group was reported to be 44 % among 15 neonates while in the late clamping group it was 59 % among 15 neonates. None of the neonates were reported to have polycythemia in both groups[25]. This finding is not consistent with our finding. ACOG acknowledge the risk of excessive placental transfusion with DCC where other risk factors for fetal polycythemia exist, such as maternal Diabetes, IUGR and high altitude[26].

Previously it was thought that with the help of ECC Postpartum Hemorrhage can be avoided but recent studies shows no clear benefit[27]. We also did not observed this finding for the reason of DCC. Contraindication for DCC are APH/abruption placenta vasa previa, p. previa, umbilical cord avulsion, cord prolapsed, fetal compromise in multiple pregnancy.

These studies show a more or less similar finding to our study with regards to anemia, bilirubin, hematocrit, polycythemia. The quantitative approach of our study has assured that we have assessed the difference of blood parameters in the early vs. late clamping groups, However, the study might not be immune from selection and observer bias. Considering the views of our observations and to what extent they are consistent with the demographic variables would be revealing to discover more facts about neonatal outcomes which will help clinicians in reducing the burden of anemia at the preliminary level

CONCLUSION:

Neonates with late clamping had lower incidence of anemia, higher haematocrit as compared to early clamping but were prone to a higher levels of bilirubin as well as polycythemia. Significant variations for haematocrit, polycythemia and bilirubin were found.

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Original Article

Awareness Of Medical Students Regarding Periodontal Disease In Diabetic Patients In A Private Dental College of Karachi

Natasha Fatima, Saima Mazhar, Mushtaq Ahmed, Umair Aslam

ABSTRACT:

Objective: The aim of this study was to evaluate the awareness and knowledge of periodontal disease among medical students of Bahria University Medical and Dental College (BUMDC) while treating diabetic patients.

Study design and Setting: It was a cross sectional study conducted in Bahria University Medical and Dental College (BUMDC) Karachi.

Methodology: This study included participants currently studying in 3rd, 4th and final year Bachelor of Medicine and Bachelor of Surgery (MBBS) in BUMDC Karachi. Questionnaire was divided into two parts, in the first part, demographic details and year of study were asked, in the second part, questions regarding diabetes mellitus and its complications were included. Total of 384 participants participated in the study and the data was statistically analyzed using responses SPSS version 23.

Results: All the participants successfully completed the questionnaire so the response rate was 100% in this study. From 384 participants, 37% were male and 63% were female. The majority of the students were aged between 22-23 years. About 64.1% of respondents thought that they were aware of periodontal disease in diabetic patients whereas only 19.5% individual had knowledge of periodontitis. Also around 44% of medical students could not specify clinical manifestations in periodontitis and only 48.4% participants could state the periodontal manifestations present in diabetic mellitus.

Conclusion: It is concluded from the study that medical students have very limited knowledge regarding periodontal disease and its association with diabetes mellitus. Very few medical students were informed about referring the diabetic patients to the dental surgeon.

Keywords: Diabetes Mellitus, Medical Students, Periodontitis, Periodontal Disease.

INTRODUCTION:

Diabetes is a metabolic disorder in which glucose level increases, with functional disorders of metabolism of protein, fat and carbohydrate, which results from defects in insulin secretion, insulin action, or both.[1] Diabetes has been graded into multiple categories including, Type 1 diabetes (caused by autoimmune â-cell destruction, which leads to complete deficiency of insulin), Type 2 diabetes (caused by loss of â-cell insulin secretion progressively which eventually causes insulin resistance),Gestational diabetes mellitus (GDM) (occurs in pregnancy mainly 2nd and 3rd trimester), Specific types of diabetes due to other causes, e.g., monogenic diabetes syndromes (neonatal diabetes and maturity-onset diabetes of the young (MODY), diseases of the exocrine pancreas (cystic fibrosis), and drug- or chemical-induced diabetes (with glucocorticoid use, in the treatment of HIV/AIDS, or after organ transplantation).[2] Diabetes mellitus can cause multiple complications e.g. cardiac arrest, brain stroke, renal failure, leg amputation, loss of vision and nerve damage. In pregnancy, poorly controlled diabetes increases the risk of fetal death and other complications.[3]

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In 2017 International Diabetes Federation (IDF) reported that around 451 million (age 18–99?years) people are affected with diabetes worldwide, which may increase up to 693 million by 2045. It was estimated that 49.7% diabetic individuals are never diagnosed. Around 5 million people, in the age range of 20-99 years, died because of diabetes worldwide.[4] The demographical studies showed that the prevalence of Diabetes in Pakistan is ranging from 7.6% to 11%.[5] The prevalence of DM in Pakistan was reported to be 5.2 million in the year 2000 and by the year 2030, it may reach up to 13.9 million.[6]

Among other systemic complication, diabetes played an important role in oral diseases. Individuals with poorly controlled diabetes are more vulnerable to oral infections. Periodontitis is a sixth complication of diabetes.[7] Periodontitis is a condition which causes inflammatory changes in the supporting structures of the teeth including gingival fibers,

bone and periodontal fibers, which can eventually lead to loss of teeth and may cause systemic inflammation. Chronic periodontitis mostly occurs in adults whereas aggressive periodontitis affects children only.[8] According to American Dental Association (ADA), individuals with fasting blood glucose levels higher than 125 mg/dL or 7 mmol/L are considered as diabetic.[8]

Diagnosis is made on the basis of systemic and oral signs and symptoms. Systemic signs and Symptoms include hyperglycemia include polyuria, polydipsia, weight loss, sometimes with polyphagia, and blurred vision whereas oral symptoms include gingivitis and periodontitis, recurrent oral fungal infections and impaired wound healing with reduced salivary flow.[9] Diabetes attack all periodontal factors, including bleeding on probing, probing depths, attachment loss and tooth loss.[10] Diabetes may cause changes in the collagen metabolism, gingival crevicular fluid, host response and the tissue micro flora. Inflammatory mediators like interleukin (IL)-1, IL-6 and tumor necrosis factor (TNF) alpha are formed by inflamed periodontal tissues which change the glycemic control thus affecting the glucose and lipid metabolism.[10]

Numerous studies have been conducted which show that very few patients with diabetes visit dentists for regular check-ups to evaluate their periodontal health status and are not aware of the knowledge of the oral health maintenance. There were few studies conducted on the assessment of the behavior and attitude of doctors towards the treatment of patients having diabetes. It was found out that very few physicians convey with the patient's dentists regarding their diabetes status and oral condition.[11]

Allen conducted a study in which he assessed the knowledge of diabetic patients about periodontal diseases and found that they had a very low awareness of this relationship, as compared to increased knowledge for the increased risk of eye diseases, heart disease, kidney disease and circulatory problems.[12] Despite the role of oral health care in systemic health, it is an aspect that is often neglected.[13] It is recommended that physicians should integrate education into the management regimen of their diabetic patients about periodontal disease and its risk factors. There should be a focus on referral of diabetic patients to dental care professionals for thorough dental evaluation.[14]

Thus, it is necessary for medical practitioners to have basic dental education to evaluate symptoms and diagnose dental diseases among patients, to deliver emergency dental treatment when needed or to recommend these patients to maintain good oral hygiene.[15] Dental students have adequate knowledge about periodontal disease but limited studies are available which reveal the knowledge of medical students about periodontal disease as a complication of diabetes mellitus in Pakistan. Therefore; the rationale of this study was to find out the knowledge regarding the relationship between diabetes mellitus and oral health among medical students. This study would be beneficial in enlightening the medical students about periodontal disease and its serious short term and long term complications. The aim of this study was to evaluate the awareness and knowledge of periodontal disease among medical students of Bahria University Medical and Dental College (BUMDC) while treating diabetic patients.

METHODOLOGY:

A cross sectional questionnaire based study was conducted in Bahria University Medical and Dental College (BUMDC) Karachi from august 2018 to December 2018.Sample size was calculated as 384 on the prevalence of 50%. A self-administered questionnaire was distributed among the subjects through convenience sample technique and written consent was obtained from each participant before filling the forms. This study included participants who are currently studying in 3rd, 4th and final year bachelor of medicine and bachelor of surgery (MBBS) in BUMDC Karachi. Students who failed to give consent were excluded. Ethical clearance certificate was obtained from ethical review committee of Bahria University Medical and Dental College (BUMDC) Karachi Pakistan numbered ERC 63/2018.

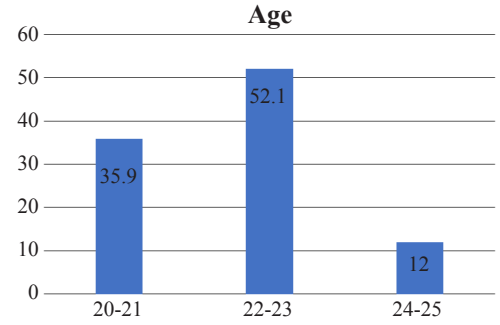
A survey comprising of 15 questions was used to assess the knowledge among medical students regarding periodontal disease in diabetic patients. Questionnaire was divided into two parts, in the first part, demographic details and year of study were asked, in the second part, questions regarding diabetes mellitus and its complications were included. The questionnaire assessed the knowledge of medical students regarding periodontal disease in diabetic patients through following questions (1) ADA approved fasting blood glucose test level (2) most common oral micro vascular complications of diabetes(3) knowledge of Periodontitis(4) clinical manifestations in Periodontitis(5) most commonly found periodontal manifestation among uncontrolled diabetic individuals(6) estimate your knowledge about periodontitis and its relationship with systemic disease.Data analysis was done using SPSS Version 23.

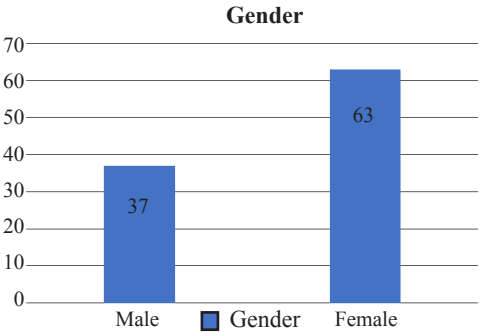
RESULTS:

Among 384 participants, 142 were males and 242 females. 128 participants were from 3rd year, 129 from 4th and 127 from final year. All the participants successfully completed the questionnaire so the response rate was 100% in this study. According to the results shown in table 2, this study depicts that only 13.3% of medical students always ask diabetic patients if they have ever been diagnosed with periodontal disease.

A majority of respondents i.e. 64.1% were aware of periodontal disease in diabetic patients whereas only 19.5 % individual had knowledge of periodontitis.

Among the entire population of medical students; 44% could





not specify clinical manifestations in periodontitis and only 48.4% participants could state the periodontal manifestations present in diabetic mellitus.

About 33.6% of the participants thought that they have moderate to good knowledge about periodontitis and its relationship with systemic diseases like diabetes mellitus. 34.1% of the individuals never referred while 19.3% of the individuals always refer their patients for evaluation to a dentist.

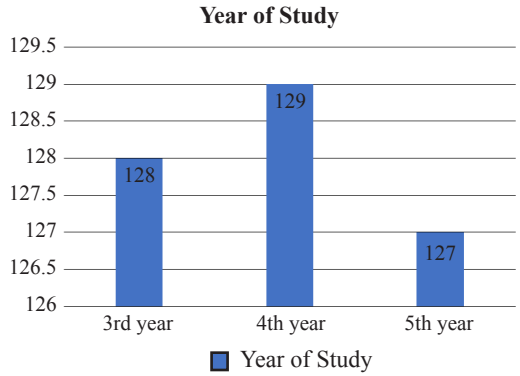


Table 1. Knowledge Parameters of Periodontal Disease in Diabetic patients among 3rd ,4th and 5th year MBBS Students.

Parameters	Options	3rd Year	4th Year	5th Year	P-value
Normal range of fasting blood glucose level	50-69 mg/dl	2(1.6%)	8(6.2%)	1(0.8%)	**0.000**
	70-99 mg/dl	95(74.2%)	79(61.2%)	60(47.2%)	
	100-125 mg/dl	26(20.3%)	35(27.1%)	60(47.2%)	
	>126 mg/dl	5(3.9%)	7(5.4%)	6(4.7%)	
Fasting blood glucose test level in diabetes	50-69 mg/dl	1(0.8%)	9(7.0%)	3(2.4%)	**0.005**
	70-99 mg/dl	8(6.3%)	10(7.8%)	5(3.9%)	
	100-125 mg/dl	28(21.9%)	36(27.9%)	19(13%)	
	>126 mg/dl	91(71.1%)	74(57.4%)	100(78.7%)	
Most Common oral complications in diabetes mellitus	Xerostomia	38(29.7%)	64(49.6%)	50(39.4%)	**0.014**
	Gingivitis	72(56.3%)	42(32.6%)	55(43.3%)	
	Leukoplakia	8(6.3%)	11(8.5%)	8(6.3%)	
	Gingival enlargement	10(7.8%)	12(9.3%)	14(11.0%)	
What is Periodontitis?	Inflammation of Enamel	22(17.2%)	47(36.4%)	31(24.4%)	**0.000**
	Inflammation of Dentin	39(30.5%)	21(16.3%)	30(23.6%)	
	Inflammation of gingiva	55(43.0%)	37(28.7%)	27(21.3%)	
	Inflammation of PDL, Cementum & Bone	12(9.4%)	24(18.6%)	39(30.7%)	
Rank of Periodontitis in complication of diabetes mellitus.	1st	26(20.3%)	23(17.8%)	15(11.8%)	**0.003**
	2nd	27(21.1%)	26(20.2%)	26(20.2%)	
	3rd	40(31.3%)	38(29.5%)	21(16.5%)	
	6th	35(27.3%)	42(32.6%)	65(512%)	
Destruction of periodontal structures in poorly controlled diabetic	Increased collagenase activity	19(14.8%)	20(15.5%)	21(16.5%)	**0.263**
	Decreased collagen synthesis	35(27.3%)	36(27.9%)	28(22.0%)	
	Decreased collagenase activity	13(10.2%)	16(12.4%)	6(4.7%)	
	Both a & b	61(47.7%)	57(44.2%)	72(56.7%)	
Most common periodontal manifestation in diabetes	Periodontal abscess	31(24.2%)	26(20.2%)	28(22.0%)	**0.024**
	Bleeding gums	72(56.2%)	58(44.9%)	56(44.0%)	
	Ulcers	25(19.5%)	45(34.9%)	43(33.85%)	

Table 2. Awareness Parameters of periodontal disease in diabetic patients among 3rd ,4th and 5th year MBBS Students.

Parameters	OPTIONS	3RD YEAR	4TH YEAR	5TH YEAR	P-value
Awareness of complications of diabetes	Yes	118(92.2%)	117(90.7%)	118(92.9%)	**0.090**
	No	10(7.8%)	12(9.3%)	9(7.1%)	
Awareness of periodontal disease in diabetics?	Yes	77(60.2%)	90(69.8%)	79(62.2%)	**0.005**
	No	51(39.8%)	39(30.2%)	48(37.7%)	
Ask patients about periodontal disease	Never	69(53.9%)	62(48.1%)	82(64.6%)	**0.020**
	Often	37(28.9%)	52(40.3%)	31(24.4%)	
	Always	22(17.2%)	15(11.6%)	14(11.0%)	
Clinical manifestations in Periodontitis	Bleeding gums	53(41.4%)	46(35.7%)	24(18.9%)	**0.002**
	Mobile teeth	3(2.3%)	5(3.9%)	10(7.9%)	
	Gingival recession	6(4.7%)	13(10.1%)	9(7.1%)	
	All of the above	66(51.6%)	65(50.4%)	84(66.1%)	
Advise to diabetic patients who have or are at risk for periodontal disease	Encouraged to visit a dentist at least once a year	73(57.0%)	76(58.9%)	81(63.8%)	**0.459**
	Advised to follow a strict a diet regimen	36(28.1%)	30(23.3%)	33(26.0%)	
	Advised to increase the drug dosage	9(7.0%)	15(11.6%)	9(7.1%)	
	Advised to reduce weight	10(7.8%)	8(6.2%)	4(3.1%)	
Knowledge about periodontal disease and its relationship with systemic disease	Limited	86(67.2%)	90(69.8%)	79(62.2%)	**0.004**
	Moderate	35(27.3%)	18(14.0%)	36(28.3%)	
	Good	7(5.5%)	21(16.3%)	12(9.4%)	
Role as a physician for evaluation of periodontal	Strongly disagree	10(7.8%)	30(23.3%)	10(7.9%)	**0.000**
	Disagree	16(12.5%)	22(17.1%)	26(20.5%)	
	Agree	86(67.2%)	73(56.6%)	82(64.6%)	
	Strongly agree	16(12.5%)	4(3.1%)	9(7.1%)	

DISCUSSION:

This study was conducted to evaluate the knowledge and awareness of periodontal disease commonly present in diabetic patients among medical students. Diabetes has been linked to chronic periodontitis. In an epidemiologic study conducted in the United States, Periodontitis is 2.9 times more common in individuals with poorly controlled diabetes as compared to non-diabetic individuals.[16] A study reported that it's a bidirectional relationship between DM and periodontal disease (PD). It's a relationship in which Periodontal Disease can effect glycemic control levels and uncontrolled Diabetes can aggravate Periodontal Disease.[17] Generally only dental hygienists and Dentists have been educated regarding the oral disease and its systemic association.[18]However there are quite less studies about education of medical practitioners regarding oral-systemic connection related to periodontal disease and its systemic complication.[19]

In our study only 19.5% of the participants had a knowledge about periodontitis which was significantly lower than the study conducted by Roshni Jaiswal which was found to be 43.33%.[20]According to our study 64.1% of the participants were aware that diabetic individuals are prone to periodontal disease which was comparable to 68% of Indian population.[20]So overall medical students have limited knowledge of diabetes and its oral manifestations. A study by al Khabbaz et al, showed that only half of all study participants believed that diabetic patients were more vulnerable to tooth loss whereas in our study almost 60.7% individuals believed that diabetic patients were more vulnerable to tooth loss because of periodontal diseases than non-diabetic individuals.[11]

There are various studies which highlight the association of systemic disease with periodontal condition. These studies recommended that controlling periodontal and gingival disease may be significant in reducing other systemic inflammatory conditions, thus preventing or controlling diabetes mellitus, cardiovascular diseases and other systemic diseases.[21,22] A study conducted in North Carolina concluded that majority of the endocrinologists and internists have very limited knowledge about the association of diabetes mellitus with periodontal disease. [23]A study conducted byBahammam MA, showed that the patients with diabetes

lack basic knowledge about the association between oral health and diabetes. [24]As the number of patients having oral complications of diabetes mellitus and other systemic diseases is increasing with time so it is important to incorporate medical-dental collaboration and inter-professional education to manage the rising number of patients. Physicians need to show more interest and get more involved in promotion of oral health. Moreover, incorporation of oral health education in the curriculum of medical students is necessary.[25]General physicians should get a proper education and knowledge before they can take up a broader role in the early diagnosis of oral diseases.[26]

Failure of examination of the oral cavity which includes teeth and its supporting structures by physician has been reported.[27]So it should be encouraged to do routine oral examination of patients with uncontrolled diabetes who are at higher risk for developing periodontal disease. When physicians are examining a diabetic patients, it is vitally important to include examination of oral cavity as it is important for the treatment of Periodontal disease and diabetes mellitis.[28]Medical practitioners should take certain regulatory steps which includes: inquiring diabetic individuals about their oral hygiene, specifically bad breath, any sign of inflammation, altered taste sensation(Dysgeusia) or any other oral symptoms; also questioning regarding last visit to a dentist and reminding diabetic individuals that they need to have dental examination every 6 months as recommended by American Dental Association (ADA).Diabetic patients should be presented with a personalized dental plan which can be used to inhibit and control periodontitis.[29]

A study conducted among medical students in Australia revealed that there's generally positive approach towards the significance of oral health trainings. But they had overall less understanding of dental caries, oral-systemic connections, and oral health inconsistency during undergraduate years.[19] The strength of this study was the huge sample size and the intended topic of the study. Among the limitations the single centered study but the results can be generalized to the entire population due to diabetic prevalence in Pakistan. .It is recommended that during medical school years, students obtain less than two hours of training on oral health. More studies are required to assess the impact of dental health referrals and patient's educational interventions. There should be interdisciplinary approach is required between dental and medical professionals to provide holistic care to the diabetic individuals who are at increased risk for periodontal disease and insure timely treatment of the individuals. It is necessary to implement learning approaches in the curriculum for medical and dental students to extend professional education and their association to educate dentists and physicians for prevention and management of diabetic patients with periodontal disease.

CONCLUSION:

It is concluded from the study that medical students have very limited knowledge regarding periodontal disease and its association with diabetes mellitus. Very few medical students were informed about referring the diabetic patients to the dental surgeon.

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Original Article

Association of Physical activity levels and BMI Among Doctor of Physical Therapy Students of a Private College from Karachi

Khalid Aziz, Ayesha Afridi, Abida Arif, Ghousia Shahid, Muhammad Faisal Fahim, Rabia Khan

ABSTRACT:

Objective: To evaluate the physical activity levels among DPT students of Bahria University College of Physical therapy (BUCPT) by International Physical Activity Questionnaire (IPAQ) and to study the relationship between Body Mass Index (BMI) and Physical activity levels of DPT students of (BUCPT).

Study design and Setting: This cross sectional study was conducted in BUCPT Bahria from March- April 2019 (1 month data collection).

Methodology: Written consent form was obtained from each participant before taking part into study. Individual with cardio-respiratory diseases and fractures in last 12 months or any limb disability were excluded from the study. The study tool was IPAQ.

Results:A total of 125 students were enrolled in this study. There were 121 (96.8%) female and 4 (3.2%) male observed. Mean age of students were 19.89±1.14 (18-22) years. In low physical activity level, 2 (28.6%) students were underweight, 8 (17.0%) were normal BMI, 3 (9.7%) were overweight and 6 (15.0%) were obese. In moderate physical activity level, 3 (42.9%) underweight, 22 (46.8%) normal, 19 (61.3%) overweight and 19 (47.5%) fall in obese criteria. High physical activity levels were found to be 2 (28.6%) in underweight group, 17 (36.2%) in normal group, 9 (29.0%) in overweight and 15 (37.5%) were obese.

Conclusion: BUCPT students were moderately physically active and minority of them were low physically active and majority of them were lying the category of normal BMI. There was statistically insignificant relationship found between BMI and physical activities levels. Some students were obese and still have high physical activity level while some are normal in BMI and having low physical activity level.

Key words: Assessment, BMI, Physical Activity, IPAQ questionnaire, Exercises, Obesity, DPT

INTRODUCTION:

Proper workout of skeletal muscles to produce productive bodily movements by utilizing calories and results in energy expenditure is termed as physical activity or sometimes interchangeably called exercise[1]. Opposite to that, physical inactivity results in adverse health conditions like diabetes mellitus, breast cancer, obesity, hypertension and hypercholesterolemia which ultimately leads to coronary heart disease[2]. The puberty is the transition link for individuals to move from childhood to adulthood and majority of the health habits developed at this transition level, lasts long e.g. exercise and dietary habits[3]. Many previous researches indicate that today's lifestyle of adults is deprived of health consciousness and total dependency upon technology is diminishing the physical activity levels[4]. Exercise and physical activities are practically ignored in daily routine of adult university students due to different corresponding factors including lack of supervision for proper exercise plan, poor time management and disbelieve about positive effects of physical activity upon body[5]. Overweight and obesity among young adults' leads to low self-esteem and it directly affects the confidence level and academic record of university students. Physical activity/ exertion boosts the metabolic system for young students in their growing age and maintain the hormone balance in female students[6]. The transition from childhood to adolescences decreases the level of physical activities and with further advancing age physical activity level further deteriorated Growing age along with biological changes and psychological maturation and habits developmental stage, the physical activity levels decreases and leading to unhealthy, sedentary life style in university students[7]. Different perceived barriers to physical activity among students are classified as internal and external

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barriers. Daskapan at al reported in their study that score for external barriers like lack of time for exercise was significantly higher than internal barrier which include lack of stamina and energy for exercise[3]. Health professionals are making efforts to aware the population about the hazardous effects of physical inactivity and sedentary life style by counseling the individuals visiting them for health issues in last decades[8]. Unfortunately the facilities provided by latest technologies are overcoming the manual work outs of adults and physical activity attitude and behaviors are difficult to adopt and inculcate in daily routine[9]. World health organization has provided the guidelines for adults of age 18 to 64 years for healthy life style. These guidelines recommend that adults should do moderate intensity physical activity for at least 150 minutes and vigorous intensity physical exertion for 75 minutes per week or mixture of both intensities at regular level[10]. Previous research reported that high academic stress among university students discourages the will to do physical exertion and exercise, which leads to weight gain and ultimately further decline in the stamina for physical activities[11]. Worldwide the prevalence of physical inactivity leading to obesity is increasing drastically among university students[12]. The prevalence for obesity among university students from 22 different countries has been reported through self-administered questionnaires and Body Mass Index (BMI) for weight status. Overall in male and female, 22% students were lying in category of overweight or obesity due to physical in activity[13]. Studies in low, middle and high income countries showed drastic results of physical inactive university students, Pakistani students are counted as 80.6% physically inactive due to regularly skipping breakfast and lack of social support for personal and academic workload[14]. Previous studies reported that high prevalence of physical inactivity and obesity is linked with poor diet control routine, sleep deprivation and academic stress among university students[15]. University students are having more freedom for their dietary and sleeping time choices[16,17]. According to WHO 2010 guidelines for physical activities in adults which include at least 150 minutes of moderate and minimum 75 minutes of vigorous intensity activities in one week for healthy life style and good quality of life[18]. Inadequate exercise or physical activity routine are causing mortality rates even higher each year. In 2010 almost 3.2 million deaths were reported by WHO solely due to inadequate physical activity. Physical inactivity is leading to vicious cycle of cardio respiratory, obesity and hypercholesterolemia issues in young adults which can affect their personal, social and academic life adversely[19,20]. Maintaining the regular physical activity level can prevent from many chronic diseases and quality of life can also be improved. Quality of life is the perception of individuals towards their positive and negative aspects of life[2]. International Physical Activity Questionnaire (IPAQ) is validated tool used in many researchers for methodological measurement of physical activity levels among adults[21] Being a physical therapy student everyone should know the importance of exercise and physical activity for healthy and good quality of life because in future they have to deal with patients of same issues. The rationale of the study was to create awareness about exercise, physical activity and obesity in BUCPT students by using validated IPAQ tool. This study was aimed to evaluate the physical activity levels among DPT students of Bahria University College of Physical therapy (BUCPT) by international physical activity questionnaire (IPAQ) and to study the relationship between Body Mass Index (BMI) and Physical activity levels of DPT students of (BUCPT).

METHODOLOGY:

Ethical approval was obtained from BUMDC numbered: 11/2019. This cross sectional study was conducted in Bahria university college of Physical Therapy (BUCPT) from March- April 2019 (1 month data collection). Written consent form was signed by each participant before taking part into study. Total 125 Doctor of Physical Therapy (DPT) students were enrolled in study by purposive sampling technique with mean age of 19.9±1.4 (18-22 years). Inclusion criteria was individuals should be above age 15 (requirement of international Physical Activity questionnaire IPAQ), from (BUCPT) and willing to be the part of this study. Individual with Cardio-respiratory diseases, fractures in last 12 months and any limb disability were excluded from study. After signing the consent form, participants were assessed for anthropometric measurement such as weight in kg and height in meters by Physical Therapist of BUCPT. Body Mass Index was determined using formula weight (kg)/Height(m). Physical activity of students was assessed using IPAQ International Physical activity questionnaire short version comprising of total 7 questions. This questionnaire has 3 categories of activities, including vigorous, moderate and walking and 4th one was related to sitting hours in weekdays. Through this questionnaire MET minutes were calculated for each activity and then individuals were assigned either low physical active, moderate or high physical active according to MET minutes calculation[22]. One metabolic equivalent (MET) is defined as the amount of oxygen consumed while sitting at rest and is equal to 3.5 ml O_2 per kg body weight per min. The MET concept represents a simple, practical, and easily understood procedure for expressing the energy cost of physical activities as a multiple of the resting metabolic rate. Individual categorical calculations were done using automatic scoring sheet of excel for International Physical activity Questionnaire designed by Cheng H[23] Scoring was taken and calculated in MET-minutes/week (www.ipaq.ki.se). The subsequent value were used for the investigation of IPAQ data:

- Walking MET = 3.3 x walking minutes x walking days
- Moderate MET = 4.0 x walking minutes x walking days

- Vigorous MET = 8.0 x walking minutes x walking days
- Total Physical Activity MET = sum of Walking + Moderate + Vigorous MET minutes/week scores[24].

Statistical analysis was performed on SPSS-23. All variables of International Physical activity questionnaire were evaluated according to their classification. Frequency and percentages and Mean and Standard deviation are presented in results.

RESULTS:

A total of 125 students were enrolled in this study. There were 121 (96.8%) female and 4 (3.2%) male observed. Mean age of students were 19.89±1.14 (18-22) years. Students mean height was found to be 1.48±0.10 (1.27-1.89) meters. Mean Weight of students was found to be 53.73±10.31 (30 – 80) kg. Average BMI in students was found to be 24.65±4.85. Physical activity MET according to IPAQ was asked from students that how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling in last 7 days mean value found to be 2.37±1.48 days per week. When asking about how much time did you usually spend doing vigorous physical activities on one of those days mean value was found to be 10.37±3.43 minutes per day. When asking about how many days did you do moderate physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Mean value of 3.22±1.53 days per week observed. Students were asked that how much time did you usually spend doing moderate physical activities on one of those days. Average value was found to be 23.15±8.36 minutes per week. They were asked that how many days you walked for at least 10 minutes at a time. Mean value was found to be 5.70±1.82 days per week. The question asked was how much time you usually spent walking on one of those days. Average value was observed to be 50.21±5.10 minutes per day. Students were asked about how much time you spent sitting on a week day. Mean value was found to be 15.49±3.74 minutes per day. Mean total days of activity was 6.63±1.05. Mean Met-minutes per week vigorous was 704.35±112.36. Mean Total activity was 83.74±17.36 (min/week). Mean Met-minutes per week was 408.48±78.07. Mean Met-minutes per week walk was 1019.01±106.36. Mean Met-minutes per week moderate total was 1806.82±152.40. (Table 1)

Body Mass Index (BMI) was followed by Asian cut off values as Underweight, Normal, over weight and obese. There were 47 (37.6%) students lying in the normal category whereas 40 (32.0%) found to be obese. Physical activity levels were observed as low 19 (15%), moderate 63 (51%) and high 43 (34%) students. (Figure 1)

There was statistically insignificant relationship found between BMI and physical activities levels. Some students are obese and still have high physical activity level while some are normal in BMI and having low physical activity level. (Table 2)

DISCUSSION:

Current study aim was to identify the physical activity levels in DPT students using IPAQ; any activity that lasts for more than 10 minutes was included. Results showed that 34% students were involved in vigorous physical activity on further elaborating the activities, majority of the students showed more than 100 stairs climbing activity in 1 hour due to construction design of BUMDC (nine floors), 51% with moderate physical activity level and only 15 % were found with low physical activity level. On contrary study by Supa

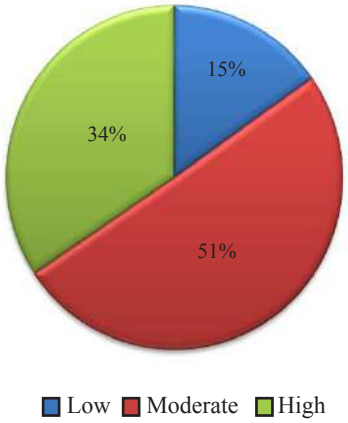
Table 1: Interpretation of Total Physical activity MET according with IPAQ

Question regarding vigorous activity of last 7 days / Interpretation of Total Physical activity MET according with IPAQ	**Mean± SD**
During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling?	2.37±1.48
How much time did you usually spend doing vigorous physical activities on one of those days?	10.37±3.43
During the last 7 days, on how many days did you do moderate physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.	3.22±1.53
How much time did you usually spend doing moderate physical activities on one of those days?	23.15±8.36
During the last 7 days, on how many days did you walk for at least 10 minutes at a time?	5.70±1.82
How much time did you usually spend walking on one of those days?	50.21±5.10
During the last 7 days, how much time did you spend sitting on a week day?	15.49±3.74
Total days of activity	6.63±1.05
Met-minutes per week vigorous	704.35±112.36
Total activity (min/week)	83.74±17.36
Total Met-minutes per week	408.48±78.07
Met-minutes per week walk	1019.01±106.36
Met-minutes per week moderate total	1806.82±152.40

Table 2: BMI in comparison with Physical activity levels.

	PHYSICAL ACTIVITY LEVELS				
BMI (kg/m2)	**Low (n=19)**	**Moderate (n=63)**	**High (n=43)**	**Total (n=125)**	**P-value**
Under weight	2	3	2	7	0.575
(< 18.5)	28.6%	42.9%	28.6%	100.0%	
Normal	8	22	17	47	
(18.5 - 22.9)	17.0%	46.8%	36.2%	100.0%	
Over Weight	3	19	9	31	
(23 - 26.9)	9.7%	61.3%	29.0%	100.0%	
Obese	6	19	15	40	
(= 27)	15.0%	47.5%	37.5%	100.0%	

Figure 1: Physical Activity Levels Of Students



et al (2015) revealed that physical activity levels among university students using IPAQ, total 813 students were enrolled from Pakistan with 80.6% low, 7.7% moderate and 11.7% with high physical activity levels[14]. another study was done in 2016 on Turkish student's physical activity levels using IPAQ and results were near to current study results; 52% students were found to be moderately physical active 37% vigorous and only 11% with low physical activity level[25]. Ajit et al conducted a study in 2018 on Indian Physical Therapy students using IPAQ, results showed that 49% were moderately physically active , 39% low physically active and 12% with high physical activity level[26].

Current study showed the BMI of students which was alarming as 5.6% students were under weight, 37.6% were normal, 24.8% were overweight and 32 % were lying in the category of obese. There was statistically insignificant relationship found between BMI physical activity level. Some students are obese and still have high physical activity level while some are normal in BMI and having low physical activity level. Indian study on physical therapy students showed that 64% were normal, 9% were obese, 14% were overweight and 13% were underweight according to BMI calculations. Out of 289 normal subjects, 39% were low, 51% moderate and 10% were highly physically active. Out of 40 obese subjects 32% were low, 42% moderate, and 26% were high physically active. Out of 59underweight subjects, 53% were low, 39% moderate, and 8% were high physically active. Out of 62 overweight subjects, 27% were low, 56% moderate, and 17% were high physically active[26].

The validated questionnaire of IPAQ was the strength of the study and smaller sample size, single centered study were the limitations of the study. It was recommended the physical activity is important for students of all subjects and for this in house gymnasium should be structured for the students. Multiple centered study and students of various students program should be carried out in future for generalizability of the results.

CONCLUSION:

Majority of the Doctor of Physical Therapy (DPT) students were moderately physicaly active and minority of them were low physicaly active and majority of them were lying in the category of normal BMI. There was statistically insignificant relationship found between BMI and physical activities levels. Some students were obese and still have high physical activity level while some are normal in BMI and having low physical activity level.

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Original Article

Association Of Vitamin D Deficiency With Type 2 Diabetes

Sehrish Shafique, Rana Ansari, Hamidullah Ariff, Sajid Abbas Jafri, Naveed Faraz

ABSTRACT:

Objective: To determine the association of Vitamin D deficiency with peripheral neuropathy in patients of type-2 Diabetes mellitus.

Study Design and Setting: It was a cross sectional study conducted in a private clinic in Karachi, during a period of three months.

Methodology: Total of 70 cases were included according to inclusion and exclusion criteria. Approval was sought from Ethical review committee. Consent was signed from the patients before the data collection. All the patients who were coming to the clinic, 30-75years of age, had history of type 2 diabetes for more than 5 year with HbA1c of 7% or above and had peripheral neuropathy were included. Data was collected in a pre-designed proforma. For entry of data and its statistical analysis SPSS version 20 was used.

Results: From the total 70 cases n=41(58.5%) were vit D deficient. Most of the patients with type 2 diabetes with neuropathy were in the age group of 61-75yrs (57%) followed by 46- 60yrs age group (30 %). This study also showed that 30 females (73%) and 11 males (26.8 %) were deficient in vitamin D.

Conclusion: Type 2 diabetic patients with vitamin D deficiency were more at risk of developing diabetic peripheral neuropathy (DPN) earlier. It is required to supply vitamin D appropriately for preventing DPN in type 2 diabetes.

Key words: Diabetic, Neuropathy, Vitamin D, Peripheral Neuropathy

INTRODUCTION:

Type 2 DM is among the commonly prevailing non-communicable diseases which occurs worldwide and is of high concerns as it can cause many health-related problems. However, because of its increasing number of cases and its high burden; evidence based novel innovative approaches should be made to prevent the occurrence and risk of the disease. Recent studies showed that vitamin D is a potential diabetes risk modifier[1]. Diabetes is among those health care syndrome which is associated with hyperglycemia due to pathology in insulin secretion and its action on its target cell. Similarly, vitamin D deficiency has also been recognized for its global concern[2]. The similarity between Vitamin D deficiency and diabetes is that both are pervasive and prevalent. According to the World Health Organization (WHO); it is estimate that by 2030; prevalence of DM rises above 366 million and the epidemic of diabetes will continue[3]. Vitamin D deficiency is also a commonly occurring problem in our country due to various social issues; such as lack of exposure in sunlight. About 30% to 50% of the population in the world suffers from Vitamin D deficiency. In UK, about 91% of T2DM had a Vitamin D deficiency with severe deficiency seen in 32% of patients[4] Like many countries, the prevalence of vitamin D deficiency in Pakistan is affecting 53.5% of population irrespective of the age groups[5,6,7,8]. Studies showed that 50-90% of Pakistani population especially females are vitamin D deficient.

Vitamin D has three vital sources. The first and the most essential source of vit D is sunlight. Apart from sunlight there are also dietary sources like dairy products, cereals, milk etc. which can provide us the dietary source of vitamin D. Nutritional Supplements that contain vitamin D are considered as the third major source of vit D. So, it is extremely essential that in a human body its normal levels should be maintained for the proper functioning of the body and also for normal regulation of different body systems. Its deficiency can lead to bone pains, osteomalacia, proximal myopathies and to the extent of osteoporosis and fractures due to increase parathyroid hormone level[9,10,11]. According to various studies; it is suggested Vit D has an important role as an immunological suppressor of tumors, although others are less certain about it[12].

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Decrease Vit D level is also one of the contributing factors in people for the development of both type 1 and type 2 diabetes. Beta cells which are present in the pancreas that secretes insulin also contain vitamin D receptors (VDRs) as well as the one á hydroxylase enzyme Through its effect which is regulated by calcium it has an indirect effect on causing insulin secretion. Vitamin D contributes to normalization of extracellular calcium, ensuring normal calcium flux through cell membranes and whenever there are low vitamin D levels in the body there is diminished calcium's ability to secrete insulin. If there is sufficient amount of vitamin D in the body glucose hemostasis can also be maintained in the body and thus minimizing the risk of developing diabetes. (10,11,12) It plays a vital role in the plasma calcium metabolism via effects on intestinal absorption and bone metabolism.In people who have mild to moderate vitamin D insufficiency there is a risk for developing type 2 diabetes[13]. Not only it is associated with the occurrence of diabetes but it is also related to its complications especially with diabetic peripheral neuropathy[14] as it helps in regulation and production of the neutrophic factors like neuron growth factor, neutrophin 3 and 4 and glial cell derived neutrophic factors so if it is deficient in the body there can be damaged to the neurons, and also effect on the production of neurotrophic factors which have a neuroprotective effect. Vitamin D is related to skeletal stability[15] normal level of plasma vitamin D minimize the chances for the diabetes mellitus and also the progression and severity of neuropathy in high risk patients[16,17] Vitamin D deficiency has been seen among the patients with syndrome due to specific vitamin D receptor gene polymorphisms[18]. Therefore the rationale of this study was to ascertain the frequency of 25-hydroxy vitamin D_3 [25(OH)D_3] deficiency and to determine their association with peripheral neuropathy in Pakistani population with type 2 diabetics.

METHODOLOGY:

All the patients who were coming to the clinic, with 30 -75 years of age, diagnosed with type 2 diabetes mellitus for more than 5 year with HbA1c of 7% or above with positive peripheral neuropathy which was checked through Semmes Weinstein monofilament test were included. Pregnant women, patients with history or clinical features suggesting chronic liver diseases, chronic renal disease, osteoporosis, history of any malignancies, thyroid disorders and patients already taking vitamin D or calcium supplements were excluded from the study. Data was collected in a pre-designed proforma.

The study was commenced after the ethical approval obtained from the ethical committee. Consent was taken from the patients prior to data collection after explaining the details of procedure. Those patients fulfilling the inclusion criteria and attending the OPD were selected. After taking their history of peripheral neuropathy Semmes Weinstein monofilament test with 5.0/10g was performed, three times at each site (dorsal between the base of digits 1–2; ventral digits 1, 3, 5; metatarsal heads 1, 3, 5; medial and lateral midfoot; and heel). If the patient missed perceiving the filament more than once at one site, the test was considered abnormal at that site. If a subject did not perceive the filament at two or more of the 10 sites, the test was reported as abnormal. (19). Then all those patients with positive monofilament test, were advised to have their vitamin D levels checked in blood. Patients were labelled deficient if serum 25(OH)D concentration levels are <20 ng/ml. (19-20). For data analysis SPSS version 20 were used.

RESULTS:

During the study period, a total of 70 were found to have diabetic and peripheral neuropathy among which 41 (58.5%) were vit D deficient. The youngest being 30 years and oldest being 75 years of age. Most of the patients with type 2 diabetes with neuropathy were in the age group of 61-75yrs (57%) followed by 46- 60yrs age group (30%). Out of 41 total vit D deficiency patient ,30 were females (73%) and 11were males (26.8%). (FIG.1)

Figure 1: Frequency of Vitamin D Deficiency with Neuropathy according to gender

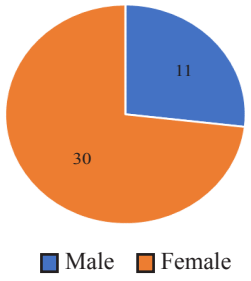

Figure 2: Distribution of vitamin D deficiency & neuropathy patient according to age group

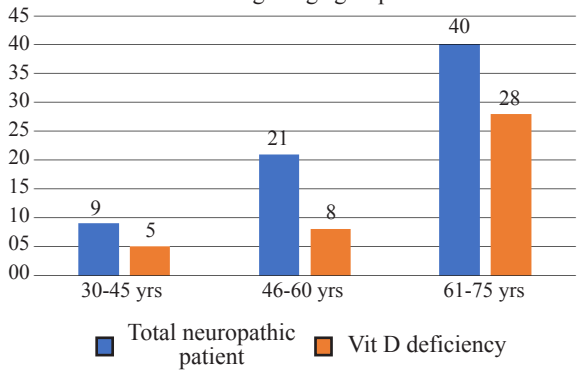

Table 1: Frequency of Vitamin D Deficiency in patients with Neuropathy

Total No of Diabetics with Neuropathy	Vitamin D Deficiency in Diabetics with Neuropathy	Percentage %
70	41	58.5%

DISCUSSION:

Diabetes is one of those diseases if it is not controlled, can lead to devastating microvascular complications such as eye, kidneys and brain which can compromise the quality of life and can also lead to high morbidity and mortality. This study determine the levels of 25-hydroxy vitamin D_3 among patient with neuropathy especially in diabetic patient, and to determine the correlation between low 25 $(OH)D_3$ levels with peripheral neuropathy, because vitamin D has a neuroprotective effect and it can prevent the progression and severity of neuropathy. There are numerous factors that can cause the development of peripheral neuropathy in diabetes like inflammation ,oxidative stress causes damage to blood vessels and further can lead to nerve ischemia, enhance advanced glycation end products all can lead to the development of neuropathy in the peripheral nerves[21]. Past studies have been shown that diabetic patients are almost twice more prone to have vitamin D deficiency as compared to normal healthy patient. So, in diabetics sufficient levels of vit D has a therapeutic role in the prevention but also in decreasing the severity and progression of illnesss[22]. In our study also, it was observed that out of total 70 type 2 diabetes mellitus with peripheral neuropathy among which 41 (58.5%) were found to have vitamin D deficiency(table 1) In this study the association seen between peripheral neuropathy and vitamin D deficiency , and these results were in agreement also with the results of the studies in which 67% of patients with diabetes have diabetic peripheral neuropathy with vit D deficiency levels, <20 ng,. Multiple studies have also found that serum vitamin D level in patients with diabetic peripheral neuropathy is significantly lower than those in healthy persons[23,24]. previous studies also showed that symptoms of nerves dysfunction can be prevented by correcting VIT D deficiency. Prevalence of Vit D deficiency is mostly associated with distal symmetric polyneuropathy. Neurological pain minimized by doing vit D deficiency corrected[24]. There are multiple factors which can lead to vitamin D deficiency like poor socioeconomic status, lack of proper care on diet, poor exposure to sunlight due to traditional dress all can be the contributing factors for deficiency in our country. The results shown in our study were also consistent with the other studies which have been done in Pakistan and Saudi Arabia to determine the frequency of vitamin D deficiency in diabetics[24,25]. Although, the studies which were conducted in western population have showed high prevalence of vit D deficiency that was 76% in diabetics. Previous studies shows incidence rate of vit D deficiency equal to 60.5%[6] in Switzerland, Australia (43%), Italy(25%), and North America(15%). Our finding were consistent with previous studies as well. Also past studies revealed that the level of vitamin D in diabetics are lower than non- diabetic individuals[26,27,28] in one of study done in our country shows that 53.5% had deficient levels.

In this study the patients were categorized into three age groups Relative frequency of decrease Vit D was found to be higher in old age group 57% (figure 2) which were also consistent with the previous studies[25]. Patients with increasing age were more at risk to develops vitamin D deficiency as a result of many reasons: like decreased in the number of vitamin D receptor, decrease calcium absorption in response to circulating1,25(OH)2D, decreased dermatological metabolism of vitamin D, and above all as with age so many organ compromise their function so as a result less production of active form of vit D (1,25(OH)2D) by the kidneys[29].

In our study there were more females (73%) as compared to males (27%) (fig 1) and this result consistent with the past studies which shows high incidence of vit D deficiency correlated with gender differences with deficiency more in females then males[25]. Our study finding of diabetic female with neuropathy had significantly lowered 25(OH) level were seen in past studies as well but one of the study in Iran shows no significant association between vitamin D levels and gender differences[30]. Therefore, it was recommended that vitamin D level of diabetic monitored regularly to prevent the complications of neuropathy like foot infections, ulcerations that can lead to foot amputation can be minimized and hence can reduce their morbidity and mortality.

Smaller sample crossectional nature of the study design were the limitation of the study

CONCLUSION:

Type 2 diabetic patients with vit d deficiency were at more risk of developing earlier peripheral neuropathy. Diabetic female were more susceptible of having peripheral neuropathy due to vit D deficiency as compare to male.

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Original Article

Risk Factors Associated With Sino-Nasal Polyposis And Its Relationship With The Occupational Inhalants

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ABSTRACT:

Objective: To determine the risk factors associated with sino-nasal polyposis and its relationship with the exposure of occupational inhalants in patients presenting in a tertiary care hospital of Karachi.

Study design and Settings: Cross-sectional study conducted at department of otorhino-laryngology Karachi Medical & Dental College and Abbasi Shaheed Hospital Karachi for a period of two and a half years from October 2015 to April 2018.

Methodology: Total number of patients included for this study were 221 patients with diagnosis of bilateral and multiple nasal polyposis with age greater than 10 years. Specifically, designed proforma was used for data collection specially in relation with occupation and exposure to different occupational inhalants and entered in SPSS version 23 for analysis.

Results: There were 133 male and 88 female patient with a mean age was 36.16 ± 12.33 years. Mostly patients belonged to poor socio-economic status i.e. 133 (60.70%). Allergic rhinitis or nasal allergy was the most common risk factor present in 114 patients (51.6%) while aspirin hypersensitivity was the least common risk factor present in only 19 patients (8.5%). Most of the patients (76 or 34.4%) were related with one or the other form of agriculture and were exposed to different occupational inhalants like mud, pollens, animals and plants.

Conclusions: Nasal allergy is the most common risk factor and occupational inhalant specially related with agriculture, poultry and pets are the common agents responsible for nasal polyposis in our local population.

Key words: Nasal polyps, nasal obstruction, risk factor

INTRODUCTION:

Nasal polyps are the chronic inflammation of the mucous membrane of para-nasal sinuses and nose[1] and severely affects the normal life of patients causing nasal obstruction and altered sense of smell. These are the benign lesion that develops due to marked extracellular edema of the mucosa of the nose and sinuses[2] being most commonly arise from the middle meatus or the ethmoid area[3]. Clinically it presents as rounded or pear shaped soft pedunculated, semi translucent, yellow or pale glistening mass projecting in the nasal cavity, which are insensitive and rarely bleed on touch [4]. Overall it effects 4% of the general population[5] but in a cadaveric study, prevalence of nasal polyps was reported up to 40%[6]. It usually descends between the lateral wall of nose and middle turbinate causing nasal obstruction, nasal congestion, hyposmia, rhinorrhea, facial pain[7], post nasal drip and sleep disturbance[8].

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The exact etiology is still unknown[9] but there are some etiological factors associated with it like nasal allergy, chronic inflammation of mucosa of nose or paranasal sinus, genetic predisposition and autonomic nervous dysfunction[10]. Up to one third of these patients have history of asthma while polypi are found in 7% of the asthmatic patients[5]. The treatment of the nasal polyps is challenging for the otorhinolaryngoloist, because etiology is not clear and tendency for recurrence is high. Recurrence can be prevented by proper control of the nasal allergy and avoidance from exposure to all allergens responsible for development of nasal polyposis. Nasal polyposis in Western populations is often characterized by type 2 inflammation, with elevated levels of type 2 cytokines, such as IL-5 and IL-13, along with eosinophilia. However, patients of Asian countries, are characterized by a mixed type 1 or type 3 inflammation, with a more neutrophilic inflammation[11]. The mechanisms that drive these different phenotypes are unclear at this time. The paranasal sinuses of patients with nasal polyposis are often chronically colonized with fungi and bacteria and these microbes may play an important role in pathogenesis of nasal polyp[12]. Although there are numerous hypothetical mechanisms that could account for this colonization, it is not yet clear whether this accumulation of microbes is an initial cause of nasal polyposis or a downstream effect of the underlying inflammatory disease mechanism.

This study was done with the intention to find out the risk factors associated with the formation of nasal polyposis along with its relationship with the exposure of occupational inhalants in local population.

METHODOLOGY:

This study was conducted in the department of Otorhinolaryngology of Karachi Medical and Dental college and Abbasi Shaheed Hospital Karachi, over a period of two and half years, from October 2015 to April 2018. A total of 221 cases of nasal polyposis were included in the study. The sample size was calculated with confidence level of 95% and prevalence of 17% in general population. The inclusion criterion was all consecutive patients presenting to the hospital's outpatient department with the diagnosis of nasal polyposis having age greater than 10 years. The exclusion criteria were patients with antro-choanal polyp (single and unilateral), patients younger than 10 years of age and patients on whom surgical intervention had been done previously.

Complete history along with clinical examination of ear, nose, throat and general examination was done in every patient. Eyes and Neurosurgical opinion were taken for any orbital and intracranial involvement. The occupation of the patients and exposure to different occupational inhalants was specifically noted. Routine baseline laboratory investigations and plain CT scan in all three planes were also done in every patient. All the required information was gathered in a specially designed proforma and entered with SPSS version 23.

RESULTS:

A total number of 221 patients were included in this study where male were 133 (60.01%) and female were 88 (39.81%) with male to female ratio of 1.5:1. Figure. 1 shows distribution of patients in different gender and age groups. The highest number of patients were noted between the ages of 21-40 years i.e. 104 patients (47.05%) followed by 41-60 years, 67 patients (30.31%). Only 15 patients (6.78%) were between the age of 11 to 20 years and 35 (15.8%) were above the age of 61 years. Most of the patients belonged to poor socio-economical status i.e. 133 (60.70%) while 64 (28.9%) were middle class and only 24 (10.8%) were of good socio-economic status.

Table 1 shows the different risk factors present in these patients. Out of 221 total patients, 116 patients (52.5%) had only one risk factor present while 95 patients (43.0%) had at least two risk factors and 10 patients (4.5%) had three or more risk factors. Allergic rhinitis or nasal allergy was the most common risk factor present in 114 patients (51.6%) while aspirin hypersensitivity was the least common risk factor present in only 19 patients (8.5%).

Figure.2 depicts the occupations and exposure to different occupational inhalants related with that occupation in these patients. In our study, most of the patients (76 or 34.4%) were related with one or the other form of agriculture and were exposed to different occupational inhalants like mud, pollens, animals and plants. The second common occupation in our series was poultry workers (39 patients, 17.6%) and

Figure. 1 Age and Gender Distribution (n=221)

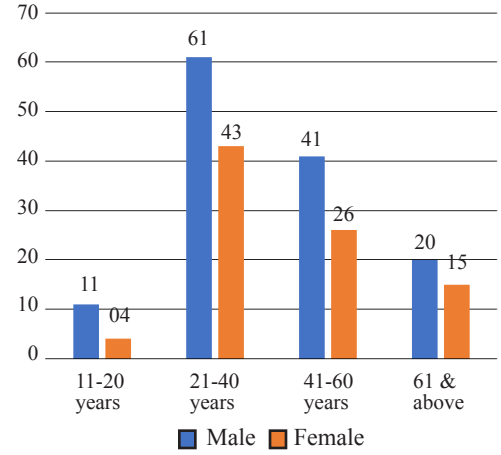
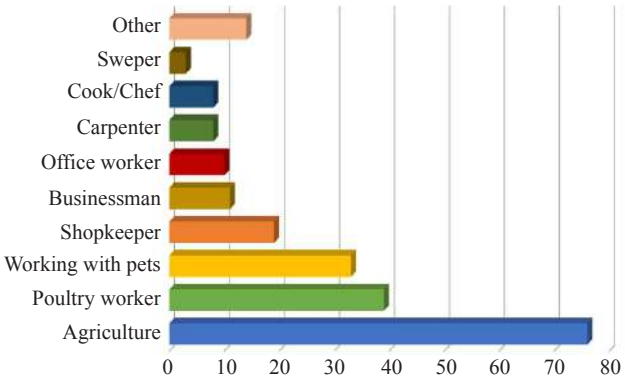


Table 1: Risk Factors Associated With Nasal Polyposis (n = 221)

Risk factor	Number of patients	Percentage
Allergic rhinitis	114	51.6%
Asthma	27	12.2%
Aspirin Hypersensitivity	19	8.5%
Nasal allergies in family	60	27.10%
Bronchial asthma in family	63	28.50%
Chronic Rhinosinusitis	57	25.8%

Figure. 2: Occupation of the patients (n = 221)



exposed to chickens and other related items. Another common occupation was related with exposure to pets in 33 patients (17.6%).

DISCUSSION:

Nasal polyposis and other associated diseases like allergic rhinitis and asthma, severely impair the quality of life of the patients, and represent imperative problems to the physician both from diagnostic and therapeutic points of view[13]. Scientific studies have been made to recognize and differentiate the pathophysiology of these conditions, but to date most of the aspects are still unclear and uncertain. Therefore, increasingly complex diagnostic and instrumental

methods are required for diagnosis and management where a detailed diagnosis allows to characterize and optimally treat these nasal diseases.

Nasal polyposis effects more male as compared to female with a male to female ratio varying from 1.3 to 2.2[14]. In our study also, male were 133 (60.01%) and female were 88 (39.81%) with male female ratio was 1.5:1. Nasal polypi are common in 4th to 7th decade of life[15] with a peak incidence between the ages of 45 and 65[16]. The highest numbers of patients in our study were between the ages of 21-40 years of age which was 104 (47.05%) patients and followed by patients between the ages of 41-60 years of age which were 67 (30.31%). Another study shows maximum prevalence of polyps was noted between 31 and 40 years of age[17], fairly similar to ours study. Only 15 patients (6.7%) were below the age of 20 as according to most studies nasal polyps are usually uncommon under the age of 20 years.[18] In this age group, it is frequently associated with cystic fibrosis, asthma and aspirin sensitivity.

Chronic nasal and sinus infection is also a risk factor of nasal polyposis[19]. In our study we found 25.8% patients had history of chronic rhino-sinusitis. One of the reasons is that inflammation of one part of respiratory tract may affect the other side of the respiratory tract at a distance[19] because upper and lower airways both are continuous. History of asthma in patient was present in 12.2% cases. According to one study, sinus radiograph findings show that asthmatic patients have high chance of abnormal sinus mucosa[20]. One study showed that mild to moderate asthmatic patients who are on steroid therapy have abnormal mucosal changes on CT scan[21]. 51.6% cases of this study had positive history of allergic rhinitis in the patients. According to Nanda et al. study, 33% patients found positive history of allergic rhinitis[22]. According to one study, 7.4% patients had positive family history of allergy or asthma[23]. Our study also found history of nasal allergy and bronchial asthma in family members in 27.10% and 28.50% respectively. Genetic predisposition for nasal polyposis has been studied and suggested but still controversies exist and the matter is still unproven.[24] Only limited work has been done in relation with nasal polyposis and occupational inhalants and no significant local study was found on literature search. In our study certainly nasal polyposis was found to be related with occupation and occupational inhalants. Agriculture related exposure was present in 76 cases while exposure with birds, chicken and other pets was found in 72 patients. All such occupational exposure are well known associated with nasal allergy and chronic rhino-sinusitis.

The limitations of this study is that it was conducted in only one tertiary care hospital of Karachi and the catchment area of this hospital is limited. Further multicenter studies involving different areas of Pakistan are needed with a greater number of patients.

CONCLUSION:

It was concluded that nasal allergy is the most common risk factor and occupational inhalant specially related with agriculture, poultry and pets are the common agents responsible for nasal polyposis in our local population.

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Original Article

Awareness Regarding Minimally Invasive Dentistry among Dentists of Karachi

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ABSTRACT:

The objective of this study was to assess awareness of dental practitioners of Karachi regarding minimally invasive dentistry.

Study design and Setting: It was a cross sectional study based on questionnaire, conducted in 6 different dental hospitals of Karachi. The sample included dentists who were actively practicing clinical dentistry in Karachi. Specialists were excluded from the study

Methodology: A study questionnaire was distributed to the participants which comprised of demographic details, professional data and Likert-Scale based questions to asses respondent's agreement level related to caries activity, assessment, detection and treatment.

Results: Out of the 151 questionnaires distributed, 119 were analysed with an overall response rate of 78.8%. From the total 67.2% dentists were received training in MID through some means in which 36% received training in MID by lectures and clinical training both while 32.8% had no training in MID. MID techniques like ART and sandwich technique was found to be effective by 65% and 50.4% respectively. The 58.8% participants were agreed that caries risk assessment (CRA) should be done in every patient and 55.5% dentists were agreed that restoration should be planned according to patient's assessment

Conclusion: General Dental Practioners were not completely aware of the concepts and application of minimally invasive procedures and had little knowledge regarding caries detection methods and lacked in implementation of MID techniques in their daily practice.

Keywords: Caries detection, Minimally Invasive Dentistry, Remineralization, Tooth Preservation.

INTRODUCTION:

Minimally invasive dentistry is a modern approach to conserve healthy tooth structure[1]. It focuses on prevention of caries, remineralization, and minimal intervention by the dentist[2]. Today with the help of scientific developments and technology, we are better able to understand and manage the caries process[3].

In recent years, adhesive dentistry has flourished and has shifted the traditional GV Black's caries management model of "extension for prevention" to "minimally invasive"[4]. The main objective of this approach is early identification and elimination of the causative factors to prevent and treat caries. In contrast to traditional methods, the minimally invasive approach has shown control over dental caries by application of preventive measures, minimal cavity preparations, use of adhesive materials and evidence-based decision-making.[5]

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There are four main principles of the Minimally Invasive Approach. First is "recognition" of potential risk factors at an early stage through lifestyle analysis and caries detection methods. Second is "Reduction" or elimination of caries risk factors by diet modification and lifestyle changes. Third is "Regeneration" by arresting and reversing the demineralization process. Fourth is "Repair" of carious tissue by using conservative approach for caries removal[6].

The usual visual, tactile and radiographic methods are unable to detect early caries activity but with the advanced caries detection methods like lasers and fluoroscopy, it has become easier for us to detect early carious lesions and decrease proliferation of decay into dentinal tissue[7,8]. The MID approach utilizes conservative techniques like air abrasion, lasers and hand instrumentation in Atraumatic Restorative Technique (ART) to remove infected layer of dentine and arrest further demineralization[9,10,11]. MID advocates use of adhesive materials which require less tooth preparation and re-mineralizing topical agents like fluoride varnishes and fluoride tooth pastes for prevention.[4, 12]

In Pakistan dental caries is the most widespread childhood disease[13,14,15]. This is due to lack of awareness regarding oral health and excessive consumption of refined carbohydrates. Implementation of Minimally Invasive approach in Pakistan would be helpful in reduction of caries burden by early detection and intervention; In addition, simple preventive procedures are less costly. Indeed the rationale of this study

was to find out the awareness and practice of MID among dental practitioners of Pakistan as to formulate the training in MID according to the outcome of the study; which ultimately decrease the caries burden. Therefore, the objective of this study was to assess the awareness of dental practitioners of Karachi regarding minimally invasive dentistry.

METHODOLOGY:

It was a cross sectional study based on questionnaire, conducted in 6 different dental hospitals of Karachi. Sample size was calculated as 11% of dentists[16] had a great deal of knowledge about minimally invasive dentistry. The calculated sample size was 151.The sample included dentists who are actively practicing clinical dentistry in Karachi. Specialists and dentists working outside Karachi were excluded from the study. Ethical approval was obtained by the ethical review committee of Bahria University Medical and Dental College. Study period was from March 2018 to September 2018. All forms were filled with prior written informed consent was taken. The questions were distributed into three sections which included demographics and awareness and attitude of dentists towards principles of minimally invasive dentistry. It was pilot tested on 15 dental practitioners who were excluded from the sample. No changes were made to the questionnaire after pilot testing. The first part of the questionnaire was about dentist's demographic data. The second and third portion comprised of 5 point Likert-Scale (Strongly Agree=1,Agree=2, Not sure=3, Disagree=4, Strongly Disagree=5) based questions to evaluate respondent's agreement level, their knowledge and attitude related to caries activity in relation to diet, re-mineralization with fluoride and sealants, caries risk assessment, conservative cavities, treatment planning and effectiveness of minimally invasive techniques like Atraumatic Restorative Technique (ART), Sandwich technique, fluoride varnishes and fluoride tooth pastes. Data was collected by the researcher. The responses in Agreement (Always/Mostly) and Disagreement (Sometimes/Rarely/Never) had been analyzed together. The responses of attitude in Agreement (Always/Mostly) and Disagreement (Sometimes/Rarely/Never) have been calculated together. Data entry was done on IBM statistics version 20. Frequency and percentages were used for descriptive data. Pearson Chi Square test with a significance level of p value <0.05 was used to analyze association between training in MID and attitude towards MID principles in diagnosing and treating dental caries.

RESULTS:

From the total 151 distributed questionnaires; 125 returned the filled forms. Out of the collected forms 6 forms were discarded due to incomplete information thereby 119 questionnaires were included for data analysis. Over all response rate was 78.8%. Demographic data of our study showed 53.8% of our sample comprised of males and 46.2% were female general practitioners. Only 7.6% of the participants were of age 35 and above while majority of our participants were between 26-30 years of age. The results showed that 41.2% of the respondents had a professional experience between 5-10 years while only 11% had professional experience above 10 years. There was no significant difference found between GDP's professional experience and training in minimally invasive dentistry (p>0.05). Age and gender did not show any positive association with practice of MID principles (p>0.05). (Table 1). Regarding training of GDPs in minimally invasive dentistry, 67.2% of the respondents received training in Minimally invasive dentistry through some means 32% of the GDPs received no training in MID. (Figure 1).

Regarding awareness of Minimally Invasive Dentistry, 96% of the GDPs were of the agreement that carbohydrates in diet have a direct effect on dental caries and 92% believe that fluoride is vital for remineralization process. 58.8% of the dentists agreed that Caries Risk Assessment (CRA) should be done in every patient and treatment provided should be based on patient's assessment. 32% of the respondents do not practice conservative cavity preparation techniques like box and tunnel-Table 2. In relation to methods preferred by GDPs to diagnose and detect caries, 49.6% of the GDPs use sharp explorer to detect caries which is not in agreement with the concepts of minimally invasive dentistry. Caries detection with blunt instrument and use of magnification were significantly related to MID training with $p = 0.00$ and $p=0.04$ respectively. The most widely used method for detection was using radiographs preferred by 91% of the dentists while 42% also use magnification for detection of dental caries. 88% of the GDPs do not use newer methods of caries detection like Electronic Caries Monitor, Fiber-Optic Transillumination or lasers in their practice.

Minimally Invasive techniques like Atraumatic Restorative Technique (ART) and Sandwich Technique was found to be effective by 65% and 50.4% of the respondents respectively in order to preserve remaining tooth structure. Training in MID had significant effect on utilization of ART technique by dentists with p value of 0.03. 96.6% of the GDPs reported fluoride varnishes to be effective in preventing dental caries while 88.2% of GDPs think that fluoride toothpaste is effective for preventing caries. (Table 3).

DISCUSSION:

Minimally invasive dentistry aims to adopt methods of caries prevention and reduction of cariogenic bacteria by dietary modification, early detection and remineralization of initial lesions followed by minimal intervention of cavitated lesions[17]. Minimally invasive dentistry is an approach adopted by dental practitioners to maintain long lasting oral health focused primarily on prevention of caries, risk assessment and treatment according to patient's individual requirement.

Figure 1. Training in Minimally Invasive Dentistry

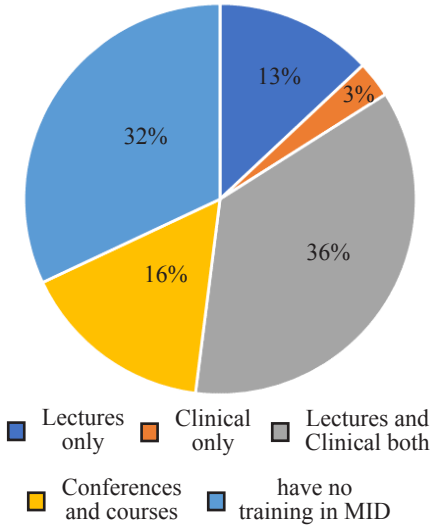

Table 1: Demographic Characteristics in correlation with training in MID

Age of Dentist	Received Training in MID		P-value (<0.05)
	Yes (n=80)	No (n=39)	
21-25 years	30%	28.21%	0.700
26-30 years	45%	53.85%	
31-35 years	16.25%	12.82%	
>35 years	8.75%	5.13%	
Professional Experience			
< 5 years	40%	61.54%	0.100
5-10 years	45%	33.33%	
>10 years	15%	5.13%	
Gender			
Male	62.5%	35.90%	0.06
Female	37.5%	64.10%	

Patient education and focus on prevention especially in high risk population is vital for caries prevention. This study revealed that more males have received training in MID than female however age and gender did not affect their awareness about minimally invasive dentistry which is in accordance with a study conducted in Saudi Arabia[4] and India[17]. Studies conducted in India [17,18] show that 84.7% of dentists in Puducherry and 97% dentists in Karnataka had adequate awareness about principles of MID which is greater than 67.2% in our study, 59.4% in Brazil[19]and 40.9% in Saudi Arabia[4]. Implementation of MID can only be effective in our practice if the four principle elements of recognition, reduction, regeneration and repair are integrated into our thought process[6]. It is evident that 96% of our respondents understand the direct relationship of carbohydrates with dental caries which is proven by extensive scientific data evidence on carbohydrates consumption as a necessary factor for development of caries[20]. WHO strongly recommends sugar control throughout one's life that is less than 10% of total energy intake.[20] 92.4% dentists in our study believe in the role of fluoride in replacing lost hydroxyapatite crystals and converting them into fluorapatite which are more resistant to caries.

In our study 98.3% of the dentists agreed that Caries Risk Assessment (CRA) should be performed in every patient. In UK[16] 70% of dentists in carried out CRA on patients which is greater than 26% in Japan[21]. 91% of dentists in UK affirmed that CRA has an influence on their treatment planning which is similar (91.6%) to the result of our study. Caries Risk Assessment is the basis of minimally invasive dentistry as not only it helps in diagnosis and treatment planning but also highlights the probability of developing caries in an individual. CRA if regularly done in patients can help in preventing caries and even arresting the ongoing caries cycle. Visual and tactile examinations were the most common means of diagnosing. Dental explorers over frequently used in diagnosing dental caries as shown in our study where 49.6% of the dentists use sharp explorers for caries detection. It is now an established from different studies that a sharp explorer can cause irreversible damage to the demineralized early lesion and may augment caries progression[22,]. In contrast, a blunt ended explorer as preferred by 63% of the dentists in our study was better as it causes less ultrastructural damage to the tooth[22,23] and was significantly associated with MID training in our study.

The principles of minimally invasive dentistry also emphasize usage of newer detection methods like laser fluoroscopy, dye staining, electronic caries monitor etc. which can help dentists save tooth from unnecessary destruction by removing unaffected tissues[24]. In our study 88% of the dentists have either never used these advanced caries detection methods or use it occasionally which is less than a similar study conducted in India[18] where 96.9% of the dentists don't use new detection methods in daily practice. Majority (91%) of the dentists in our study, rely on radiographs for caries detection which over the years have found to be an accurate method in diagnosing proximal lesions and dentinal caries[25]. Minimally invasive dentistry advocates usage of techniques like Atraumatic Restorative Technique (ART), sandwich technique and fluoride varnishes for preventive care. ART prevents further progression of caries and prevents formation of new lesion. "The latest meta-analysis on ART sealants showed a weighted mean survival percentage of fully and partially retained ART/HVGIC sealants after 1, 2, 3, 4, 5 and 6 years by 79%, 69%, 68%, 62%, 63% and 59% respectively"[26]. Similarly sandwich technique which is a combination of GIC and Composite also provide anti-cariogenic effect together with strength and esthetics of composite[27]. In our study 65% of the dentists think that ART is an effective technique to stop caries progression and this opinion was significantly corelated with dentists who had received training in MID. Daily fluoride uses in the form of tooth pastes, rinses or topically applied varnishes have

Table:2 Knowledge about MID among the participants. N=119

Knowledge towards MID principles	Strongly Agree (%)	Agree(%)	Not sure(%)	Disagree (%)	Strongly Disagree (%)
Carious lesions and intake of refined carbohydrates are directly related	58%	38.7%	4%	0%	0%
Fluoride aids in tooth remineralization	57.1%	35.3%	2.5%	5%	0%
Pit and fissure sealants are effective in caries prevention	81.5%	18.5%	0%	0%	0%
All patients should go through Caries Risk Assessment (CRA)	58.8%	39.5%	0.8%	0.8%	0%
Tunnel and box preparations are effective cavity designs.	16%	63%	10.9%	10.1%	0%
Restorations and techniques should be according to patient's caries risk assessment	3.1%	55.5%	7.6%	0.8%	0%

Table 3: Attitude of participants regarding application of MID principles in detection of caries and clinical practice.

Attitude of participants regarding application of MID principles in detection of caries		Received training in MID		P value
Application of MID Principles in Diagnosing dental caries**		YES(n)	NO(n)	
Do you use of a sharp explorer for caries detection?	Always/Mostly Sometimes/Rarely/Never	40 40	19 20	0.200
Do you use of a blunt instrument for caries detection?	Always/Mostly Sometimes/Rarely/Never	49 31	26 13	0.00*
Do you use magnification (e.g. loupes) for caries detection?	Always/Mostly Sometimes/Rarely/Never	29 51	21 18	0.04*
Use of radiographs for caries detection.	Always/Mostly Sometimes/Rarely/Never	72 9	34 4	0.500
Do you use newer methods of caries detection like QLF, ECM, IRLF, FOTI	Always/Mostly Sometimes/Rarely/Never	8 72	5 34	0.200
Attitude of participants about various clinical MID procedures in Clinical Practice				
How effective is ART (Atraumatic Restorative Treatment)?	Very effective/Effective Ineffective/Very Ineffective	74 06	38 1	0.03*
How effective is Sandwich Technique (Glass Ionomer + Composite)	Very effective/Effective Ineffective/Very Ineffective	79 01	39 0	0.100
Do you think remineralization with fluoride varnish or any other topical fluoride products is effective?	Very effective/Effective Ineffective/Very Ineffective	76 04	39 0	0.300
Do you think remineralization with high concentration fluoride toothpaste at home Is effective?	Very effective/Effective Ineffective/Very Ineffective	71 11	37 0	0.500

been proven effective in preventing caries by literature[28] which agrees with the results of our study where 74.8% and 75.6% of the dentists think that fluoride use in daily routine can arrest caries as well as prevent development of new lesion.The limitation of the study was a small sample size including dentists of only one city. A more comprehensive sample size would provide more information of overall knowledge and application of MID by practitioners of

Pakistan. It is recommended that with the advances in newer caries detection methods, restorative options and better understanding of caries process we can shift the mindset of our clinicians to adopt techniques that preserve natural tooth structure. Concepts of minimally invasive dentistry are based on scientific evidence and needs to be incorporated into the thought process of dentists in our country by making it part of the dental curriculum, conducting educational seminars and workshops for training dentists in MID. In addition, patient education regarding modification of diet, life style and oral health maintenance will play a vital role for the success of minimally invasive dentistry.

CONCLUSION:

It was concluded that GDPs from Karachi had inadequate awareness regarding the concepts and application of minimally invasive procedures, caries detection methods and lacked in implementation of MID techniques in their daily practices.

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Original Article

Patterns Of Hysterosalpingographic Findings In Infertile Patients Presenting In A Tertiary Care Hospital Of Quetta

Pari Gul, Shama Jogezai, Fahmida Naheed, Palwasha Gul

ABSTRACT

Objective: To study the different patterns of Hysterosalpingographic findings in women evaluated for infertility in a tertiary care hospital of Quetta.

Setting and design: A crossectional study conducted at the Radiology Department of Bolan medical complex hospital, Quetta

Methodology: A two year secondary data based study of hysterosalpingographic films were assessed, data of 338 infertile women investigated for infertility from July' 2016 till June' 2018. Hysterosalpingography examination was done in the preovulatory phase of the menstrual cycle.

Results: Infertility was the main indication for all the hysterosalpingographic examinations with primary infertility the predominant infertility accounting for 186(55%) of all cases while secondary infertility constituted 152(45%) cases. Majority of the patients n=146(43%) were in the age group of 28-33 years as this is the peak age of reproduction. Out of the total 338 patients reviewed, normal hysterosalpingography finding with free peritoneal spill of contrast were seen in n=212(62%) cases. The most common abnormality revealed was tubal blockage among n=81 (24.2%) patients followed by hydrosalpinx n=23(6.5) %. Other abnormalities included loculated contrast spill, fibroids, Asherman syndrome and adenomyosis. Congenital anomalies were also seen of which arcuate uterus was seen commonly followed by bicornuate uterus.

Conclusion: It was concluded that most of the HSG findings were normal, followed by tubal abnormalities in the age range from 28 to 33 years. Tubal occlusion and hydrosalpinx were the most common abnormal findings in this study.

KEY WORDS: Hysterosalpingography, Infertility, Fallopian tube, PID

INTRODUCTION:

Infertility affects an estimated 13% to 15% of couples worldwide is a disease of the female reproductive system defined as failure of the couple to conceive 12 months or more of regular unprotected intercourse[1].The most common causes of infertility include male factor(45%),disorders of the ovulation(37%) and tubal damage or blockage(18%)[2].

Hysterosalpingography is a valuable technique and plays an important role in the investigation of infertility to assess the pathologies related to the uterus and fallopian tubes. Although hysterosalpingography (HSG) is an invasive procedure, it remains an important investigation in the infertility management .HSG has been considered to be a vital diagnostic procedure in the gynecology practice for decades[3]. It helps in diagnosing the congenital anomalies, surgical changes, polyps, synechiae, adenomyosis and fibroids. The tubal abnormalities include tubal blockage, hydrosalpinx and peritubular adhesions. However, its primary role is still in the evaluation of fallopian tubes[4].HSG is known to have 65% sensitivity and specificity in the diagnosis of tubal occlusion[5].

Infertility is a worldwide phenomenon that is estimated to affect 60 million to 168 million people globally[6].Majority of the sufferers are from developing countries[7]. The prevalence of infertility in Pakistan is around 22% where primary infertility constitutes 4% and secondary infertility about 18%[8].Primary infertility was more common than secondary in our study, which is in agreement with previous studies[9, 10, 11].Some authorities consider that hysteroscopy and laparoscopy can replace HSG. But HSG is still a superior procedure in diagnosing the uterine and tubal pathologies due to its availability and cost effectiveness making it the standard and easy method for the evaluation of women infertility specially in the developing. And low resource countries.[12,13].

It is contra-indicated in pelvic inflammatory infection (PID) and pregnancy. [14] The common complications noted with it are severe pain ,pelvic infection, bleeding and vasovagal episodes.[15] The objective of this study was to assess the different patterns of Hysterosalpingographic findings in women evaluated for infertility in a tertiary care hospital of Quetta Pakistan over a period of two years.

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METHODOLOGY:

This was a cross sectional study. The data was collected from the archive of the department of radiology of Bolan Medical Complex Hospital Quetta. The patients referred from gynecology department after thorough clinical history and examination were included. Patients with active pelvic inflammatory disease were given antibiotic prophylaxis before the examination. The sample size was 264 which was calculated by considering 22% prevalence of infertility in Pakistan.[8] This was augmented as 338 reported data was retrieved over the period of two years which met the inclusion criteria, clinical history and examination) of the study. Since it was a retrospective study, therefore no contact with patients or their families was made during the study. In addition, no contact was made with any other physician. Approval from institutional review board was obtained before date collection. A data sheet was made which included age, indications, HSG findings and examination date to generate information. Data has been formulated as simple frequency tables. Data was entered in SPSS version 22. After detailed history and explaining the procedure, a verbal informed consent was taken from the patient according to the protocol of the department before performing HSG. All HSG examinations were performed in the first half of the menstrual cycle. This is because during the proliferative phase the endometrium is thin and helps in proper image interpretation. It was ensured that there was no pre existing pregnancy. Contraindication to the procedure included bleeding, pregnancy, pelvic inflammatory disease(PID)and allergy to iodine containing contrast agents.

About15 to 20 ml of water-soluble contrast material, usually Urograffin, was injected slowly into the uterine cavity after cannulation. Prior antibiotic was given to prevent infection. Several films were taken to visualize fallopian tubes, uterine cavity and peritoneal spillage. All the HSG procedures were supervised, interpreted and reviewed by the radiologists. The most important complaint experienced during the procedure was pain. About 60% of the patient's complaint of pain that even persisted after 24 hours. Two of the patients went into vasovagal shock and were resuscitated. Pain was experienced less in secondary infertility.

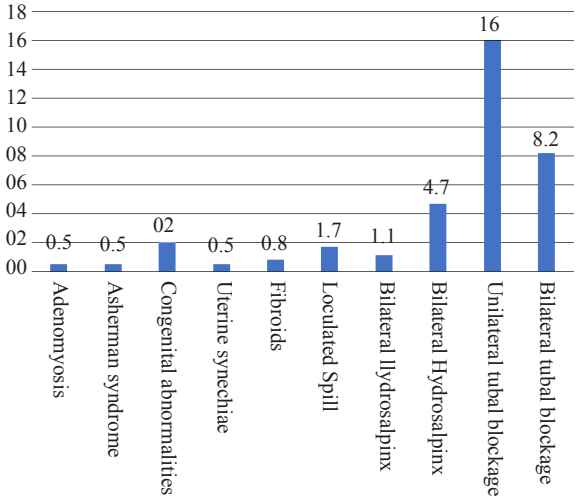
RESULTS:

During the study period, 338 HSGs were done with majority of the patients 146 (43%), aged 28-33 years with a mean of 31 years of age-Table-1.Out of them 185(55%) 54.7 cases were of primary infertility while 152 (45%) of secondary infertility. Normal Hysterosalpingographic examination with free spillage of contrast bilaterally were noted in 62% of cases. Tubal blockage was present in 8.2% while unilateral blockage in 16% of patients. Bilateral hydrosalpinx were present in 4.7% of cases while loculated spill present in 1.7%. Congenital anomalies were present in 2% of patients of which arcuate uterus was common. Uterine synechiae and Asherman syndrome were present in 0.5% of patients respectively. Uterine fibroids were seen in 0.8% of patients.-Graph-1

Table-1: Age Distribution of Sample

Age Stratifications	Frequency N-338	Percentage
22-27	51	15%
28-33	146	43%
34-39	105	31%
40-45	33	10%
>45%	3	1%

Graph 1: HSG findings in infertile patients



DISCUSSION:

Infertility is considered important not only because of its physical entity but considered as a social stigma in our society as our cultural norms and perceived religious customs consider infertility equal to a personal, interpersonal or social failure. Apart from emotional stress, it can have serious impact on economic, physical and social well-being for both spouses, but affects women more as motherhood is considered as a supreme achievement for a woman.[16]

More than 70 million couples are affected from the infertility worldwide. Majority of them belongs to the developing countries. The consequences of childishness are experienced more in the developing countries as compared to the west.[17]

Infertility remains the main indication for HSG. The causes of infertility and its incidence (primary or secondary) vary in different regions of the world. In our study, the incidence of primary infertility was higher than that of secondary infertility. This is in contrary to the reports from some other studies where it has been studied that secondary infertility is commoner.[18]

Hysterosalpingography (HSG) is considered an important investigation in the evaluation of infertile couple despite the increased advocacy of sonohysterography, laparoscopy and dye test. Its value has not been underestimated in the developing countries, as they are not yet readily available. It can efficiently evaluate fallopian tubes , uterus and cervixin a female presenting with infertility at a lower cost and the benefit being readily available and non-invasive.[19]

Preliminary ultrasound was requested as it defines the uterine contour and evaluates for uterine fibroids and other myometrial abnormalities like adenomyosis. HSG was done between 8 to 10 day of cycle as the isthmus of the fallopian tube is most distensible at this time. The second half of menstrual cycle is avoided because of the fear of irradiating a developing embryo and to avoid the risk of venous intravasation.[20]

Under aseptic measures, the cervical Os was cannulated and contrast medium was injected to outline cervix, uterus and fallopian tubes and serial films were taken. Balloon catheter was used for cannulation as it is associated with less pain and side effects.[21]

HSG is regarded as an uncomfortable and painful procedure. Our study discovered 60% of the sample population felt pain even after 24 hours of HSG procedure and these results were slight lower than the study of Tokmak et al[22] pain among 85% of women who underwent HSG. Pain was experienced more in patients with increased pre procedural anxiety levels therefore need for research to deal with fear and anxiety associated with hysterosalpingography must be carried out.[22]Pain during HSG was mostly experienced while placement of a cervical tenaculum, inflating the balloon and during contrast media spillage through the fallopian tubes into the peritoneal cavity. Some patients have described the pain experienced during the contrast spillage as severe abdominal cramps similar to a worse form of pain experienced during dysmenorrhea.[23]Mild analgesics were usually prescribed for pain relief.One problem encountered during HSG is to differentiate spasm from blockage. Intramuscular antispasmolytic was administered to every patient before the study to minimize cornual spasms.[24]

HSG has limitations such as exposure of patients to ionizing radiation, invasive nature of the procedure, inability to define uterine contours, attendant complications such as severe pain, hemorrhage, pelvic infection and syncopy.[25] Most of the female with primary infertility had Hysterosal-pigographic examination with normal findings; therefore a high number of normal HSG examinations were noted in the primary infertility. This has been reported earlier as well.[26]Infertile women mostly presented for HSG within the range of ages 28-34 years because this is the peak of reproduction. Mean age encountered in this study was 31 and showed that this is the commonly presenting age as seen in previous studies.[27]

Tubal blockage was the most common abnormality observed in our study. This is observed in previous studies as well.[28]Pelvic inflammatory disease is considered the most common reason of tubal occlusion resulting in infertility. In active pelvic infections, HSG is contraindicated. In chronic PID the complications of previous infections can be seen at the HSG examinations. Tubal blockage is seen as an abrupt cut off contrast material with non-opacification of the fallopian tubes distally. It can be either unilateral or bilateral, and can involve any portion of the fallopian tube.[4]

The high rate of primary infertility and the high rate of tubal related abnormalities points to the high prevalence rate of pelvic inflammatory disease specially pelvic tuberculosis in our environment.[29]As most of the cases are asymptomatic therefore it is difficult to diagnose genital tuberculosis clinically. Moreover histopathology and mycobacterium culture facilities are limited in high prevalence countries. Therefore, the infection in these circumstances is usually diagnosed during hysterosalpingography procedure for the preliminary investigations of infertile women.[30]

Second common abnormality detected was hydrosalpinx, which were observed in 18 patients (4.7%) bilaterally, and 4 patients (1.1%) unilaterally. The blockage in the ampullary portion can result in tube dilatation forming a hydrosalpinx. Previous studies have shown increased incidence of hydrosalpinx on right side.[31]This was not seen in our study which is comparable to earlier study.[18] One of the complications of PID is adhesions in the peritoneal cavity adjacent to the fallopian tube. Peritubal adhesions results in prevention of the contrast material from spilling freely into the peritoneal cavity and can be seen as loculation of the contrast material around the of the fallopian tube ampullary region. Loculated spill was noted in 6 cases. Congenital uterine anomalies were demonstrated in 2% of the Hysterosalpingograms in this study. The most common congenital anomaly encountered was arcuate uterus followed by bicornuate uterus. Asherman syndrome was seen in 2 cases. Uterine synechiae was noted in 2 cases and Fibroids in 3 cases.

Other less commonly encountered HSG abnormalities in our study included two cases in which contrast filled irregular branching spicules were seen radiating from the uterine cavity extending from endometrium into the myometrium. The provisional diagnosis of adenomyosis was made which was later confirmed by transvaginal ultrasound.

Continuous advocacy on preventive measures should be implemented by the practice of proper hygienic care and seeking timely consultation as soon the symptoms appear. These measures will bring down the incidence of tubal abnormalities among the women especially in the developing countries. There is need of further studies to investigate the cause of these abnormalities so that appropriate measures to be taken at the earliest to bring down the rate of occurrence of these conditions.

CONCLUSION:

The common patterns as seen in our study were normal findings. Tubal pathologies were the most common abnormal imaging findings on HSG as shown by tubal blockage and hydrosalpinx because of infective and inflammatory processes.

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Original Article

Outcome Of Manual Vacuum Aspiration Vs Surgical Evacuation

Fozia Akmal, Sadia Suboohi, Saba Pario, Sugra Abbasi, Shahanaz Hassan Siddiqui

ABSTRACT

Objective: To compare the safety, efficacy and complications of manual vacuum aspiration (MVA) versus surgical evacuation in low resource set up.

Study Design and Setting: This crossectional study conducted at Department of Obstetrics & Gynaecology at Kulsoom Bai Valika Social Security SITE Hospital Karachi from January to June 2017.

Methodology: A total of one hundred patients with less than 12 weeks of gestation and diagnosis of missed miscarriage, incomplete miscarriage, blighted ovum or with retained products of conception (RPOCs) were recruited and randomly allocated to MVA without anesthesia (Group A) and surgical evacuation under general Anesthesia in Operation theatre (Group B).Both groups were compared in terms of demographic and obstetric data, clinical course (need of anaesthesia, operating time, approximate blood loss and stay in hospital) ,complications(excessive bleeding, uterine perforation, need for re-evacuation/ failed procedure, sepsis and maternal death) and patient satisfaction.

Results: Mean age of patients was 28.68 in Group A and 26.90 in Group B (P value-0.136). Average gestational age in weeks at which procedure was performed in Group A found to be 8.32 and 9.546 for Group B (P value-0.007). Parity was comparable in both groups (P value-0.746). Most of the patients were literate. Mean operating time and amount of blood loss comparison among groups had no statistical difference. Average hospital stay was significantly short in MVA Group (P value-0.001). No maternal death or uterine perforation observed in both the groups,6% and 8% of patients had excessive bleeding in Group A & Group B respectively, one patient underwent re-evacuation in MVA group and one had sepsis after surgical evacuation. Post procedure satisfaction was comparable in both the groups.

Conclusion: Manual Vacuum Aspiration is comparable to surgical evacuation in terms of safety, efficacy, complications, patient satisfaction and superior in shorter hospital stay, no need of anesthesia and access to operation theater.

Keywords: Dilatation & curettage , miscarriage, MVA, Surgical Evacuation .

INTRODUCTION

Miscarriage or spontaneous abortion is the commonest medical complication affecting about 10-20% of clinically recognized pregnancies. The options of management are either expectant, medical or surgical depending on clinical situation and preference of women.[1] Expectant management generally takes more time, so mostlyin clinical practice medical or surgical options are preferred because of increased psychological issues in the woman and her relatives.[2]Surgical evacuation is mandatory in case of excessive bleeding, infection or DIC. It is also preferred by most of women because of its immediate effect and it can be planned to their family and work needs.[3] Surgical evacuation can be performed by conventional method dilatation and curettage (D&C) or vacuum aspiration, by electric (EVA) or manual vacuum aspiration method (MVA).[4] During MVA, a 60-ml hand held syringe with a self-locking plunger is used to produce the vacuum for the aspiration of products of conception. It is performed under paracervical block & analgesia in the procedure room.[5] Among surgical options, D&C is widely practiced despite the fact that it needs general anesthesia, is performed in operation theater and prolong hospitalization leading to higher charges, just for the reason of unawareness and non training of staff to use the alternative and simple procedure, the MVA.[6]

MVA is a safe, effective method and performed without general anesthesia.[7] Additionally it is done in shorter time as outpatient procedure and more cost effective in contrast to conventional method.[8] MVA can be used for any type of miscarriage of < 12 weeks, including missed, incomplete, molar or even retained products of conception.[5] There are minimal complications seen like excessive blood loss or

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incomplete evacuation in the hands of a skilled and trained practioner.[9] MVA should be preferred and given superiority to conventional evacuation methods in low resource health care units and rural clinics because of its lower cost , no need of electricity and general anesthesia.[7]

Incidence of miscarriage in our country is 29/1000 women per year in reproductive age.[9] According to the Pakistan Demographic and Health Survey, association of maternal death due to miscarriage or abortion was observed to be 5.6 %. [10]

MVA is now globally recommended by the international federation of Gynecology and obstetrics and World health organization.[11, 12] It is therefore a deemed necessity to introduce MVA as a safer option of evacuation in developing countries like Pakistan, especially in low resource areas as it is considered to be effective, simple, inexpensive and easy to perform procedure with almost nil complications and indeed it was the rationale of this study. Therefore this study was aimed to compare the outcomes of manual vacuum aspiration (MVA) and surgical evacuation in low resource set up in Karachi Pakistan.

METHODOLOGY:

A clinical trial was performed in the Department of Obstetrics and Gynecology, at Kulsoom Bai Valika Social Security SITE Hospital, Karachi Pakistan for a period of six months from January to June 2017 to compare the outcomes of manual vacuum aspiration (MVA) and surgical evacuation in low resource set up. Patients who were less than 12 weeks of gestation and diagnosed with missed miscarriage, incomplete miscarriage, blighted ovum or with retained products of conception (RPOCs) were included in the study and gave informed consent. Patients with septic abortion, uterine anomalies, pelvic infection, bleeding disorders, hemodynamically unstable state, psychiatric or neurological disease were excluded.

Diagnosis was confirmed after history/ LMP, physical examination and ultrasonography (USG). Investigations were performed for every patient like complete blood count, blood grouping and Rh factor, Hepatitis B & C screening. One hundred total patients by non-probability convenient sampling technique were allocated to MVA without anesthesia in procedure room (Group A) and surgical evacuation under general anesthesia in operation theatre (Group B), fifty patients in each group. Informed consent was obtained and data was collected using a self-designed proforma. MVA was performed with IPAS cannula, after cervical priming of 6 hours with 400 micrograms of misoprostol, under aseptic techniques in procedure room without anesthesia. Para cervical block was given with 10-20ml of 1% lignocaine, as a local anesthesia. While surgical evacuation procedures were performed in operation theatre under general anesthesia by conventional method of dilatation and curettage. After procedure either MVA or surgical evacuation, products of conception were sent for histopathological examination. Patients were shifted toward after either procedure, routine care provided and discharged once stable. On discharge they were advised for follow-up visit after a week and report urgently in case of any excessive bleeding, severe abdominal pain and foul discharge.Both groups were compared in terms of demographic and obstetric data, clinical course (need of anaesthesia, operating time, approximate blood loss and stay in hospital) ,complications (excessive bleeding ,uterine perforation, need for re-evacuation/ failed procedure , sepsis and maternal death) and patient satisfaction. SPSS (version 20) was used to organize and analyze data. Data was presented as mean and standard deviation for age of patient, gestational age, operating time duration, amount of blood loss during procedure, stay in hospital and applied independent t-test for comparison. Frequency and percentages were calculated for parity, educational status, need of anesthesia, complications and patient satisfaction and compared using chi square test in both groups.

The significance level was $P < 0.05$.

RESULTS:

One hundred patients were recruited under study, fifty in each group to compare the outcomes of manual vacuum aspiration (Group A) and surgical evacuation (Group B). Indications of procedure for both groups are expressed in Figure I. Regarding Parity in Group A; 26 % were nulliparous, 52% were between Para 1-3 and 22% were Para 4 or above, while in Group B; 28% were nulliparous, 56% were between Para 1-3 and 16% were Para 4 or above ,with no significant difference in both groups(P value-0.746).All patients in Group A underwent MVA without anesthesia ,while surgical evacuation was done under general anesthesia in all patients except one, which was highly significant (P-value = 0.001). (Table I)Most of the patients under study were literate , 74% and 70% in Group A and Group B respectively.

Mean age of patients undergoing procedure was calculated to be 28.68 in Group A and 26.90 in Group B (P value=0.136). Average gestational age in weeks at which procedure was performed in Group A found to be 8.32 and 9.546 for Group B (P value=0.007). Mean operating time and amount of blood loss during procedure was comparable in both groups with no statistical difference. While average hospital stay was significantly short in Group A (P value=0.001). (Table II) Regarding complications, there was no case of any major complications, maternal death or uterine perforation was observed in both groups, while 6% and 8% of patients had excessive bleeding in Group A & Group B respectively and only one patient underwent re-evacuation in MVA group and one patient had sepsis after surgical evacuation, P value-0.541 (Figure II). Post procedure satisfaction of patients was comparable in both the groups shown in Figure III.

DISCUSSION:

Despite the fact that MVA is an effective, economical and safe choice for management of first trimester miscarriages, it is not widely practiced in our state largely due to lack of trained personnel and non-availability of MVA kits. However, Pakistan collaborated with The International Federation of Gynecology and Obstetrics (FIGO) global initiative for the prevention of Unsafe Abortions and its consequences almost eleven years back.[12] Recommendations were to switch from surgical evacuation followed by curettage to MVA, which was also endorsed by WHO, UNFPA, Society of obstetrician &Gynecologists Pakistan /SOGP and training was provided for same, mainly to doctors at public sector hospitals and ensured the availability of instruments.[12] But still we are far behind to achieve this target.

Regarding the availability and cost of MVA kits, it is slightly more expensive and need to be replaced earlier than conventional instruments used in surgical evacuation which can be used for long term and are cheaper. But overall total expenditure is reduced as it is performed without anesthesia, does not require access to operation theatre associated with early recovery and shorter hospital stay.[8] In present study, No statistically significant difference was observed between the two groups comparing the maternal age and parity, which was in agreement with ElieNkwabong, et al study.[13] While comparing the mean gestational age between Group A and Group B, significant difference was observed in the current study which was in disagreement with previous work done by Shonali et al,. [14] Most of the patients under study were literate. Both groups were comparable in the matter of operating time, with mean of 16.46 and 16.24 minutes in Group A and Group B respectively, which is in agreement with previous studies.[15,16] While study by Pedro et al revealed less operating time in process of MVA.[8]

Mean blood loss in MVA group was slightly less in comparison to other group, but it was not statistically significant, same noted by other author. [14]In contrast Patil T et al, observed blood loss higher in MVA group for more than 10 weeks of gestation as compared to EVA[17] while Pramod Garhwal et al compared the blood loss in MVA and medical method and reported less blood loss in MVA.[18] Duration of hospital stay was significantly limited in MVA group (Group A) which was in accordance with studies conducted previously.[8,13,19] All cases in Group A were performed under paracervical block without any need of anesthesia in contrast to Group B, which is again related to postoperative recovery, prolonged stay in hospital and high hospital expenditure.[13] Regarding comparing the post procedure complications , no maternal mortality and any case of uterine perforation was observed in either groups in current study, which was in agreement with study conducted by John M et al.[20] In contrast Elie Nkwabong et al reported six uterine perforations and one maternal death in D&C group against none in the MVA group.[13]

Excessive bleeding was the most frequently observed complication in both groups, with 6% and 8% of patients in Group A & Group B respectively. In contrast study performed by Patil T et al, 66.7% had excessive bleeding in MVA as compared to 40 % in EVA group.[17]Similar findings were observed by Goldberg AB et al. [21]Majority of patients had successful evacuation after MVA (98%) and only one patient underwent re-evacuation in MVA group in this study and analogous findings were reported in various

Figure 1: Indications For Procedure

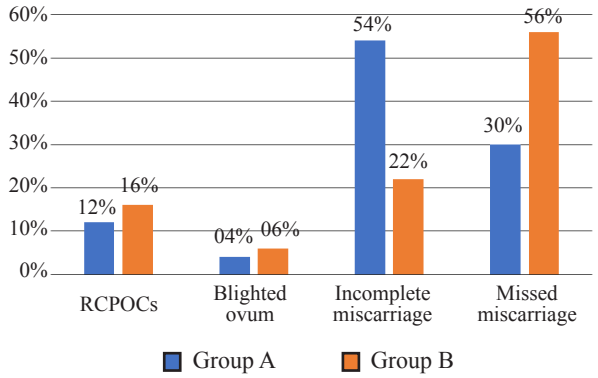

Figure 2: Comparing the Complications In MVA (Group A) & Surgical Evacuation (Group B)

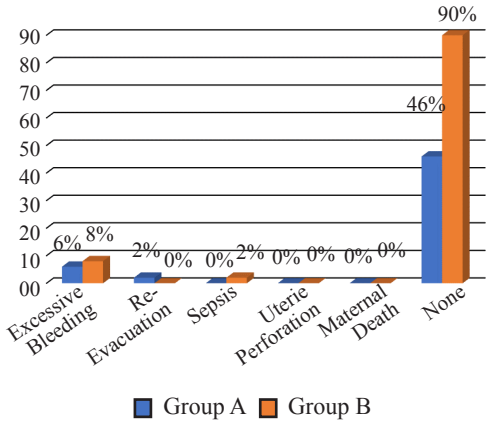

Figure 3: Patients Satisfaction (Post Procedure)

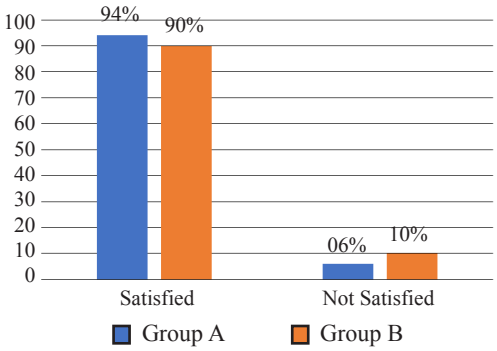

Table-1: Comparison Of Parity And Need Of Anesthesia

Obstetrical Characteristics		Group A (n=50)		Group B (n=50)		P-Value
		Frequency	Percentage	Frequency	Percentage	
	Nulliparous	13	26	14	28	0.746
	1-3	26	52	28	56	
	≥4	11	22	8	16	
Need of Anesthesia	Yes	0	0	49	98	0.001*
	No	50	100	1	2	

*Fischer exact Test

Table 2: Comparison Of Clinical Outcomes

Clinical Outcomes Variables	Group A (n=50)		Group B (n=50)		P-Value
	Mean	±SD	Mean	±SD	
Age (Years)	28.68	6.482	26.90	5.308	0.136
Gestational Age (Weeks)	8.32	2.51	9.546	1.97	0.007
Operating Time (minutes)	16.46	3.76	16.24	4.87	0.801
Amount of Blood Loss (ml)	124.40	64.49	142.70	61.29	0.149
Hospital Stay (hours)	8.76	4.09	14.44	6.48	0.001

literature.[22,23] Millingos et al, demonstrated 94.7% efficacy, while 5.3% patients had failed MVA .[5]

In current study one patient had sepsis after surgical evacuation, in contrast one patient ended up in septic shock after MVA in Ellie et al study.[13]No significant difference was observed in satisfaction level in both groups. 92% women who underwent MVA were satisfied, almost comparable results were observed by Haitham Hamoda et. al. [22]

Current study reinforces the evidence of previous researches to compare the clinical outcomes of MVA and conventional surgical evacuation. Provided all the benefits, simplicity of use and positive evidence of literature, MVA is not practiced widely until now. Probably due to non availability of MVA instruments, insufficiency of trained staff and apprehension of patients for undergoing procedure without anesthesia. Therefore it is recommended that practitioners and health policy makers must promote this procedure by providing mass training of procedure and make its access easy and available for the patients.

CONCLUSION:

The clinical outcomes of MVA (manual vacuum aspiration) procedure was comparable to surgical evacuation in terms of complications, patient satisfaction and in shorter hospital stay, no need of anesthesia and access to operation theater.

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Original Article

Comparison Of Diacerein-Ginger With Diacerein Alone In Treating Knee Osteoarthritis

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ABSTRACT

Objective: To compare clinical efficacy of diacerein-ginger with diacerein alone in treating knee osteoarthritis.

Duration and place of study: It was a randomized clinical trial conducted from 21st September 2018 to 31stMarch 2019, in medical OPD of a private hospital in Karachi.

Methodology: 60 diagnosed patients of knee osteoarthritis were included in this study. Male and female patients ≥ 50 years of age, fulfilling the inclusion criteria and after written informed consent experienced a wash-out period of 72 hours. These patients were systematically randomized into 2 groups each having 30 members. Group A received capsule Diacerein 50mg + capsule Ginger 550 mg twice daily and group B received capsule Diacerein 50mg twice daily, for 12 weeks. Parameters checked at 0, 6 and 12 weeks were: Western Ontario and McMaster Universities Osteoarthritis (WOMAC) index, pain at rest and movement (Visual Analogue Scale). Comparison of the two groups was done by independent t-test.

Results: Among 60 patients; 20 (33.33 %) were males and 40 (66.66%) were females. 4 patients in group A and 4 in B, dropped out during the study. Comparison of group A with group B in WOMAC and pain (at rest and movement) scores showed insignificant difference at day 0 before prescription of the drugs. However comparison showed highly significant difference (P-value < 0.001) between the two groups in WOMAC, pain at rest and movement scores at the end of 6th and 12th weeks of intervention.

Conclusion: Diacerein-Ginger is clinically more efficacious for management of knee OA than Diacerein alone.

Keywords: knee, osteoarthritis, ginger, diacerein, WOMAC score, pain score

INTRODUCTION:

Osteoarthritis (OA) is an inflammatory, degenerative disease of joints and most commonly affected age is above 50 years[1]. This disease affects hands and weight-bearing joints however knee joint OA is the most common amongst all. Globally 3.8% of people are affected from knee osteoarthritis as compared to 0.85% prevalence of hip osteoarthritis. In South East Asia prevalence of knee OA is 2.2% in males and 3.8% in females[2].

OA can be divided into 'age related OA' that is related to advanced age and 'premature OA' which can be associated with a strong risk factor[3]. The bone shows sclerotic changes, formation of osteophytes but synovitis is also eminent[4].

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Pro-inflammatory mediators found to be commonly involved in OA are interleukin-1α (IL-1α), IL-1β, IL-15, IL-17, IL-18, prostaglandins, tumor necrosis factor-α (TNF-α), nitric oxide (NO), matrix metalloproteinases (MMPs) and C-reactive protein[5]. These all are elevated in OA cartilage, sub-chondral bone, synovial membrane and fluid, thus produce a synergistic effect on pathways leading to enhancement of inflammation and cartilage degradation[6].

Examination of the joint may reveal swelling and tenderness, limitation in range of movements and crepitus[7]. X-ray shows decrease in joint space narrowing that is predictive of articular cartilage loss; bone density is often maintained in this disease. Severity on radiograph can be graded according to Kallgren Lawrence scale. According to this scale osteoarthritis is categorized into 5 levels, these are 0: None, 1: Doubtful, 2: Minimal, 3: Moderate, 4:Severe[8]. In early disease X-ray can be normal, diagnosis is done clinically using American College of Rheumatology criteria for knee OA[9,10].

Among treatment modalities of knee OA, pharmacological treatment is the main stay. NSAIDs are the most common drugs used for knee OA, but are associated with number of adverse effects[11].According to European Society for Clinical and Economic Aspects of Osteoarthritis (ESCEO) improvement and control of symptoms can be achieved by symptomatic slow-acting drugs for OA (SYSADOAs) including diacerein[12]. It is an anthraquinone derivative, and its active metabolite is rhein. The key mechanism of action of diacerein is to inhibit the interleukin-1β (IL-1β) system

and subsequent signaling. Diacerein not only has anti-inflammatory effect but also has some anti-catabolic and pro-anabolic effects on synovial membrane and cartilage. Moreover Diacerein has lesser adverse effects when compared with NSAIDs[13].

Osteoarthritis Research Society International (OARSI) and some authors suggest more research, as efficacy of Diacerein as a single agent is still undecided[14].Research has shown the trend of people suffering from osteoarthritis to use alternative medicine more than any other chronic disease[15].These reasons compelled addition of a herbal agent that is ginger to the available agents for management of osteoarthritis. In this study ginger was chosen to be used with diacerein for knee OA as it is easily available and economical food spice in South East Asia.

Zingerber officinale is scientific name of ginger. Besides its use as a spice it is also a folk medicine in South East Asia. It is used for gingivitis, rheumatoid arthritis, cold, emesis and as expectorant. Active ingredients of ginger include shagoal, gingerol, paradol, zingerol and zerurnborne[16]. Underlying mechanism is cyclo-oxygenase inhibition resulting in prostaglandin synthesis inhibition but Lipoxygenase pathway is also inhibited by ginger.

Nitrous oxide, protein C, IL-1β, TNF-α levels are also found to be reduced. Ginger has also found to have chondroprotective role in OA[17]. As ginger has a proved ant-inflammatory effect; it can be used alone or in addition to present pharmacological options for effective symptomatic treatment of knee OA. This study was conducted to compare clinical efficacy of diacerein with ginger-diacerein alone in treating knee OA.

METHODOLOGY:

The study was conducted in medical OPD of a private hospital in Karachi from 21st September 2018 till 31stMarch 2019. Faculty Research Committee (FRC) and Ethical Review Committee (ERC) of Bahria University Medical and Dental College approved this study. After informed written consent 60 patients of knee OA were included in the study.

Inclusion criteria were; males and females $\geq$ 50 years of age suffering from knee osteoarthritis requiring regular medical treatment. Clinical and X-ray findings of the patients were according to the American College of Rheumatology criteria for knee osteoarthritis[9] and radiographic evidence of knee OA in concordance with Kallgren-Lawrence grade of 1 to 3[18]. Patients having known history of hypersensitivity to the study drugs, Kallgren-Lawrence grade of 0 or 4, concurrent other inflammatory or traumatic joint disease, recent or concurrent major illness of hepatic, renal, cardiovascular, gastrointestinal, hematopoietic or endocrine systems, terminal illness or cancer, overweight defined as a BMI >30, pregnancy or lactation (women) and intra-articular or systemic corticosteroid therapy in 3 months preceding enrolment for the study were excluded from the study.

After fulfilling the inclusion criteria 60 patients were selected. Before giving any intervention these patients were given wash out period of 72 hours for any drug. The patients were divided through simple systematic randomization into two groups: Group A (n=30) were prescribed with capsule Diacerein 50 mg + capsule Ginger 550 mg orally twice daily for 12 weeks. Group B (n=30) patients were given with capsule Diacerein 50 mg orally twice daily for 12 weeks.

For recording demographic profile and study parameters a pre-designed evaluation form was used. Four patients in group A (n=26) and 4 patients in group B (n=26) dropped out during the study. Composite Western Ontario and McMaster Universities Osteoarthritis (WOMAC) index and Visual Analogue Scale (VAS) were used to compare the clinical efficacy of the two groups at beginning and end of 6th and 12th week of intervention. WOMAC index is a 24 item questionnaire and evaluates pain, stiffness and difficulty in physical activity in knee OA. Higher scores show worsening of the disease and a decline in the score is depictive of improvement. VAS was used to assess pain at rest and movement. A 10 cm scale numbered from 0 to 10 was used as VAS; 10 being the worst pain and 0 showing no pain. Hence decrease in VAS showed improvement. Statistical analysis was done using SPSS version 23.0. Normality of the data was assessed by plotting histogram. Independent t-test was applied to check difference between the two groups. $P \leq 0.05$ was considered to be statistically significant.

RESULTS:

In this study out of 60 patients of knee OA; females were more (66.66%) than males (33.33%), as shown in table 1. In group A mean age was 57.70±4.37 and in group B was 57.69±4.55. Mean BMI of the patients in group A was 28.28±1.19 whereas 28.08±1.53 in group B.

Parameter wise comparison of the two groups (independent t-test) was conducted at the beginning of the study (Day 0) before giving any intervention and also at the end of 6th and 12th weeks of intervention. Table 2 demonstrates comparison of WOMAC scores of the two groups. At day 0 mean of WOMAC score of group A was 36.27±8.57 and group B was 36.20±8.07 showing no significant difference (P-value = 0.975). At the end of 6th week of intervention means of WOMAC score in group A and B patients were 20.04±5.95 and 32.85±7.78 (P-value < 0.001) showing more improvement in group A. WOMAC score's mean at the end of 12th week of intervention in group A (9.96±2.25) showed marked improvement than group B (29.62±7.03) with P-value< 0.001.

Means of pain at rest (measured by VAS) before intervention were 2.53±0.90 and 2.57±0.77 for group A and B respectively as demonstrated in table 3. After 6weeks of intervention

mean for group A was 1.37±0.69 and group B was 2.12±0.43 (P-value < 0.001). Pain at rest for group A (0.50±0.51) and for group B (1.62±0.57) showed highly significant difference at the end of 12thweek (P-value < 0.001).

Comparison of pain at movement (VAS) between the two groups is shown in table 4. It is clearly shown that no significant difference was there at day 0 between group A (5.33±0.99) and group B (5.40±0.77) with P-value = 0.773. However at the end of 6th and 12th weeks of intervention; marked difference between the groups was observed (P-value<0.001).

Table 1: Distribution of the Patients Included in the Study Suffering from knee Osteoarthritis

Groups	Total no. Of patients	Males	Females	Drop out
A	30	9	21	4
B	30	11	19	4
TOTAL	60	20 (33.33%)	40 (66.66%)	8

Table 2: Comparison of WOMAC scores of Diacerein + ginger (group A) and Diacerein alone (group B)

	Mean ± Standard Deviation		P-VALUEδ
	Group A	Group B	
Day 0	36.27±8.57	36.20±8.07	0.975*
6th week	20.04±5.95	32.85±7.78	< 0.001**
12th week	9.96 ± 2.25	29.62 ± 7.03	< 0.001**

δ independent t-test
*insignificant P-value > 0.05
**highly significant P-value < 0.01

Table 3: Comparison of Pain at rest of Diacerein + ginger (group A) and Diacerein alone (group B)

	Mean ± Standard Deviation		P-VALUEδ
	Group A	Group B	
Day 0	2.53±0.90	2.57±0.77	0.878*
6th week	1.37±0.69	2.12±0.43	< 0.001**
12th week	0.50±0.51	1.62±0.57	< 0.001**

δ independent t-test
*insignificant P-value > 0.05
**highly significant P-value < 0.01

Table 4 Comparison of Pain at movement of Diacerein + ginger (group A) and Diacerein alone (group B)

	Mean ± Standard Deviation		P-VALUEδ
	Group A	Group B	
Day 0	5.33±0.99	5.40±0.77	0.773*
6th week	3.56±0.85	4.42±0.81	< 0.001**
12th week	2.27 ± 0.45	3.38 ± 0.75	< 0.001**

δ independent t-test
*insignificant P-value > 0.05
**highly significant P-value < 0.01

DISCUSSION:

Primary OA is the most common type of arthritis especially at age more than 50 years. This has been shown in a study conducted in India where people having age more than 50 years had OA more than those having age between 40-45 years. In our study 69.8% of the participants were females as compared to 30.8% males. The Indian study showed similar results where prevalence of knee OA was more in females (31.6%) than males (28.1%)[19]. Another study conducted in Sri Lanka also showed knee OA prevalence to be 20.1% in female population above 50 years of age. Exact underlying cause of knee OA being more prevalent in females is still unknown[20].

In this study mean BMI of the participant was 28.18, hence most of the patients were overweight. This is in compatible with the Indian study in which prevalence of knee OA was found to be significantly high in overweight / obese as compared to under or normal weight patients. Moreover obesity is a known risk factor for knee OA[19].

Limited studies are available regarding effect of ginger, alone or in combination with other pharmacological options, on knee OA especially with diacerein. In our study diacerein combination with ginger has produced highly significant difference (P-value < 0.001) in all parameters, as compared to diacerein alone.

Another study was conducted on 90 knee OA patients, with the objective to evaluate effect of ginger on pain of the patients. The patients were randomized to ginger and control groups for 12 weeks. The ginger group (n=45) was taking conventional osteoarthritis treatment prescribed by orthopedic specialist and 1000mg of ginger per day in two divided doses. The control group (n=45) was only taking the conventional treatment given by the orthopedic specialist. Pain of the patients was assessed using visual analogue score (VAS) at the beginning and end of the study. The pain scores declined in both groups but more in the ginger group (P-value = 0.001). Hence the results are in accord with our study[21].

Another trial showing similar results was conducted in India on 60 patients of knee OA, which were randomly divided into 3 groups. Group I was given Tab. Diclofenac 50 mg and Cap. Placebo, group II received Cap. Ginger 750 mg and Cap. Placebo and group III was given Cap. Ginger 750 mg and Tab. Diclofenac 50 mg. The patients were assessed every 2 weeks till 12 weeks of study. A statistically significant improvement in WOMAC index and Visual Analogue Score was seen in group III (P-value <0.001).Thus ginger powder had an add-on effect with NSAIDs in treating osteoarthritis[22].

Another study was conducted on 120 patients of knee OA; it was a double blinded randomized trial. The participants were randomly divided into two groups; one group received capsule ginger 500mg per day and the other received capsule placebo (containing starch) for 12 weeks. Pain scores (noted on VAS) were significantly reduced in ginger group (P-value < 0.001), hence showing concordance with our study[23].

A meta-analysis was conducted by OARSI regarding efficacy and safety of ginger in osteoarthritis. 5 randomized placebo controlled trials were included in this meta-analysis. Range of average age of participants was 47 to 66 years with more percentage of women. The daily dose of ginger ranged from 500mg to 1000mg per day and the trials duration ranged from 3 to 12 weeks. The analysis showed that ginger caused statistically significant decline in pain (p=0.005) and disability (p=0.01). The author concluded that ginger was efficacious and safe for reducing pain and inflammation of OA. The results of the meta-analysis are in agreement with our study showing improvement in ginger groups[24].

The present study and other mentioned studies demonstrated better symptomatic relief with ginger combinations, in patients with knee OA. Hence physicians should consider use of ginger in this regard. However long term and multicenter studies should be conducted with larger sample size; considering ginger alone group as well.

CONCLUSION:

Diacerein with ginger is clinically more effective in treating knee osteoarthritis as compare to diacerein alone.

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Assessment of Teaching Strategy among Undergraduate Medical Students of Clinical Sciences

Sadaf Jabeen, Asad Raza Jiskani, Hina Khan, Fouzia Kirmani, Nighat Seema, Devi Kumari

ABSTRACT

Objective: To assess the preferred teaching strategies for undergraduate medical students of clinical sciences.

Study Design and Setting: -This cross-sectional study was conducted among the 4th and 5thyear students of clinical sciences at Al-Tibri Medical College and Hospital Isra University. Karachi campus.

Methodology: All medical students of 4th and 5th year were enrolled and included for this study from May 2018 to June 2018 and absentees were excluded. A questionnaire was given to students in which they opted for the best teaching aid and strategy. Data was collected and analysed by principle Investigator. Demographic variables included were gender and year of M.B.B.S. Descriptive statistics was carried out via frequency and percentages.

Results: A total of 166 Students, 82 from 4th year and 84 from 5th year were reviewed. Among 4th year students; preference in academic teaching aids were white boards and multimedia and were equally preferred and for clinical teaching the most preferred aid was Out Patient Department (OPD)/clinical rotation. Among 5th year medical students' multimedia was most preferred for academic teaching and for clinical teaching the most preferred teaching aid was clinical based learning, i.e. 32 (38.1%).

Conclusion: White board, multimedia, were the most preferred teaching methods for academic teaching and bed side teaching and clinical based learning were highly preferred teaching method for clinical teaching among both cohorts of 4th and 5th year medical students. Therefore, approaches for improvement of the preferred teaching methods and establishing better facilities for students can be improve both knowledge and skills among clinical students.

Key words: Academic Teaching, Clinical Sciences, Learning Styles, Preferences, Teaching Aid.

INTRODUCTION:

The purpose of diversified teaching aids is to facilitate learning and to encourage the learners to learn more effectively[1]. The learning styles can be described as an individual's consistent way of perceiving, processing and retaining new information. Educational researchers have shown an increasing interest in the learning styles, the related instructional methods and teaching techniques[1]. This interest is spurred by aiming to help the students by making them more capable and successful learners. In the complex setting of a medical school; it is essential to incorporate various learning approaches in teaching and learning that is best suited with the student's needs. In developing countries, there is an exponential increase of medical institutions catering huge number of medical students and it becomes a challenge to teach large number of students per class[2].Therefore, research is needed to identify the need assessment of students in relation to their day to day learning activities[3]. Therefore, it is fundamental for educators to realize that every student have different learning style and for that they should tailor instructions accordingly to facilitate learning.[4] Various instructional strategies used for academic teaching of fourth and fifth year medical students include lectures (board and multimedia), tutorials, practical, assignment, problem based learning, and team based learning etc.[5]. For clinical teaching; the methods used are bed side teaching, OPD, examination of patient etc. Now from past few years electronic learning or e-learning is very famous among students which comprised of lectures, videos on internet, animated description of topic which helps student to understand the theme and retain for long[6]. Having knowledge on the learners' learning styles is a vastly underutilized theory to improve the classroom instructions. The learning style information can also benefit the students

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as it would help them in formulating the appropriate learning strategies for enhancing their learning[7]. To the best of our knowledge, none of the studies have correlated the preferences of the instructional methods with the learning styles of the medical students [8].The quality of medical education depends upon various factors like curriculum, college administration, infrastructure, patient exposure, faculty expertise in the subject and their knowledge, exposure and training in teaching-learning methodology. Moreover medical education in the past decade is witnessing a paradigm shifted from teacher centric to student centered mode.[9] Therefore, student opinion and preferences matter the most before introduction of any additions, deletions or modifications in the way the course is conducted. At the same time students differs in age, place, ethnicity, level of preparedness, learning styles and preferences etc.[10]. Therefore it becomes a responsibility of every medical institute and teacher to meet the individual's educational need about the knowledge, attitude, and skills of the subject. One of the most important ways to strengthen the medical education at content delivery level is to assess student perception about teaching- learning methodology. Numerous teaching-learning strategies are practiced throughout MBBS course, to promote participation and interest of students and facilitate learning. These methods include didactic lectures, role plays, seminars, case studies, demonstrations through videotapes, problem based learning (PBL), tutorials etc.[11]. The aim of the present study was to find out the most preferred instructional methods in clinical and academic teaching among medical students of clinical years (4th and 5th year).

METHODOLOGY:

A cross sectional study using convenient sampling was done among fourth and fifth year M.B.B.S student of Al-Tibri Medical College Karachi, Pakistan for a period of one month from 15th May 2018 to 15th June 2018. Ethical approval was obtained from the IRB. All the students of the respective clinical year were selected, therefore a total of 166 students were included among which 82 student from 4th year and 84 students from 5th year. Students present at the time of data collection were selected for the study and those who are absent were excluded.

A questionnaire was distributed amongst the students, asking them about preferred teaching strategy for academic and clinical teaching. Questions such as the current method of teaching present, better option for learning a topic, method of teaching which helps to retain a topic and lastly the preferred method of teaching by the students was asked. Questions were asked in serial order and students had to select their preferred teaching option. Data was analysed using SPSS version 20.0. Data was collected, analysed and kept confidential. Descriptive statistics included gender and year of M.B.B.S. Frequency and percentages were calculated and presented.

RESULTS:

A total of 166 of students, 82 from 4th year and 84 from 5th year MBBS were reviewed. The preferred method of academic teaching by 4th year medical students was white board and multimedia, 26 (31.7%) each. Least preferred method was assignments by n=03 (3.7%) of students. Among 5th year medical students; the preferred academic teaching was multimedia, by n=32 (38.1%) students followed by group discussion by n=22 (26.2%) while least preferred methods were tutorial and assignments, by n=01 (1.2%) student. The preferred method for clinical teaching among 4th year medical students was O.P.D n=27 (32.9%); followed by wards n=19 (23.2%) while least preferred methods were history taking and multimedia as n= 03 (3.7%) students for each. The preferred strategy for clinical teaching among 5th year medical students was clinical based learning at n=29 (34.5%) followed wards as n=25 (29.8%); while least preferred method in this cohort was clinical examination n=03 (3.7%). Figure 1-2

Figure 1- The Preferred Academic Teaching Methods among 4 and 5th Year MBBS Students

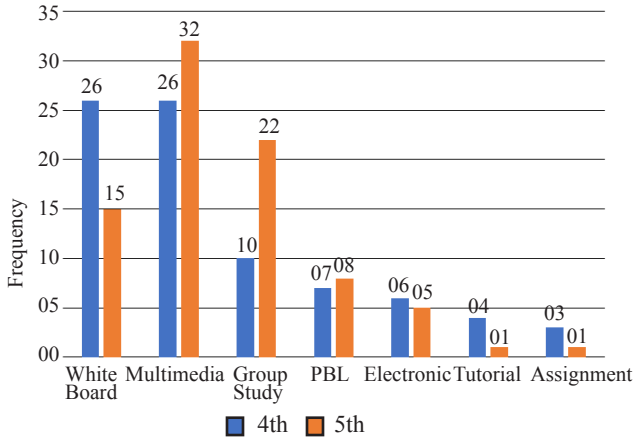
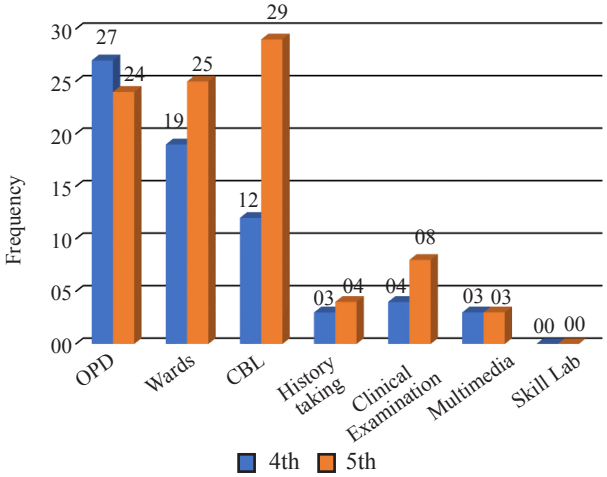


Figure 2- The Preferred Clinical Teaching Methods among 4 and 5th Year MBBS Students



DISCUSSION:

The preferred method of academic teaching by 4th year medical students was white board and multimedia, 26 (31.7%) each. Least preferred method was assignments by n=03 (3.7%) of students. Among 5th year medical students; the preferred academic teaching was multimedia, by n=32 (38.1%) students followed by group discussion by n=22 (26.2%) while least preferred methods were tutorial and assignments, by n=01 (1.2%) student. These results were incongruent with the study of Gupta et al; in which from 130 students, n= 59(45.4%) preferred lectures followed by group discussion n=26 (27.7%) students while tutorial was preferred by only n=28 (21.5%) students. Another study declared that the best teaching-learning mode was blackboard teaching chosen by n=58 (44.6%) students followed by multimedia n=47 (36.1%) students[12]. A similar study by Priyadarshini *et al*. revealed that 31 % of students preferred blackboard teaching over multimedia[13].In another study by Papanna *et al*., the preferred mode of teaching was blackboard, by (51.4%) of students followed by multimedia, by (40.9%) students.[14] A study by Mohan et al, reported in their study that both white board and multimedia were equally preferred among the students, similar to the finding of our study of 4th year students[15]. Another study by Atif et al. showed that the preferred method of academic teaching among the students was multimedia[16].In a study by Kharbet al. 39.5% of students preferred group discussion while 27.8% students preferred lectures including both white board and multimedia[17]. In another study byNaqvi SH et al, this was similar to our study, where black board teaching was preferred over other teaching aid[18].

In our study; the preferred method for clinical teaching among 4th year medical students was O.P.D n=27 (32.9%); followed by wards n=19 (23.2%) while least preferred methods were history taking and multimedia as n= 03 (3.7%) students for each. The preferred strategy for clinical teaching among 5th year medical students was clinical based learning at n=29 (34.5%) followed wards as n=25 (29.8%); while least preferred method in this cohort was clinical examination n=03 (3.7%). The preferred clinical strategy were similar with the study of Papanna et al; in which 81.5% students preferred bed side teaching whether in wards or O.P.D. to develop clinical skills[14]. Mahmood A et al reported that problem based learning and case studies were the most preferred teaching aid among the students.[19].Fatima SS et al reported in their study of 98 students that the concept of "flipped classroom" i.e. interactive 2-way session were most preferred by undergraduate 4th year medical students [20].In a study on 138 medical students of 2nd undergraduate year by Holambe VM et al reported that the most preferred mode for theory and practical teaching by students was focused group discussion and bedside clinic respectively and the most common obstacle faced by students during theory and practical learning was one way, non-interactive teaching [21]. In a study by Madhukumar S et al on undergraduate medical students of all years reported that from 685 students, more than half, i.e. 53% of the students preferred blackboard and 47%preferred power-point presentations. Majority of students preferred bed-side teaching (71%) over video and animation lectures[22].Neetha CS et al in another study on 146 medical students reported that the most preferred mode of teaching was blackboard, i.e. among 54.79 % of students [23].

Therefore it was recommended that providing training and opportunities to the medical educators for the development and understanding of the students' learning style preferences can result in a greater comprehension and consideration of the unique learning needs of each student. Correlating the students' learning style preferences and instructional needs can assist the teachers in using appropriate teaching-learning instructional practices and it can also provide personalized interventions for enhancing the learning.

Limitations of the study included observer bias, limited sample size and being conducted at a single center. Further recommendations for large scale multi-centric studies with different teaching methods are warranted to work on improvement and facilitate the learning.

CONCLUSION:

White board, multimedia, were the most preferred teaching methods for academic teaching and bed side teaching and clinical based learning were highly preferred teaching method for clinical teaching among both 4th and 5th year medical students. Therefore, approaches for improvement of the preferred teaching methods and establishing better facilities for students can be improve both knowledge and skills among clinical students.

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Review Article

Diagnosis Of Endometriosis In The Light Of Prevalent Theories

ArfaAzhar, Rabiya Ali, Mohummad Hassan Raza Raja, Rozeena Baig, Rehana Rehman

ABSTRACT:

Endometriosis is a gynecological condition recognized by the existence of ectopic endometrial tissue outside the uterus. It is predominantly present in females of reproductive age group and is one of the main causes of infertility. Even with a predictable prevalence of 11% in females and considerable historical explanations adopted from the seventeenth century, the diagnosis of endometriosis still remains doubtful. The conventional concepts on histological basis of endometriosis are explained by a number of theories. Medical signs of endometriosis contain prolonged pelvic ache, dyspareunia, repeated menstrual discomfort and chronic pelvic pain which can severely affect the excellence of life and health of the patient. In this review we will discuss the prevalent theories for the diagnosis of endometriosis and suggestions to identify the condition well in time for better control and management.

Key words: Endometriosis, Endometriotic lesion, angiogenesis, vascularization, vasculogenesis, endothelial progenitor cells

INTRODUCTION:

Endometriosis is well-defined as the existence of endometrium in uncommon or ectopic position[1] Histopathologically, there is the existence of tissue or glands of the endometrial type external to the uterine cavity[2]. This is a gynecological condition that depends on the hormones that are observed more frequently in child bearing age women[3]. Frequency of endometrium is among 5% and 10% in premenopausal females and be able to extent up to 35% in females suffering of subfertility, as this might be main reason for infertility[2].The hazardous cause of endometriosis is menarche starting at the age of 11 years as well as prolonged and heavy periods[3]. These two causes may raise the extra uterine environment for menstrual flow and the threat to endometriosis. The common locations for pelvic endometriosis are fallopian tubes ovaries, Douglas-fir pouch and uterine ligaments (broadly broad and uterosacral ligaments[4]. Endometriotic embeds are also present outside the pelvis, i.e. diaphragm, lungs, gastrointestinal tract, pericardium and abdomen[5].

There are 3 main types of endometriosis present in pelvisperitoneal, ovarian, and infiltrating endometriotic disease[6]. Structurally, there are 3forms of endometriotic lesions: red lesions, white lesions and black lesions. Red are characterize by great vascularization, although white are at late stages of red lesions, assuming the development of fibrosis and inflammation. The black lesions have tissue breakdown and scarring with successive development of scar tissue[7]. The histological basis of endometriosis are explained by a number of theories.

METHODOLOGY:

Literature search was carried out regarding the studies conducted on Theories of Endometriosis with the key words endometriosis, endometriotic lesions, angiogenesis, vascularization, vasculogenesis endothelial progenitor cells. Through Literature searches were performed in PubMed, Medline and Google scholar for English articles. The searches included both animal and human studies (Figure 1)

Literature Review: The various theories were discussed in 43 articles for the diagnosis of endometriosis.

Molecular and Cellular Theories onPathophysiologyof Endometriosis

To date, the pathologic process of endometriosis is quiet debatable even with many years of investigations. Numerous concepts of pathology have been suggested in current years: i) implantation theory[8]; ii) metaplasia theory[9]; iii) induction theory[10]; iv) Epigenetic theory[11]; v) stem cell based theory[12]; vi) Perineural theory[13]. In recent times, it is suggested that an additional means of expressing the development and pain associated with endometriosis on the basis of inflammatory processes and initiation of nerve terminals to menstrual debris resultant retrograde and addition aluterinemenstrual flow of endometriosis[14].

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i) Implantation theory:

The best frequently recognized implantation theory[8] stands on hypothesis that small and early disease is recognized the consequent progression and invasion indicates towards advanced problem. These conserved endometriotic particle shave capability for attachment to the peritoneum, multiply, categorize, and attack the adjoining tissues. Additionally the distribution of endometrotic cells thru lymph nodes[15] impacts over the source of disease at distant places such as cerebellar or thoracic endometriosis[16].

As per requirement towards sustenance of implantation theory a number of causes take place: i) existence of backward menstruation[16]; ii) occurrence of sustainable endometrial tissues to reversing refluxed menstrual flow[16]; and iii) binding ability of endometrial cells on peritoneum together with implantation and propagation[17].

The peritoneal fluid, (PF) is filled into the peritoneal cavity, variation of fluid resulting eg. macrophage exudations, ovarian exudate, retrograde tubal fluid, transudate and reflux endometriotic material through reflux menstruation are therefore a significant component of the peritoneal surrounding[18]. This conversation of fluid into the pelvic cavity may explain in part the anatomical distribution of endometriotic lesions, which corresponds well to the principles of implantation biology[19] and is therefore favorable to the theory of implantation. In contrast, endometriosis is only seen in a subcategory of females, despite of detail that FP comprises endometriotic tissue in equal to 59% of patients, regardless of endometriotic lesion present or menstrual cycle at any stages[17]. However, a persistent as well as increasing menstrual flow noticed in females having endometriosis might because of retrograde flow into the pelvis compared to healthy females having patent fallopian tubes[20]. Furthermore, the sealtered uterine peristalsis might be the reason for the interruption of additional basal endometrium and, hence, growing extent of stem cell-resembling cells existing in retrograde flow of menstrum[21].

ii) Metaplasia theory:

The theory of metaplasia further more remains redirected in developing rest theory since poorly placed Mullerian / endometriotic tissues might be stimulated on the way to suffer metaplasia. These data are corroborated by recent evidence that emigrant primary epithelium remains or endometrium-like ectopic glands are able to create beside fetal woman reproductive system[22] sustainingas likely cause for endometriotic disease. Conversely, endometrial lesions also take place at additional positions outer to the Müller canals[23].

iii) Induction theory:

The induction theory associates the theories of implantation and metaplasia and hypothesizes that unidentified materials released from the degenerating endometrium will induce the undifferentiated mesenchyme to form a tissue similar to that of the endometrium[10]. In summing-up, the overhead concepts emphasis over the occurrence of endometrial lesions however remain unsatisfactory to describe the happening of severe endometriosis. The progressive development of short-term disease to initial endometrial lesions and severe types approaching benign cancers could remain elucidated by cellular alterations initiating after genetic or epigenetic modifications besides is treated into the theory of endometriotic lesion(EDT)[11].

iv) Epigenetic theory:

In Support of the epigenetic concept, it is found that cystic ovarian endometriosis is of clonal origin[11] then certain endometrial particles are disturbing in vitro, related with loss of epithelial -cadherin appearance), a process commonly detected in cancer biology[24]. Furthermore, there is a combined proposal of tendency of germ line to endometriosis. Family reunification of endometriosis in humans[25] and rhesus monkeys moreover to the increased prevalence between blood relatives of females having all diseases, associated to the wide spread population[26] has been described. In addition, the suffered non–twin sisters are similar in ageof onset for symptoms[27] and show onsistency in monozygotic twins[28]. Furthermore, other risk factors, such as prolonged exposure of digoxins, may to oplay a part in etiology of disease[29]. These comments may lead to the assumption that endometriosis is probably having complicated genetic trait where several genes work together and with the surroundings to produce the phenotype of disease[11]. The endometrium have a tremendously regenerative power and this is not an amazing that endometrium has stem cell properties[30].

v) Stem cell-based theory:

After confirmation, that endometriosis may possibly be a stem cell-based situationstops after the statement that newly isolated endometrial stromal and epithelial cells comprise a uncommon population of cells having clonogenic property fictional in colony-forming units. (CFUs)[31].

The CFUs in endometriotic stromal fractions are analogous with mesenchymal stem cells (MSCs) with respect to their differentiation potential across several lineages[32]. Development of endometrial type MSC cells (eMSC) is likely through expression of PDGF-Rb and CD146 perivascular cell markers. The epithelial and stromal cells Clonogenicity of the endometrium shows non-substantial predisposition dependent on stage of the menstrual cycle, with greater than before clonogenicity at the growing stage of stromal cells, at secretory stage of epithelial cells. CFUs can similarly be identified in the non-cycling endometrium[33]. MSC inappropriate eretrograde in the pelvis hence a serious element in forming an initial endometriotic disease. Further significance, the menstrual blood comprises plasticity particles, i.e. the re-forming cells of the endometrium (ERC)[34].

ERCs be similar to MSCs by their presence, growing

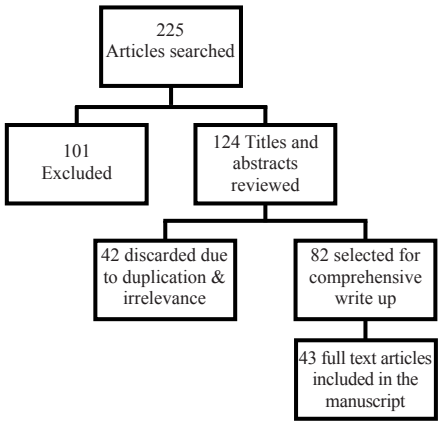
possessions and prospective for differentiation into several cell categories. But, unlike MSCs, they direct matrix metalloproteases (MMP-3 and MMP-10), angiogenic factor ANG-2 and cytokines (GM-CSF, PDGF-BB) exposed by proteome investigations[34].

The morphology of menstrual blood-derive MSC (discussed as MMCs or MenSCs) for example unique like as fibroblast and similar to bone marrow-derived MSCs[35].

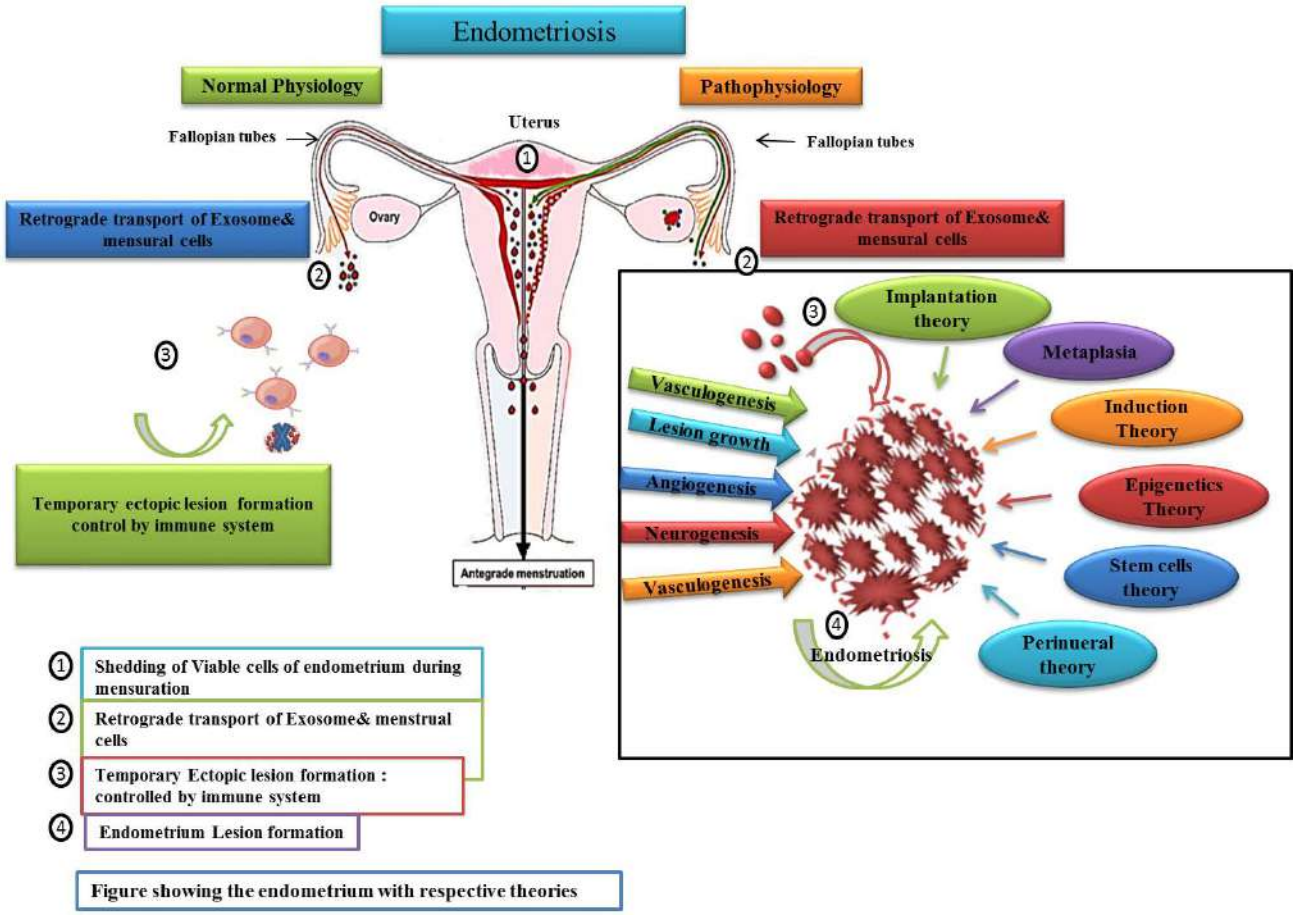
An additional research established the comprehensive plasticity of Men SCs[36].

Generally, Men SC shave advanced rate of proliferation, clonogenicity and migration than angiogenic potential in vitro and bone marrow-derived MSCs in vivo studies[37]. Hida et al. confirmed the power of Men SC stowards there sortation developments in Myocardial Infarction rat model[38]. Now, Men SCs contributed in reestablishment for diminished cardiac physiology thrudistinguishing into Cardiomyocytes derived from Men SC over transplant position. Therefore, menstrual blood comprises plastic cells that provide a new basis for cell-based additional managements[39]. These outcomes obviously designate that back ward flow of menses be able to carry stem cell in the pelvic cavity and also there may be additional cell types using putative stem / progenitor cell properties. Investigations on blood and menstrual-derived plastic cells are still in its infancy. This is likewise the objective why numerous researches describe the appearance of diver seimmuno phenotypic sketches of MenSC[40]. A consistent attitude to segregate and describe

Figure 1; Flow Chart of Literature Review



(figure:2) Interplay of theories of endometriosis adopted from PAB Klemm, A Starzinski - Powitz - Current Women's Health (2018)



stem cells in menstrual blood is important in deciphering their title role in the pathogenesis of endometriosiss[41].

vi) Perineural theory:

It was suggested the perineural extent of endometriotic lesion with in inferior hypo gastric plexus, established concept of extent of endometriosis into nerve tissues in pelvic cavity[13]. Meanwhile, further studies are demonstrated participation of nerves arising after lumbosacral plexus, as well as sciatic and obturator nerves[42]. Newly revealed biological concepts of general importance (e.g. miRNAs, stem cell-based) are also significant to the pathogenesis of endometriosis[43]. One challenge in endometriosis research will be to evaluate non-steroidal signaling pathways as targets for new therapeutics for the treatment of endometriosis. This may be an opportunity to substitute E2 depletion therapies to reduce undesirable effects.

CONCLUSION:

The molecular features of endometriosis include a hormone-dependent (estrogen-dependent, progesterone- opposition) and inflammatory state with an epi-genetic predisposition that is most likely driven by cells with plasticity.

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Case Report

Huge Thyroglossal Duct Cyst Mimicking As Goiter In An Adult Man

Iqbal Hussain Udaipurwala, Sana Muhammad Sadiq, Sohail Aslam

ABSTRACT:

Thyroglossal duct cyst is the most common congenital cervical mass found mainly in children but only 7% of them are among adult population. They are mostly asymptomatic and found around the region of hyoid bone. Their size usually varies around 1.5 to 3cms. but cases are reported with unusually larger sized cysts, which may cause pressure symptoms over upper aero-digestive tract. We are reporting a case of unusually huge thyroglossal cyst of size of 6 x 8 cms in a 26-year-old man. This cyst was not apparent at time of birth or in early childhood but appeared later on. Initially it was very small but progressively and gradually increased to its present size. On first look, it appeared as thyroid swelling with soft to firm in consistency but on examination it was moving with both deglutition and tongue protrusion. Ultrasonography and CT scan of the neck confirmed the diagnosis of thyroglossal cyst. Thyroid scan showed, thyroid gland in its normal position. Sistrunk's operation was done with a midline vertical incision and the subsequent recovery was uneventful.

Key Words: Thyroglossal duct cyst, congenital neck masses, Sistrunk's operation

INTRODUCTION:

Thyroid gland is the first endocrine gland which appears in the 3rd week of embryonic life near foramen cecum[1]. Initially it remains connected to gut through a narrow stalk called thyroglossal duct, while it descends in the neck and by 10th week of gestational life, the duct obliterates. Sometimes this duct may persist and runs from foramen cecum to thyroid gland's anatomical location in the neck and sometimes a cyst may develop within this duct later in life to appears as a midline cervical mass. Thyroglossal duct cyst is a common and frequent congenitally present midline neck mass in children. Majority of the thyroglossal duct cysts are usually diagnosed till the age of 5 years and only 7% are found in adult population[2]. It has a slight male preponderance. It is mostly found around the hyoid bone but may be found at any place along the tract of the duct[3]. Most of the thyroglossal cysts are small in size but in literature some cases of unusually large size are reported which may compromise the upper aerodigestive tract. Sistrunk operation is found to be gold standard surgical procedure, while specimen is sent for confirmed histopathological diagnosis.

CASE REPORT:

A 26-year-old man presented with complaint of a painless lump in front of the neck since 18 years of age, which slowly enlarged in size over last 8 years. Initially it was very small up to the size of an almond but gradually increased and reached up to its present size. It was painless and despite of its large size it was not associated with dyspnoea, stridor or dysphagia. On examination, patient was of average height and built, conscious, well oriented with person, time and place and vitally stable. There was a large sized lump in front of neck, up to 6 x 8cms. in size, moving with both deglutition and on tongue protrusion (fig. 1). Overlying skin was normal and freely mobile. The consistency was soft to firm with no fluid thrill. Pemberton's sign was negative, and no cervical lymphadenopathy was present. Rest of the clinical examination was also unremarkable.

Ultrasonography of the neck was advised, which revealed the presence of a cystic swelling. Thyroid scan was done which showed normal thyroid gland in its normal position. Thyroid function tests were also within normal limits. C.T scan was also done to find the extent of the lesion which showed presence of a huge thyroglossal duct cyst in the infrahyoid region, with compromise or displacement of airway or food passage (fig 2 and 3). Baseline investigations for general anaesthesia were found within limits and fitness was taken. Sistrunk operation was planned and vertical midline neck incision was used because of better exposure in this big cyst. It was a huge sized cyst, which appeared benign on macroscopic appearance and filled with straw coloured fluid. Surgery and subsequent post-operative recovery were uneventful (fig 4). Biopsy specimen was sent for histopathology which confirmed the diagnosis of thyroglossal cyst.

DISCUSSION:

Thyroglossal duct cysts are found mostly in 1st decade of life but sometimes in late teen or adult age cases may be reported. 60% cases appear before 20 years of life while only 7% cases are detected in adult life[4,5]. In a large study

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Fig 1. Pre-Operative Appearance of the cyst

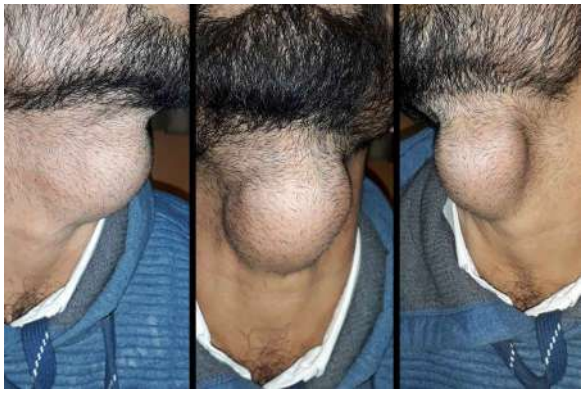


Fig 2 CT scan findings on axial view

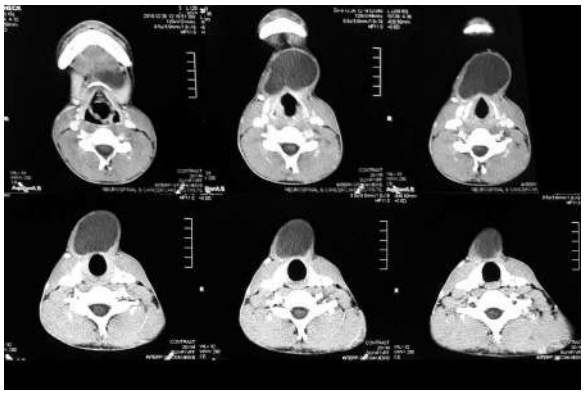


Fig 3. CT scan findings on coronal view

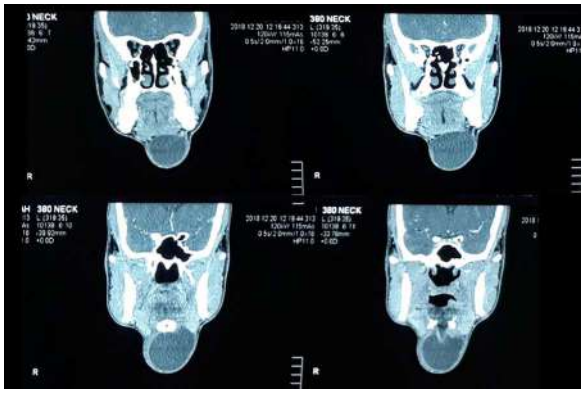
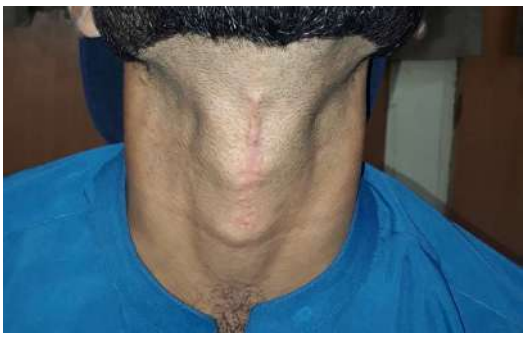


Fig 4. Post-operative appearance after 4 weeks



about congenital neck masses in paediatric population, 55% were diagnosed as thyroglossal duct cysts[6]. It is mostly found in the infrahyoid or sub-hyoid region but may present at any point along the tract of the thyroglossal duct. Atypical presentations also include along floor of the mouth[7], intralaryngeal[8], as a thyroid nodule in the lateral neck[9], as cutaneous extrusion[10], or in the mediastinum[11]. Mostly these are asymptomatic except producing a cosmetically bad appearance, but larger ones may displace the trachea and /or oesophagus and thus pressure symptoms may appear like dyspnoea, stridor or dysphagia. Sometimes due to repeated infections, cyst may rupture and presents as fistulous tract or discharging sinus. In our case, the cyst appeared in the adult man after the age of 18 years. Though it was a huge cyst, there was no compression symptom and on inspection it appeared as a goitre. The patient in this case was also male as thyroglossal cyst is more common in males.

Ultrasound is usually the first investigation, which confirms the presence of the cyst. In our case also ultrasonography showed a huge cyst. Fine needle aspiration cytology reveals the nature of cells within the cyst. As it was a clear case of fluid filled thyroglossal cyst so fine needle aspiration cytology was not done in this case. In large cysts, C.T scan is advised to know the extent of the lesion. We also performed CT scan to see the extent of the cyst which showed a huge fluid filled cyst in the midline extending from the hyoid bone till upper tracheal rings. Thyroid function tests and thyroid scan are needed to rule out a normally functioning thyroid tissue in the body. In our case both were within normal limits.

Sistrunk operation is found to be gold standard treatment for such cases, in which TGD cyst is removed along with a part of central region of hyoid bone and a core of muscles around base of the tongue to avoid recurrence. This procedure carries 2.6-5% recurrence rate, depends upon the location of the cyst, surgeon's expertise, pre-operative infections etc. We also performed Sistrunk's operation. Ideally horizontal neck incision is used for this surgery, but we preferred midline vertical incision for better exposure as this was a huge cyst. There was no recurrence of the cyst in follow-up period of about 6 months. Use of operating microscope has been advocated by a recent study to identify the thyroglossal duct remnant better and to reduce chances of recurrence[12].

Thyroglossal cysts are mostly benign, but few cases are reported which harbour carcinoma in around 1% of the cases and out of which 75-80% cases are found to be papillary carcinoma. In our case histopathology of specimen was done after surgery which confirmed its benign and cystic nature with no evidence of malignancy. The lining epithelium of the cyst is mostly stratified squamous or sometimes pseudostratified ciliated columnar epithelium and rarely cyst may be devoid of any epithelium. In this case, the lining epithelium was stratified squamous.

CONCLUSION:

Thyroglossal duct cysts are congenitally present benign cervical masses, which mostly produce bad cosmetic appearance and no other symptoms. We are presenting a case of huge thyroglossal cyst in an adult man which was mimicking as a goitre because of its size.

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Reasons of Diagnostic Errors and the Ways to Overcome among Medical Residents

Shafaq Sultana, Farhat Fatima

ABSTRACT:

Arriving at an accurate diagnosis is one of the competencies prime of the medical practitioner. Errors may occur in the diagnostic process anywhere from the point of patient's initial assessment and interpretation of diagnostic tests, and even during follow-up and patient referral. Patient safety is gaining global precedence and in this context diagnostic errors are speculate as an important cause of harm to the patients.[1] An awareness of the possible underlying factors leading to diagnostic errors, along with a repertoire of strategies to improve can be of great help to both junior and senior medical residents.

INTRODUCTION:

The burden of diagnostic errors is significant to the point that approximately 5% of adults who attended outpatient clinics endured diagnostic errors on an annual basis. Above 50% of these errors had detrimental consequences. This data reflects situation in a developed country and higher percentage of diagnostic errors is expected in developing countries, as access to resources and specialists is further limited there.[1] Considering this explicit attempts by residents to improve their diagnostic accuracy can in the end increase Patient Safety standards, more so in a country where resources are scarce.

Reasons for diagnostic errors:

Possible causes for a resident making diagnostic errors could be:

- He is committing a "no-fault error" because the patient presentation was either silent, atypical or mimicked a very common disease. They arise because of necessary short comings and the probabilistic nature of choosing a diagnosis on part of the physician.[2]
- His errors could be a result of system errors which are due to inadequacy of the health care system[2]
- He could be making "cognitive errors",a critical subset of diagnostic errors, collectively referred as cognitive dispositions to respond (CDRs). These are especially associated with failures in perception, failed heuristics and biases[2-4,10]Studies have found processing biases like availability, base rate neglect, representativeness, confirmation bias, premature closure and many morea far more common cause of diagnostic error than knowledge gaps.[3,4]

  However, according to psychological literature heuristics and rules of thumb are efficient mental strategies which may help clinicians cope with uncertain situations and overcome the limitations of time and data.They serve as powerful tools to cope up with the diagnostic challenges and usually lead to accurate decisions, though at the cost of predictable error reflecting the inherent biases associated with them.[2-6, 10]
- Diagnostic errors can also be a result of poor attitude towards best practices and over confidence.Studies on doctors self-assessment and error recall have found doctors to over rate themselves and they also had difficulty in recalling errors they made.[3,7]

How to reduce Diagnostic errors:

Following strategies can be employed by medical residents to reduce diagnostic errors:

- Develop awareness by providing detailed and thorough characterization of known cognitive biases. Provide multiple clinical examples on the constructive as well as detrimental effects of cognitive biases on the diagnostic process. This will help them reflect on the specific effects of heuristics on clinical decisions.[4,8,9,18]
- Train them to employ a reflective approach to problem solving. Studies have shown that if problem solving training is coupled with metacognitive training or other kinds of instruction, such as questioning it further enhances the problem solving abilities of the student. Only a self-directed, strategic, reflective learner can become a flexible, effective problem solver.[4,9,13-15]
- Develop generic and specific cognitive forcing strategies to avoid predictable bias in particular clinical situations.[4,11]
- Provide them with adequate time for quality decision making.[4]
- Provide them with timely and effective feedback so that errors are confronted early on and corrected.[4,9,12,13]
- Promote residents to adopt a systematic approach to common problems.[13]
- Promote them to practice worst case scenario medicine where in the worst possible diagnosis is considered

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first. This technique might lead to unneeded lab testing. To avoid this teacher should emphasize that it is not always necessary that if a diagnosis is considered it should be tested as well.The positive side of this approach is that serious diseases will be considered and evaluated.[9,10]

- Promote the use of why questions to reinforce the importance of examining all cases in detail.[9]
- Teach and reinforce the value of clinical exam as it helps reduce diagnostic errors occurring as a result of premature closure and unpacking error.[9]
- Promotingresidents to use diagnostic timeout effectively by making every effort not to frame the data using the current working diagnosis, can prove useful in preventing propagation of a diagnostic error.[9]
- Learning strategies to foster elaborated and compiled knowledge should be employed for medical training.[16]
- Acquisition of expert knowledge should be highly facilitated, as studies have shown that content is what derives the medical diagnostic work.[8,16] Itshould be emphasized that nothing can substitute for knowledge attainment and clinical experience.[16]
- Provide them with an understanding of the basic processes of problem solving because an awareness of general problem solving strategies can turn a person into a better problem solver.[8,13]
- Promote them to focus on discovering and identifying the problem. Adequate time should be spent on this stage because the better a problem is conceptualized the better it is solved,particularly when coupled with high creativity and motivation on part of the solver.[9,13,14]
- Promote them to use external representations of the problem whenever possible for example written or graphical. This is necessary because most problems encountered by physicians exceed the limited stores of sensory and short-term memory. This causes an inability to hold all relevant pieces of a problem in working memory.[13,14]
- Diagnoses can be arrived at more precisely by engaging in more than one form of reasoning. Such an approach aids in maintaining balance between the analytical and non-analytical forms of reasoning particularly while tackling diagnostic challenges.[19]

CONCLUSION:

An awareness of the possible underlying factors leading to diagnostic errors, along with a repertoire of strategies to improve can be of great help to both junior and senior medical residents. They will have metacognitive awareness of their own practices while making diagnosis and can guide their juniors along similar lines.

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Medical Marijuana: A Hope For Resistant Epilepsy?

Arsalan Anwar, Sidra Saleem

Dear sir,

Cannabis is a popular recreational drug worldwide and recently has been approved by many countries and a few states within the USA for recreational purposes. It is composed of two basic components, the psychoactive part tetrahydrocannabinol (THC) that targets CB1 and CB2 receptors in the body and counteracts reactive oxygen species and the Cannabinoidiol (CBD) component is famous for its medicinal use that works without interacting with these receptors and is free of psychiatric side effects.

CBD has gained wide popularity for its use such as reducing nausea/vomiting during chemotherapy, chronic pain, muscular spasm, improving appetite in chronic immunosuppressive disorders[1]. In the past, Cannabis has also been used for multiple CNS disorders including Parkinson Disease, Multiple Sclerosis, Alzheimer's Disease, Autism, Tourette syndrome, Huntington Disease, Neuropathic pain but the most prominent and earliest example is its usage for treatment of Epilepsy[2].

The global prevalence of epilepsy is generally taken as between 5 and 10 cases per 1000 persons.Prevalence of epilepsy in general population in Pakistan is estimated to be 9.99 in 1,000 population. It is characterized by a history of at least one seizure, enduring alterations in brain with likelihood of future episodes. It can be due to different phenomenon such as Traumatic Brain Injury, Congenital Syndromes, Stroke and Infections. The other component is associated neurobiological, cognitive, psychological and social disturbances[3]. All these demographics is always concerning to researchers and they are actively working on Anti-Epileptic Drugs (AED) and therapeutics of all kind of Epilepsy.

Multiple treatment modalities are available for epilepsy but the advancement in treating resistant epilepsy has been slow. Cannabis has created hope in the epilepsy community for its modest efficacy in treating resistant epilepsy disorder (seizures cannot be controlled with the use of two appropriate AEDs). Resistant Epilepsy more commonly occurs in two congenital disorders-Dravet syndrome (DS) or Lennox-Gastaut syndrome (LGS)[4]. Multiple studies have been conducted in the past to assess the efficacy of Cannabis and showed improvement in symptoms but it is used as an adjunct with traditional AED in treating Epilepsy[5]. More studies are required before it will go mainstream.

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5	Short Communication /Commentary/ Opinions/ Perspective	-	-	1200-1500	15-20	2	1
6	Student Corner	1. Original article Structured (250)	3-10	2500-3000	20-30	4	3
		2. Views/Perspectives/ Opinions Unstructured (150)	3-6	1200-1500	8-10	1	1
7	Case Report	Unstructured (150)	3-5	1200-1300	10-12	1	5
8	Letter to Editor	-	-	400-500	1-5	-	-

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