

# FOUNDATION UNIVERSITY **MEDICAL JOURNAL**



ISSN 2312-6531

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Foundation Uni Med J  
Vol. 3, No. 2, Jul - Dec 2018



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Vol-3 No.2, Jul - Dec 2018

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## EDITORIAL

### NEED TO DEFINE BEHAVIOUR CONSTITUTING ACADEMIC INTEGRITY & THE PENALTY FOR LAPSE/BREACH

The importance of professionalism, and academic probity is undisputed in medical colleges. They are essential competences for medical graduates. Worldwide all medical colleges and medical councils, including Pakistan Medical and Dental Council (PM&DC), and affiliated medical colleges in Pakistan have code of conduct and disciplinary committees to impose punitive actions, as a way to remedy academic fraud, and to ensure academic integrity. Pakistan Medical and Dental Council (2002), recommend: 'A physician shall always maintain highest standards of professional conduct...being in conformity with principles of honesty, and justice', and advises, 'all medical and dental colleges may incorporate medical ethics into their curriculum'.<sup>1</sup> This is similar to recommendations elsewhere. UK General Medical Council (2007) even recommends that Medical school to have fitness to practice procedures in place.<sup>2</sup>

Professionalism is defined as 'the ability or skill that you expect from a professional person'.<sup>3</sup> Medical professionalism is competence or skill, which is expected of a health professional. It defines the right way to do a thing by a health professional. It is important because it promotes patient safety. Health professionals need to practice principles of honesty, respect, and confidentiality.

The recognized obligations and values of a professional medical doctor include integrity. Academic integrity is an important conduct of professionalism. It is the essential set of values and moralities of medical colleges. Any act, which improperly affects the evaluation of student's performance or achievement, is academic misconduct. The fundamental values of academic integrity are honesty, trust, fairness, respect, and responsibility (what is academic integrity 2008). These values are similar to that needed for other aspects of professionalism and translate into behaviors of academic probity, which is an important learning outcome in medical education.<sup>4</sup>

The measurement of academic integrity is useful at undergraduate level for assessment and certification. Moreover, the measurement would be helpful in helping students who show unacceptable academic integrity behavior in remedial and support. Students' education is a way to promote an educational atmosphere of professionalism and academic integrity.<sup>5,6</sup>

The need of award of punitive actions on academic misconduct helps in ensuring academic integrity. High moral code requires medical colleges to have clarity of behaviors constituting academic dishonesty and the punishments to be awarded on lapse of such behaviors. Similarly, the assessment of academic integrity of students will be compromised unless its definition and behaviors constituting are precisely defined. Zijistra-Shaw *S et al* drew similar conclusion, while assessing professionalism within dental education.<sup>7</sup>

In absence of any unified punishment for lapses, the penalties for lapses are subjective. The opinion of students and faculty vary with regard to level of punishment. Koletsi-Kounare *et al* in their study found the faculty opined for harsher penalties.<sup>4</sup> Similarly, significant differences occur between faculty and students values regarding seriousness of cheating, and unprofessional behavior. Roff *et al*<sup>5</sup>, also found a small group of behaviors, which were viewed more severely by the faculty.

Medical students are adult learners. Involving them actively in issues of academic integrity will increase the motivation of students to learn necessary knowledge, skills and attitudes related to academic integrity.

Roff *et al*, at University of Dundee, has developed a preliminary Dundee polyprofessional inventory after extensive research on existing literature, which consists of 41 items of unprofessional behavior related to lack of academic integrity and 10 punitive sanction levels, which could be imposed on students, which show such behaviors. They have used it to rank proposed sanctions for unprofessional behavior related to academic integrity.<sup>6</sup>

In Pakistan, medical colleges have code of conducts, and disciplinary committees. But, no instruments have been applied to measure academic integrity or other aspects of professionalism. Nor is there uniform policy on lapse, or absence of academic integrity.

An important step towards preventing students' academic dishonesty would be to reach to a consensus that what behaviors constitute academic integrity, the level of punishments and what level of punishments may be awarded for a lapse. Prevention of academic dishonesty can be attained through well-defined and reliable practice of strategy and sanctions across all medical colleges, and communication of it to students, faculty, and disciplinary committee and including teaching of desired behaviors of professionalism in the curriculum.

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**Professor Brigadier Dr. Irfan Shukr SI(M) (Retd)**  
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## SEEING IT THROUGH THEIR LENS: STUDENT'S PERSPECTIVE ON CURRICULUM OF ORAL BIOLOGY

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### ABSTRACT

#### **Objective:**

To identify the strengths & weaknesses of current curriculum of Oral Biology by involving students.

#### **Design:**

Qualitative phenomenological study

#### **Place and duration of study:**

A qualitative phenomenological study was conducted in a period of 6 months at Foundation University College of Dentistry, Islamabad.

#### **Materials and methods:**

A two session focus group discussion (FGD) was conducted with equally stratified students according to their academic achievements i.e. high achievers 7 students (scoring 70-80%) and low achievers 7 students (scoring 56-62%) grades in Oral Biology. In each FGD session, a total of 14 students participated from both high and low achievers group.

#### **Results:**

The current study highlighted six common themes, which were; i) Teaching method, ii) Difficulties in 1st year BDS education, iii) State of cooperation between teachers and students, iv) Status of qualified and experienced regular faculty and v) Role of students in curriculum development and vi) Lack of interactive sessions and discussions.

All these weaknesses highlighted that the teachers should make their lectures more interactive in which everyone is paying attention thus a proper learning can be achieved.

#### **Conclusion:**

Current study findings are that the status of curriculum can be improved by involving the students in discussions and debates on various basic concepts in an interactive class. Thus giving importance to students input & perspective in curriculum development.

#### **Keywords:**

Curriculum, Dentistry, Focus Group

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#### **INTRODUCTION**

We as medical teachers ever thought that we should ask students what curricular changes they need according to the problems they were facing during their academic year. The answer is NO. This

phenomenon intrigued me to conduct this study.

According to literature Handley and Eve highly recommended to take input from the students for curriculum designing.<sup>1</sup> The student involvement in curriculum development was devised in the first issue of SPICES model.<sup>2</sup> Students are ignored while doing curricular reforms.<sup>3</sup>

In our current medical or dental education students are usually ignored by the higher authorities of university when there is a question of curriculum evaluation, development or scrutinizing. This leads to poor understanding of our education system and also demotivates our students.<sup>4</sup>

If we want students to have better understanding of course contents and decrease their stresses we should engage them to design, manage and evaluate the curriculum as it is advocated by WFME 2015 document.<sup>5</sup>

The aim of this study was to gather the feedback of our dental students about the strength and weaknesses of curriculum of Oral Biology.

## MATERIALS AND METHODS

A qualitative phenomenological study was conducted at Foundation University College of Dentistry, Islamabad. The duration was 6 months from February to August 2017. A purposeful sampling technique was used.

The students of 2nd year BDS were our sample, according to their marks in Oral Biology, they were grouped into high achievers (obtained 70-80%) and the low achievers (obtained 56-62%). There were

**Table 1: Data of participants (high achievers).**

Student	Gender	Marks obtained in %
1	Female	79
2	Female	71
3	Female	75
4	Female	73.5
5	Female	73.25
6	Female	73
7	Female	71

two sessions of focus group discussions (FGD). Each group had 7 participants.

The moderators were the researcher himself and a note taker. A written consent was taken from each participant. They were asked 6 questions and their responses were recorded by a mobile software and also in a written form. Objective of study was to know the strengths & weaknesses of Oral Biology curriculum in student's perspective.

**Table 2: Data of participants (low achievers).**

Student	Gender	Marks obtained in %
A	Male	61.75
B	Male	61.75
C	Male	60.5
D	Female	58
E	Female	56
F	Female	58.5
G	Female	62

## RESULTS

### High Achievers (scoring 70-80%):

The following themes were derived from their interviews.

#### Expectations from the curriculum:

Approximately majority of the respondents have told that their expectations were high and they were thinking that as it was in F.Sc. it will be the same in BDS but it was not the case.

Near 10% of students were satisfied and their experience was good.

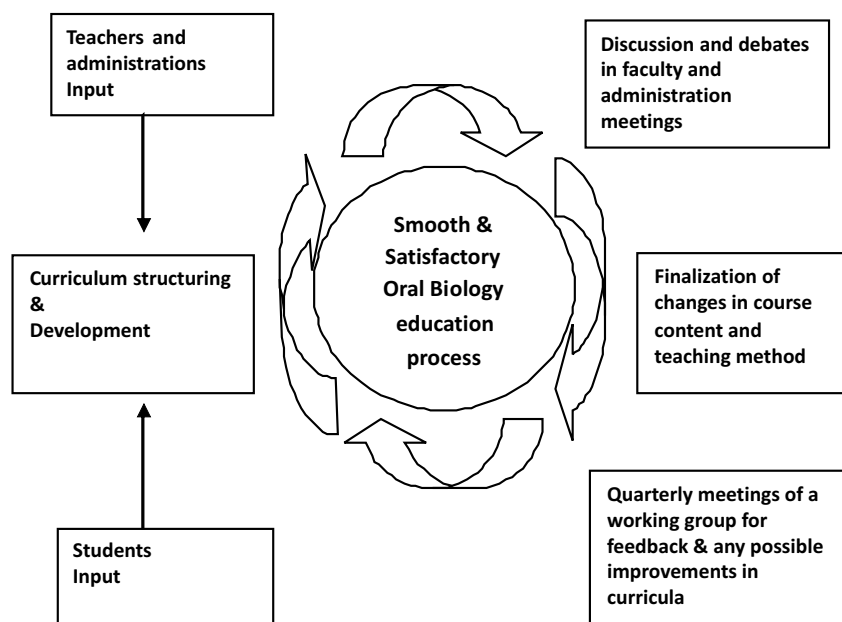
#### Difficulties in 1st year BDS with respect to curriculum:

Most of students knew that FSc and BDS will not be the same in respect to the curriculum. In FSc there was one book, but here in BDS there were two books with addition of discussion & presentations.

#### Method of teaching:

It was new style of teaching, in which there were presentations with slides, with which they have to adjust themselves.





**Figure 1: Conceptual framework of student's engagement in curriculum development**

#### **Teacher and student communication:**

The 75 % of students were not satisfied with communication of teachers. They use to say that these slides will be just introductory, rest you have to study.

#### **Theoretical and practical modes of study:**

Around half of students liked OSPE in practical session. A student told that “Comparing with the theory exam, the OSPE were quite easy”.

#### **Lack of qualified and experienced teachers:**

70% of students expressed that the institute is supposed to hire a regular staff having a relevant qualification and experience.

#### **Student's role in curriculum development:**

When it was questioned how the institute can help to meet their expectations, the most (75%) of them said that they should be involved in reforming schedules & the curriculum.

#### **Cooperation between students, teachers and institute:**

The 60% of students have mentioned about the lack of cooperation between the teachers & the students when asked for proper guidelines to study, also that the first year is very difficult for a new students.

#### **Communication skills:**

Few of respondents told that the communication skills of the teachers were not up to the mark, and 1/3 of them said that there should be teachers with high experience and good communications skills.

#### **Interactive sessions and discussions:**

Majority respondents have said that interactive sessions with group discussions should be included in our curriculum.

#### **Student's presentation and competition:**

When it comes to the presentation by students, they have no guidance from teachers to which extent they have to prepare the topic.

#### **Satisfaction with the teaching methodology:**

Only 20% of students were satisfied with the teaching style, also they told that it should be improved.

#### **Low Achievers (scoring 56-62%):**

The following themes were derived from their interviews.

#### **Difficulty in Oral Biology:**

Majority of respondents said that Oral Biology curriculum is difficult. As a student said, “I think the curriculum was a bit difficult for a normal student.”

**Method of teaching:**

Most of the students mentioned that the teaching method was not according to their expectations. As one student said, "I couldn't understand Oral Bio from the beginning, because teacher's teaching methodology was the reason".

**Unmet expectations:**

80% of student's expectations to the Oral Biology curriculum were not met.

A student said, "I think my expectations were not met because I was hoping that they will teach us the basic concepts".

**Satisfactory curriculum:**

Just a 20% of respondents said that they are satisfied with the current curriculum. A student said that, "I really had no issues with the curriculum, because there were limited numbers of books".

**Communication gap between students and teachers:**

Few respondents have mentioned that there was a communication gap between the teachers and the students. As a student said, "I had a few problems with our teachers, because the slides were not properly elaborated & the course was very lengthy".

**The student's role in curriculum development:**

Few students said that their perspective should be given weightage in curriculum development.

**Check and balance of teaching staff:**

A student said that "Institute should check the teachers if they are delivering the lectures according to the need of the students".

**Earlier difficulty, later comfort:**

One of the respondent said that, "it was difficult for us to capture things, take the concept on the 1st go, but as the year progressed we were like use to it & tried to go with it as it is, & managed by ourselves".

**DATA ANALYSIS**

For each Focus Group Discussion (FGD) the recorded data was transcribed & a word document was made. Transcribed data, manual scanning of responses by students was done and key messages were noted to achieve conformability. The phrases & continuous statements were highlighted by

aligning the transcribed responses to each question. Coding were done by thematic analysis, they were Open codes, Selective codes from which themes were generated. To validate my findings, triangulation and member checking was performed.

**DISCUSSION**

In the light of this study the Oral Biology curriculum is quite inadequate that needs to be revised. The following 6 themes were highlighted by both groups of high and low achiever students;

- i) Teaching methods.
- ii) Difficulties in first year BDS education and Oral Biology.
- iii) Communication gap between teachers and students.
- iv) Lack of qualified and experienced regular faculty.
- v) Role of students in curriculum development.
- vi) Absence of interactive sessions and discussions.

In this study, the current status of medical curriculum deviates from student's expectations, specially, in basic dentistry subject like Oral Biology.

Previous literature hints out that there is no formal training for the doctors involved in medical teaching. There has been suggestions by several institutions for a proper training of medical educationists and to monitor their teaching during the whole session.<sup>6</sup>

Students faced problems in the first year taking into account the difference between F.Sc. and BDS education system. So experienced teaching can play a vital role in these situations. These basic issues must be discussed and finalized in curriculum designing. Curriculum is the most important issue that needs urgent attention of medical or dental educators.<sup>7</sup>

In the present study, the new teaching staff replaced the old, their qualifications and communication skills remain as marked observations by the students. A similar trend can also be witnessed in previous studies.

During this study, there was a lack of satisfaction among students towards the teaching of Oral Biology curriculum. Moreover, the mismatching of the teaching content and the course book made it tough for students to comprehend. Which highlights the importance of student's involvement in medical curriculum formulation. In our university, the MBBS students are involved in curriculum development, but that is not the case with BDS students.

Many examples exist in literature about the benefits of student's participation in curriculum designing. A recent study by D'Haese *et al* revealed these benefits in curriculum designing and study progress in Ghent University, Belgium. After many sessions of discussions between student body, academicians and college administrations the degree has been revised to 6 years instead of 7 years.<sup>8</sup>

Another study by Fujikawa H *et al* reported that they developed liaison with other influential and intelligent peers at the institute by student's participation in the process of curriculum finalization, which resulted in positive professional attitude and behavior.<sup>4</sup>

Mahmood K also highlighted the issue of weak curriculum and concluded that it would be very difficult to find manpower possessing required knowledge for respective professions.<sup>2, 10</sup>

Many students grasp knowledge better in Problem Based Learning sessions and discussions which give a guiding role to the teacher.

Many educationists do believe that the present curriculum format is not suitable to meet the twenty first century medical challenges.<sup>11</sup>

In our education system only those students score highest who can take stress, but the missing part is that there is no emphasis on evidence based learning and the concept building.<sup>12</sup>

There are multi-dimensional demands in current medical practices besides the basic medical education. As a result the students need to have thorough understanding of other areas related to health including; population health, healthcare

systems, health policies and interdisciplinary healthcare.<sup>13</sup>

The medical colleges in Pakistan should also follow the examples of international institutes and give opportunity to all stake holders including dental students to participate in curriculum designing.

The current study is very important as;

1. This is one of the very few evaluations of student's perceptions regarding BDS curriculum of Oral Biology.
2. A group of students were asked questions using FGD method, so they can openly express the current state of curriculum and their experiences at this college during their first year.

Limitations of the study were mainly related to the composition of FGDs as we could not stratify the groups according to gender adequately and male gender participation was very less as compared to females.

Initially, two medical colleges were planned to be studied, however, due to technical and logistical issues this could not be achieved. Moreover, other stakeholders like faculty members and administrators were not included in the study.

## CONCLUSION

According to the current findings, the curriculum of Oral Biology was not satisfactory. In which the followings needed attention:

1. Students should be engaged in curriculum reforms.
2. Teaching methodology
3. Course content and it's design
4. Cooperation between faculty & students

There is very few or no research has been done in the subject of Oral Biology curriculum, in which student's perspective is explored.

In this study a selected student's opinions were taken, which may not be generalized, for this purpose a large-scale research should be done, also other than students, like teachers, medical educationist may also be involved.

## CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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## COMPARISON OF OUTCOMES IN NEONATES OF WOMEN WITH AND WITHOUT GESTATIONAL DIABETES MELLITUS

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### Abstract

#### Objectives:

To compare the outcomes and percentile in neonates of women with and without gestational diabetes mellitus (GDM) and also the differences in mode of delivery among them.

#### Study Design:

Analytical Cross sectional study.

#### Place and Duration of Study:

Data was collected from April 2015 to September 2015 at Pakistan Railway Hospital Rawalpindi.

#### Material and Methods:

The sample of 100 women was recruited in this study out of which 50 with GDM and 50 were without GDM. The data was collected and entered in a self structured questionnaire. Data was analyzed by using SPSS vs. 21.

#### Results:

It was found that 33 (66%) neonates of non-GDM women were normal while 11 (22%) neonates of GDM women were normal without any complication. Fetal distress was found in 14 (28%) neonates in GDM while Erb's palsy was in 2 (4%) neonates of GDM women. The combination of fetal distress, cord around neck and preterm birth was found in 3 (6%) neonates of GDM. In GDM group no woman had Spontaneous Vaginal Delivery (SVD) but in non GDM group 11 (22%) women had SVD. In GDM group 29 (58%) women delivered their babies through emergency lower segment caesarian section (Em- LSCS) on the other hand in non GDM women, 17 (34%) women delivered their babies through emergency c section.

#### Conclusions:

It is concluded from this study that women with GDM have greater risk of excessive neonatal birth weight, fetal distress and emergency C-section. The rate of C-section is higher in GDM women while the rate of SVD is higher in non-GDM women.

#### Keywords:

Gestational Diabetes Mellitus, Macrosomia, Mode of Delivery

## INTRODUCTION

As the incidence of diabetes continues to rise, the

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present paper considers the neonatal complications in women diagnosed with gestational diabetes mellitus (GDM). The global endemic of childhood/adult obesity and GDM is also progressively more prevailing equally in developing and developed countries.<sup>1</sup> Diagnosis of GDM is rising among obstetric populations<sup>2</sup>, with maximum risk amongst

certain ethnic, racial groups.<sup>3</sup>

GDM is defined as carbohydrate intolerance with commencement or first identification during pregnancy.<sup>4</sup> GDM increases the risk of a range of complications in pregnancy and delivery.<sup>5-8</sup> In addition the intrauterine experience to maternal glucose intolerance exposes the fetus at an increased risk for long-term adverse and unfavorable outcomes.<sup>9,10</sup> To some extent, the principle for GDM therapy is based on the postulation of an independent positive relationship amongst neonatal adiposity and maternal glycemia.<sup>11</sup> The Hyperglycemia and Adverse Pregnancy Outcomes (HAPO) study showed a strong relationship between maternal hyperglycaemia and percent body fat (%BF) > 90th percentile, birth weight > 90th percentile, pre-eclampsia, C-section delivery, shoulder dystocia and clinical hypoglycemia in neonates.<sup>12,13</sup> With the increasing blood sugar levels during pregnancy, the risk of spontaneous preterm birth is increased irrespective of perinatal complications that can set off early delivery.<sup>14</sup> Two randomized clinical trials have revealed that the management of mild gestational diabetes mellitus decreases severe perinatal morbidity.<sup>15,16</sup> A value below 50 percent illustrates that the baby's head circumference is less than the average. Whereas, value greater than 50 percent depicts that the baby's head circumference is above average. To determine growth status, a clinician should be consulted.<sup>12</sup> A percentile of 50% shows the mean or average weight. Below 50 percent value means that the baby weighs less than average, whereas value greater than 50 percent shows that the baby weight is above average.<sup>12</sup>

During pregnancy, metabolic changes in maternal adipose tissue make sure usual fetal development. An increase in fat depots occurs during first months, while through the third trimester the breakdown of fat stores and increase in insulin resistance result in higher circulating standards glucose, free fatty acids and triglycerides to maintain fetal metabolism.<sup>17</sup> In pregnancies complicated by GDM, an impaired gene expression is responsible for the

synthesis and accumulation of triglycerides in the adipose tissues.<sup>17</sup> With the increase in gestational age, physiologic decrease in insulin sensitivity results in availability of nutrients for the fetoplacental unit, advanced lipid and insulin concentrations and fetal development.<sup>17,18</sup> The purpose of this study was to compare the outcomes and percentile in neonates of women with and without gestational diabetes mellitus.

## MATERIALS AND METHODS

This comparative cross sectional survey was carried from April 2015 to September 2015 at Pakistan Railway General Hospital, Rawalpindi. A total of 100 pregnant women were included in this study and divided into 2 groups of 50 with GDM and 50 were non GDM.

Sample size was calculated through Raosoft software keeping in view 5% margin of error, 95% of confidence interval. Written informed consent was taken from the patients. Ethical consent was taken from Ethical review committee.

Data of these two groups were collected through the self designed structured questionnaire in which we have included patient's demographics, the standardized growth chart percentiles of height, weight and head circumference. Weight was measured by placing a child on the scale (traditional beam scale). Length (height) was taken while child is lying down, from the top of head to the bottom of heel. To measure head circumference, we placed a flexible measuring tape just above the ears and eyebrows and around the back of the head where it notably slopes up from the neck or where baby's head has the largest circumference.

Mode of delivery and neonatal complications were also the part of this questionnaire in which fetal distress, macrosomia, excessive birth weight, respiratory distress syndrome (RDS), hypoxia, Erb's palsy and preterm birth were included.

## RESULTS

The study population comprised total 100 women in which 50 with GDM and 50 were non GDM. Mean age of the women was 26.4 years. Data was

analyzed by using SPSS vs 20. Table 1 shows the comparison of neonatal complications of GDM and non-GDM women. A total of 66 % neonates were normal of non-GDM women while 22% were normal without any complication of GDM women. In GDM women 36% of neonates presented with large gestational age compared to non GDM women in which only 2% neonates were overweight. It was found also that in GDM women 28% neonates presented with fetal distress compared to women with non GDM in which 18 % neonates with fetal distress were found. We also found that there was Erb's palsy in 4% neonates of GDM women and in non-GDM there was no neonate with Erb's palsy. The combination of fetal distress, cord around neck and preterm birth was 6% in GDM while 4% neonates of non-GDM women. There is 4 % neonates in GDM mothers and 8% neonates in non GDM mothers present hypoxia and 2% RDS found in non-GDM only.

Table 2 shows mode of delivery that in GDM group no woman had Spontaneous Vaginal Delivery (SVD) but in non GDM group 22% women had SVD. Although SVD with episiotomy found in 8% GDM women and 18% non GDM women had SVD with episiotomy. In GDM group 58% women delivered their babies through emergency lower segment caesarian section (Em- LSCS) on the other hand in non GDM women, 34% women delivered their babies through emergency C-section. It was also found that 34% GDM women and 26% non GDM women underwent elective lower section caesarian section.

**Table 1: Comparison of neonatal complications between GDM and non GDM women**

Neonatal Complications	GDM women	Non GDM women
Normal	11 (22%)	33 (66%)
Fetal distress	14 (28%)	9 (18%)
Hypoxia	2 (4%)	4(8%)
Overweight	18 (36%)	1 (2%)
Erb's Palsy	2 (4%)	0 (0%)
Respiratory distress syndrome	0 (0%)	1 (2%)
Fetal distress, Cord around neck and preterm birth	3(6%)	2 (4%)
Total	50 (100%)	50 (100%)

**Table 2: Comparison of mode of delivery between GDM and non GDM women**

Mode of delivery	GDM women	Non GDM women
SVD	0 (0%)	11 (22%)
SVD with episiotomy	4 (8%)	9 (18%)
Em-LSCS	29 (58%)	17 (34%)
EI-LSCS	17 (34%)	13 (26%)
Total	50 (100%)	50 (100%)

SVD\*= spontaneous vaginal delivery, Em-LSCS\*= emergency lower segment caesarian section, EI-LSCS\*= Elective lower section caesarian section

**Table 3: Comparison of head circumference between neonates of GDM and non GDM women**

	Head Circumference (cm)				Total
	1-25	26-50	51-75	76-100	
GDM	13	0	23	14	50
Non GDM	11	11	27	1	50

**Table 4: Comparison of weight between neonates of GDM and non GDM women**

	Weight (pounds)				Total
	5-25	26-75	76-95	>95	
GDM	30	6	14	0	50
Non GDM	40	5	1	4	50

**Table 5: Comparison of neonatal lengths between neonates of GDM and non GDM women**

	Length (cm)				Total
	5-25	26-75	76-95	>95	
GDM	31	9	4	6	50
Non GDM	28	05	6	9	50

## DISCUSSION

The documented prevalence of gestational diabetes mellitus varies between < 1% and > 10% depending on the differences in screening, diagnostic criteria and study populations.<sup>19, 20</sup> There are wide ethnic and geographic variations in the prevalence of

gestational diabetes.<sup>21</sup>

In this study, we found many adverse neonatal outcomes in GDM mothers as compared to the non-GDM mothers that will help us to find precautions and management options for gestational diabetes mellitus like role of exercises in reducing weight and controlling glucose level. The results of this study supported the hypothesis that GDM mothers have many adverse neonatal outcomes than the non-GDM mothers. The ratio of fetal distress is relatively higher in diabetic women than non-diabetics. In this study majority of the neonates presented with excessive body weight in GDM women. Previous studies also showed the same results; excessive birth weight in infants of GDM mothers compared to the non-GDM mothers.<sup>22, 23</sup>

According to one study adverse outcome of GDM was found directly related to maternal BMI and another defined that excessive weight gain may lead to the pre-eclampsia,<sup>24,25</sup> caesarian section,<sup>24</sup> preterm delivery, fetal macrosomia<sup>26</sup> and fetal death.

In this study, the ratio of SVD is greater in non-diabetic while diabetic women have greater ratio of caesarian and SVD with episiotomy due to heavy weight babies. Majority of the GDM group women underwent emergency C-section than non-GDM group.

Patrick M. *et al.*, stated that birth weight of infant was greater than 90<sup>th</sup> percentile in GDM mothers than the non-diabetic and this may result in primary cesarean delivery, preeclampsia with progressively higher maternal BMI and glucose level.<sup>27,28</sup> This study recommended that the GDM is directly related to the adverse neonatal outcomes.

The rate of fetal distress is higher in infants of GDM mothers rather than non-GDM in this study while Rowan *et al.* in their study also found respiratory distress in infants of diabetic group<sup>29</sup> that compliments our study.

## CONCLUSIONS

It is concluded from this study that women with GDM have greater risk of excessive neonatal birth weight, fetal distress and emergency C-section and

the rate of C-section is higher in GDM women while the rate of SVD is higher in non-GDM women.

## Conflict of Interest

- No conflict of interest.

## Source of Funding

- No funding source.

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## ERGONOMIC AWARENESS AND PREVALENCE OF WORK-ASSOCIATED MUSCULOSKELETAL PAIN AMONG THE DENTAL PRACTITIONERS OF TWIN CITIES (RAWALPINDI, ISLAMABAD)

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### ABSTRACT

#### **Objective:**

*To assess the knowledge of ergonomic principles among the dentists of twin cities i.e.: Rawalpindi/Islamabad, whether they apply these principles in their everyday clinical work life and to evaluate the occurrence of musculoskeletal pain on the basis of age, region and work type.*

#### **Place of Study:**

*A descriptive cross-sectional survey was carried out in 04 private dental colleges and dental hospitals of Rawalpindi, Islamabad (only the clinical setups).*

#### **Materials & Methods:**

*A validated questionnaire was the basis of this survey. The data was collected by visiting 04 private dental colleges and dental hospitals of Rawalpindi, Islamabad (only the clinical setups). A randomized sampling was done. The sample size comprised of 202 dentists from different private dental hospitals. The respondents gave answers to 4 groups including demographic data, prevalence and distribution of pain, their knowledge of ergonomic principles in dentistry and their workplace habits. The data was then analyzed in SPSS version 22.0. Total 202 participants were enrolled in the study according to the inclusion criteria.*

#### **Results:**

*Among 202 participants, 125 (61.9%) experience muscular pain due to dental practice while 145 (71.8%) participants had awareness when asked about ergonomics posture. The study verified that there is a high prevalence of musculoskeletal problems among the dentists of the twin cities. The reason for such high prevalence is unawareness of dental ergonomic principles and negligence to follow them, both on the part of the dentists and work place organizations.*

#### **Conclusion:**

*Performing regular relaxation stretches and exercises can relieve musculoskeletal pain and improve both the quality and quantity of the clinical work of a dental practitioner.*

#### **Keywords:**

*Dentistry, Ergonomics, Musculoskeletal Pain*

### **INTRODUCTION**

Dentistry is a profession that comes with numerous

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harmful effects on the body of the practitioner. The uncomfortable postures adopted by the dentists during work, are definite to have some adverse impact on the musculoskeletal system.<sup>1</sup> Different standing and sitting postures and prolonged contraction of some muscles later results in chronic musculoskeletal pains and diseases of the

peripheral nervous system.<sup>2</sup> In Greek, 'ergo' means work and 'nomos' means natural laws or systems. Ergonomics, therefore is an applied science concerned with designing procedures for maximum efficiency and safety. Ergonomics modifies tasks to meet the needs of people rather than forcing people to accommodate the task.<sup>3</sup> It is very important to maintain an adequate work posture and that the instruments and furniture that the dentist is working with have adequate working characteristics.<sup>4</sup> Several studies have addressed the relationship between inadequate postures while practicing dentistry and the appearance of pain or muscular lesions.<sup>4,5,6</sup>

Unhealthy postures are sometimes adopted by dentists while working and they are often exposed to many biochemical risk factors which later lead on to severe and chronic pain and skeletal muscle lesions.<sup>4</sup>

Incorrect ergonomic postures and conditions will involve a lot of risks which depend upon the frequency, intensity and duration of exposure to these conditions.<sup>7</sup> According to a survey<sup>7</sup>, reasons for early retirement of dentists showed the following statistics: Musculoskeletal disorders (29.5%), Cardiovascular disease (21.2%), Neurotic symptoms (16.5%), Tumors (7.6%), Diseases of the nervous system (6.1%).<sup>7</sup>

Hence, it turned out that a lot of dental practitioners were unable to practice due to occurrence of musculoskeletal pain and lesions. Ergonomic principles for a dental workplace facility are not too difficult to follow. The sole person involved in the application of these principles is the clinician himself. Most of the principles to avoid musculoskeletal pains are related to the correction of posture and stretching and relaxation of muscles.<sup>8</sup> A study revealed that incorrect postures over a consistent period of time, develop increased disc pressures and hypo mobility of the spine which eventually lead to degenerative changes of the lumbar spine and severe pain of the lower back mostly.<sup>9</sup> A relationship exists between prolonged, static (motionless) muscle contractions and muscle ischemia or necrosis. Weakness of trunk and shoulder muscles may lean on to the operator's poor

posture. As muscles adapt by lengthening or shortening to accommodate these postures, a muscle imbalance may result, leading to structural damage and pain.<sup>10</sup>

The aim of this study was to assess the knowledge of ergonomic principles among the dentists of Rawalpindi and Islamabad, whether they apply these principles in their everyday clinical work life and to evaluate the occurrence of musculoskeletal pain on the basis of age, region and the respective departments (orthodontics, oral and maxillofacial surgery, operative, prosthodontics, periodontics) they work in.

This study has been conducted to infer awareness of ergonomic principles among the dentists of Rawalpindi/Islamabad region. Results displayed through this study identify the major regions of pain among dentists, gender and age wise and will play as a foundation for bringing about a positive impact to reduce the prevalence of musculoskeletal diseases among the dentists of twin cities by acknowledging them with incorporation of correct ergonomic principles.

## **MATERIALS & METHODS**

A descriptive cross sectional survey was carried out. A validated questionnaire which had already been used in a research carried out in a study to analyze the presence of pain among dental students at the College of Dentistry, University of Cartagena.<sup>11</sup> It was used and distributed to four dental colleges of Rawalpindi and Islamabad after permission. The initial sample consisted of 220 dental practitioners from private dental teaching hospitals in Rawalpindi and Islamabad which included Islamic International Dental Hospital, Foundation University College of Dentistry, Margalla Institute of Health Sciences and Armed Forces Institute of Dentistry. Eighteen people did not respond to the questionnaire and the final sample size came out to be 202. The variables included: gender, age, muscular pain, awareness of correct posture, zones of pain and clinical procedures producing muscular pains. The results were presented by means of frequency tables and pie charts that included the variables in an individual manner. Each of the variables which

were studied were involved in a descriptive analysis using frequencies and percentages.<sup>4</sup> Data was entered and analyzed in SPSS version 22.0 and study was done based on following inclusion criteria:

a) Licensed Dental Practitioners working in all departments (orthodontics, oral and maxillofacial surgery, operative, prosthodontics, periodontics) from Islamic International Dental College Hospital, Foundation University College of Dentistry, Margalla Institute of Health Sciences and Armed Forces Institute of Dentistry.

b) Dental house officers working in all departments (orthodontics, oral and maxillofacial surgery, operative, prosthodontics, periodontics) from Islamic International Dental College Hospital, Foundation University College of Dentistry, Margalla Institute of Health Sciences and Armed Forces Institute of Dentistry. Ethical approval was taken by the ethical review committee.

**RESULTS**

There was average 27.13±5.6 years of age of participants in the study. Majority were the female participants 144 (71.3%) as compared to male participants 58 (28.7%). Among 202 participants, 125 (61.9%) experienced muscular pain due to dental practice while 145 (71.8%) participants had awareness when asked about ergonomics posture. Table no. 1 shows the descriptive statistics of the variables.

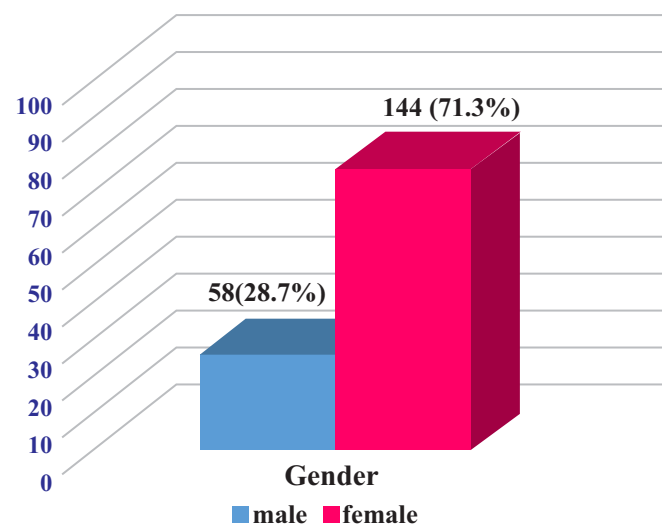
The results showed that female dentists experienced more musculoskeletal pain as compared to males. There were 32 (25.6%) male and 93 (74.4%) female participants who experienced muscular pain due to dental practices (figure 1). Majority 103 (82.4%) have age between 18 – 30 years as compared to 22 (17.6%) participants who have age between 31 – 65 years.

Significantly, muscular pain due to dental practice was observed more in lumbar 77 (61.6%), cervical 71 (57.3%), neck 79 (63.2%), shoulder 67 (53.6%); followed by wrist 58 (46.4%) and hand 56 (44.8%) zones respectively, whereas muscular pain due to dental practice was observed less in wrist 32 (25.6%) and arm 41 (32.8%) (figure 2). There were surgery 86 (42.6%) and endodontic 72 (35.6%)

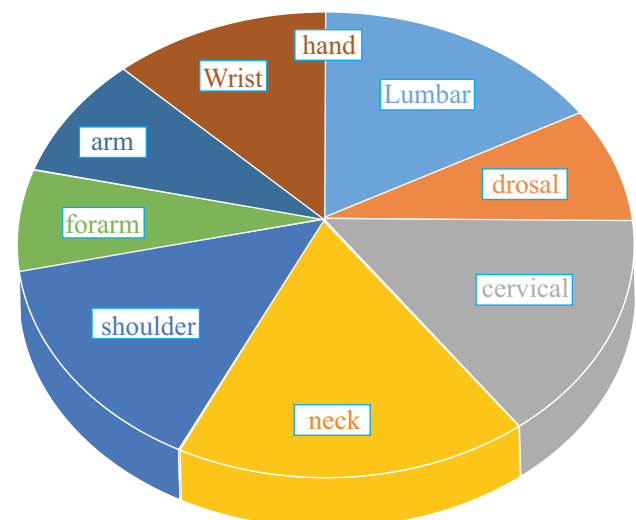
practices producing muscular pain more than restorative 08 (4.0%) and prosthodontics 12 (5.9%) (figure 3).

**Table 1: Descriptive Analysis of the Variables.**

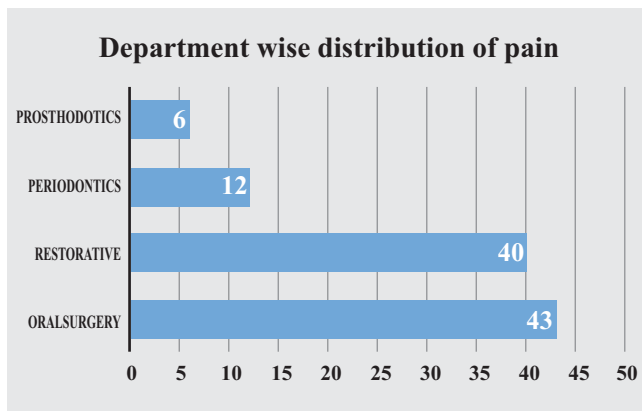
		n (%)
<b>Gender</b>	female	144 (71.3)
	male	58 (28.7)
<b>Muscular pain due to dental practice</b>	yes	125 (61.9)
	No	77 (38.1)
<b>Awareness about ergonomics posture</b>	yes	145 (71.8)
	No	57 (28.2)
<b>Clinical practices producing muscular pain</b>	surgery	86 (42.6)
	endodontics	72 (35.6)
	periodontics	24 (11.9)
	prosthodontics	12 (5.9)
	restorative	08 (4.0)



**Figure 1: Prevalence of musculoskeletal pain based on gender as variable**



**Figure 2: Regions of musculoskeletal pain.**



**Figure 3: Department wise distribution of pain.**

## DISCUSSION

Dentistry is a very high risk profession when it comes to prevalence of musculoskeletal pains and degenerative diseases. Dentists are spending most of their time using psychomotor techniques and procedures which lead on to development of chronic pain and discomfort in the regions which were involved.<sup>11</sup> The dentists of the twin cities (Rawalpindi, Islamabad) involved in this study were questioned about occurrence of musculoskeletal pain due to their clinical practices and whether they were aware of the ergonomic principles of their workplace or not. Table 1 shows the descriptive statistic of the variables included in this study. The results showed that 62% of the dentists agreed to have suffered or currently suffering from musculoskeletal pains. The regions of pain were established as well by the help of this study. Neck, back and shoulders are common sites for the prevalence of pain in dentists.<sup>1,5,3</sup> In this study, the most common sites for musculoskeletal pain were neck, shoulders and the lumbar zone whereas other studies conducted in this regard also showed the neck and lumbar zones to be common sites of pain.<sup>11,1</sup> Sitting in static postures for a long period of time put undue stress and pressure on the discs in the vertebral column, especially in the lumbar and the cervical region. The study revealed that the participants marked more than one area of pain. Muscular imbalance, neuromuscular inhibition and muscular dysfunction are often accompanied with pain due to incorrect postures adapted by dentists.<sup>6</sup>

This study also showed that females experienced musculoskeletal pain in more zones than males and their frequency was also relatively higher. Dentistry demands generation of mechanical overload on muscles and in order to do most of the procedures in a dental office, the practitioners should be aware of the ergonomic principles in order to prolong their work duration in a healthy and effective manner. Not all studies on musculoskeletal pain in dentists describe specific or standardized criteria to accurately diagnose this and sometimes such criteria are inconsistent from one examiner to the other.<sup>9</sup> The dentists who were involved in this study were, to some extent, aware of the ergonomic principles but couldn't practice them. This could be justified by the fact that in these workplaces, the patient influx is so high that to maintain a certain protocol becomes a little tedious. Also, the working environment does not offer optimum support for these ergonomic principles to be acted upon in a smooth manner.

This study revealed that the people working in Oral maxillofacial surgery, Endodontic and Restorative departments experience musculoskeletal pains more often and for longer durations as well as compared to Prosthodontics and other specialties. Several studies have proved that repetitive movements and prolonged body postures can be expected to cause muscle damage as well as ligament and joint injuries.<sup>12,9,4</sup> In the Department of Oral surgery and Endodontics, dental practitioners tend to be more fixed in a static posture and apply constant movements in a similar way which lead to muscle fatigue and deterioration. A study done by Al Ravi Natheer, showed similar results. An interesting fact here, was that periodontists usually suffer from such muscular disorders more than all other specialties.<sup>13</sup> Our study showed that only 6% periodontists agreed to have musculoskeletal pains. The rationale for this could be, that the studies that have been conducted in this regard have included practitioners who do scaling manually. The participants included in this study, were all doing tedious periodontal procedures (scaling) with automatic scalers, which have hence lead on to a very less percentage of these participants to

complain about musculoskeletal disorders.

Research indicates that adapting correct postures will lead on to lesser incidence of occurrence of such problems faced by dental surgeons and hygienists. Studies have proved, that the more a joint deviates from its neutral position, the greater is the risk of injury. Adapting neutral, back, neck and shoulder positions will help prevent such injuries to the neuromuscular system. Periodic breaks and stretches have also proved to be significantly helpful in reducing the risk of such muscular injuries and pains.<sup>14</sup>

Dentists develop musculoskeletal disorders due to prolonged static postures and constant minute vibrations with rigid, inflexible instruments.

The results deduced from this study, have successfully shown that although quite a few number of dentists are aware of ergonomics in general but due to shortcomings at their personal part from the institution/ organization they are working in, most of them are unable to apply these ergonomic principles into their work-life. This study will help the dentists acknowledge the importance of incorporating correct ergonomic principles into their work-life. It will have a strong impact on the work-place habits of many dentists. Our study will lead people on to doing more research in this area and making their work-places more work-friendly and healthy. Dentists who are at a high risk of developing neuromuscular pains will benefit from this study in terms of prevention and precautions.

## CONCLUSION

The results of this study have revealed that many dentists in the region of Rawalpindi and Islamabad suffer from musculoskeletal disorders and pains. There is a dire need to bring about awareness and reforms to make dental practitioners work in a healthy way. As it is never too late to learn correct ergonomic postures and habits to prevent musculoskeletal diseases among dental surgeons and hygienists. A lot of research and work needs to be done in order to create physically healthy and ergonomically supportive working environment for dental practitioners.

## RECOMMENDATIONS

This study revealed that various socio-demographic variables contributed to the MSDs experienced by the dental surgeons. Seminars and workshops should be conducted to spread awareness and knowledge about correct ergonomic principles among dentists of Rawalpindi and Islamabad and further research is to be conducted again to gauge the reforms that have been brought about. It is of utmost importance that dentistry incorporate these strategies into practice to facilitate balanced musculoskeletal health of Dental Practitioners.

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## FREQUENCY OF BACK PAIN AMONG SURGEONS IN PESHAWAR AND ITS ASSOCIATED FACTORS

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### ABSTRACT

#### **Background:**

Back pain is a common musculoskeletal disorder causing pain and functional limitations. It affects majority of population at some point of time in their life span. Surgeons are considered being prone to develop back pain due to awkwardly sustained postures and prolong surgical procedures.

#### **Objective:**

To find out the frequency and associated factors of back pain among surgeons in Peshawar.

#### **Methodology:**

A cross sectional study was carried out on surgeons working in different hospitals of Peshawar from January 2015 to June 2015. A self reported questionnaire was designed and tested by pilot study of 10 surgeons to determine the validity and reliability. The questionnaire was circulated among 125 surgeons by using non probability purposive sampling technique and 100 responded positively (10 from each specialty). The inclusion criteria was surgeons working in cardiac, neurological, pediatric, ENT, plastic, trauma, orthopedic, urological, gynecological, and general surgery with minimum two years of experience and no history of back pain before starting career as surgeon. The data was analyze by SPSS software (version 21) to find out the frequency and associated factors of back pain among surgeons in Peshawar.

#### **Results:**

The frequency of back pain was found to be 67% among surgeons. It was highest among gynecological surgeons (90%), followed by neurological surgeons (80%) and plastic surgeons (70%). The lowest frequency of back pain was reported in cardiac surgeons (30%). Prolong standing was reported to be the most aggravating factor.

#### **Conclusion:**

It was concluded that the gynecological surgeons had the highest frequency of back pain followed by neurological surgeons and plastic surgeons, while cardiac surgeons had the lowest frequency of low back pain. Furthermore, long hours of standing turned out to be the most aggravating factor for surgeons having back pain.

#### **Keywords:**

Back Pain, Musculoskeletal Disorders, Surgeons

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### INTRODUCTION

Occupational musculoskeletal disorders are quite common in different professions as reported every year by a number of professionals.<sup>1</sup> Surgeons are a group of professionals who are often prone to

develop these problems because of long working hours, bad posture, poor ergonomics, hard working environment and occupational stresses. Of these musculoskeletal disorders, back pain is a very common condition which affects the surgeons badly. It also affects their performance severely which in turn is a loss for patients. Occupational back pain is a recurring condition. It results in a large number of lost working days. It is also the second most common musculoskeletal disorder encountered by professionals during their duty hours. The cost of its treatment is also very high making it a financial burden.<sup>2</sup>

The awkward body posture of surgeons, increased muscle activity, repetitive and prolonged static back postures during surgical procedures are main problems, which cause back pain.<sup>3</sup> Surgeons have to lean forward because of the patients' position during open surgery and this result in increased activity of back extensor muscle. In addition to these problems, inappropriate height of operating table is another factor which causes deleterious effects on the surgeons' spine.<sup>3</sup>

The high frequency of injuries in the hands/fingers, and the neck and back of surgeons was reported in a research study with a sample size of 600.<sup>4</sup> There were 80% surgeons who had experienced discomfort and pain in the neck, shoulders and back areas after surgery as reported by another study.<sup>5</sup> The surgeons performed surgeries in repeated static postures with forward bending of the head and twisting of the back. These positions were described as "distinctly harmful" by the subjects in another study.<sup>6</sup> Surgeons are more prone to develop back pain due to prolonged static postures and long duration of surgical procedures. The current study was designed to find out the prevalence and associated factors of back pain among surgeons working in Peshawar.

#### MATERIALS & METHODS:

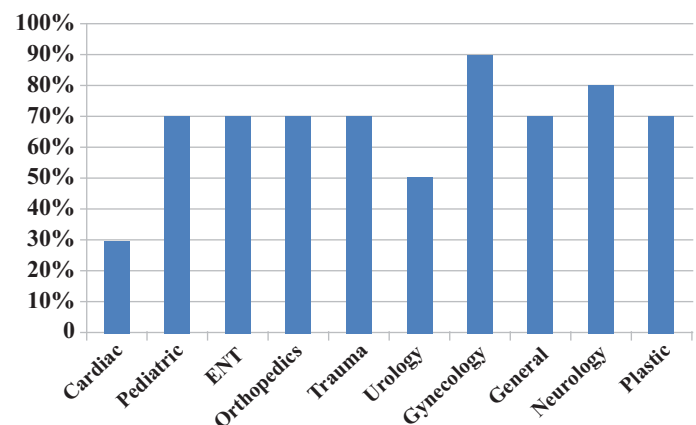
This cross sectional study was carried out on surgeons working in different hospitals of Peshawar from January 2015 to June 2015. A self reported questionnaire was designed and tested by pilot study of 10 surgeons to determine the validity and reliability. The questionnaire was circulated among

125 surgeons and 100 responded positively (10 from each specialty). The inclusion criteria was surgeons working in cardiac, neurological, pediatric, ENT, plastic, trauma, orthopedic, urological, gynecological, and general surgery with minimum two years of experience and no history of back pain before starting career as surgeon. The data was analyze by using SPSS software (version 21) to find out the frequency and associated factors of back pain among 100 surgeons in Peshawar.

#### RESULTS

The frequency of back pain was found to be 67% among surgeons. It was highest among gynecological surgeons (90%), followed by neurological surgeons (80%) and plastic surgeons (70%). It was reported that the lowest frequency of back pain was in cardiac surgeons (30%) and followed by urological surgeons (50%). Figure-1:

The most aggravating factor was standing for prolong periods of time and relieving factor was sitting. The average time for minor surgery was 30-60 min while for major surgeries, it was 4-8 hours.



**Figure 1: Specialty wise prevalence of back pain**

#### DISCUSSION

Back pain is pain felt in the lower or upper back that usually originates from bone, nerve, muscles, disc, bursa, ligaments, joints, or fascia. It can be a referred pain of pelvis, chest, abdomen, gallbladder and pancreas.<sup>7</sup> It may be triggered by the posture while sitting, standing, bending awkwardly, lifting incorrectly. Back pain can range from a dull constant ache to sudden sharp pain that makes it hard to move it can starts quickly if u pull or lift something heavy in an in correct manner or posture.<sup>7</sup>

A research was conducted in UK otolaryngology department of St George's Hospital on prevalence of back pain and neck pain amongst ENT consultants. It was a national survey conducted on 325 ENT consultants in UK which revealed that 75% surgeons complained of back pain and neck pain.<sup>8</sup> The results of the following study also support the evidence as 32% surgeons had complain of back pain during the surgery while 43% had after the surgery.

In a study on back pain among 95 different doctors, it was revealed that gynecologists were the most affected doctors by back pain among other consultant and health professionals because of the surgeries they were performing and the long time they had to stand.<sup>9</sup> These results are supported by another study on 332 gynecologist surgeons and their results showed that 159 out of 332 surgeons suffered from back pain.<sup>10</sup> A research conducted on 250 Iranian surgeons showed that gynecologists experienced highest point in prevalence of back pain of about 44.9% in six months.<sup>11</sup> Our study results are also supported by these studies as the gynecologists' experienced highest frequency of back pain.

In a study it was established that static postures are supposed to be as back pain triggers.<sup>12</sup> In our study, prolong static standing accounted for 73% of the surgeons suffering from back pain as aggravating factor. In a study on occupational musculoskeletal disorders among surgeons, the researchers found that more than 80% of the surgeons faced at least one musculoskeletal problem in the last year.<sup>13</sup> In the same study, it was noted that neck was the most affected region (82.9%), while the back accounted for 68.1%, the shoulder (57.8%), followed by the thoracic region(52.6%).<sup>13</sup> Another study reported that 30% of surgeons felt low back pain and tension after an open surgery.<sup>14</sup> In another study, surgeons reported low back region with a prevalence rate of 25% (n = 32), followed by the upper back with 24% in the last 12 months when data was taken.<sup>15</sup> In a study on occupational low back pain in nurses, 69% reported stooping or prolong standing as the aggravating factor.<sup>16</sup>

In one study, surgeons were made to wear designed

ergonomic body support during seven surgical procedures. Electromyography results showed that the muscle activity was efficiently reduced by the body supports.<sup>17</sup> It was noted that after prolonged static posture, when surgeons want to move again, they feel too much pain and retention. Most of the surgeons attributed their back pain to prolong standing and awkward body postures.

## CONCLUSION

It is concluded that the gynecological surgeons had the highest frequency of back pain followed by neurological surgeons and plastic surgeons, while cardiac surgeons had the lowest frequency of low back pain followed by the urological surgeons. Furthermore, prolong standing was found to be the most aggravating factor while sitting was the relieving factor for surgeons. It is recommended that a more detailed study with larger sample size may be conducted to establish the risk factors associated with back pain.

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## FREQUENCY OF TEMPOROMANDIBULAR DISORDERS IN UNDERGRADUATE PHYSICAL THERAPY STUDENTS OF RAWALPINDI & ISLAMABAD

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### *Abstract*

#### **Objective:**

*To determine the frequency of temporomandibular disorders in undergraduate physical therapy students of Rawalpindi and Islamabad.*

#### **Design:**

*A descriptive cross-sectional study was conducted.*

#### **Place and duration of study:**

*The study was conducted from Nov 2015 to June 2016 in three physical therapy institutes i.e. Margalla Institute of Health Sciences Rawalpindi, Armed Forces Post Graduate Medical Institute, Rawalpindi and Islamabad Federal College, Islamabad.*

#### **Participants/materials and methods:**

*A total of 132 students meeting inclusion criteria participated in this study through convenience sampling. Data was collected using Helkimo anamnestic index, 3 knuckle test, and numeric pain rating scale. SPSS version 21 was used to analyze the results.*

#### **Results:**

*Out of 132 participants 63.6%(84) participants had no symptom of temporomandibular disorder whereas 18.18%(24) had only one symptom and 18.8% (24) had two or more symptoms. Moreover, 18.18% (24) of the participants had positive knuckle test. In terms of pain intensity 75.8% (100) of the participants reported no pain on NPRS while the remaining 24% had mild to moderate pain.*

#### **Conclusion:**

*From the results of study, it was concluded that nearly half of the study sample had one or more sign and/or symptom related to TMDs. There should be a preventive program to address the issue. Further studies with larger sample size are required focusing on investigation of associated risk factors.*

#### **Keywords:**

*Orofacial Disorders, Students, Temporomandibular Disorders*

## **INTRODUCTION**

Temporomandibular pathologies include a collection of disorders and certain conditions that

commonly affect the TMJ, the muscles of mastication and other surrounding tissues.<sup>1,2</sup> These disorders have become a major reason for patients to visit their dentist and are considered to be one of the commonest orofacial pathologies that are of non-dental origin. Previous epidemiological research studies have reported that most of the adult population somehow suffered from TMJ pathologies of different severity.<sup>3</sup> In a study

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conducted at Armed Forces Institute of Dentistry intra articular disc dislocation with spontaneous reduction was the most common disorder in participants younger than 20 years, however in older subjects disc dislocation was without reduction was most common. Lateral pterygoid muscle was tender in 88.6% of the participants, while in 82.9% of the study population medial pterygoid was tender.<sup>4</sup> A study on university students of KPK revealed that 19% students had signs and symptoms of Temporomandibular disorder (TMDs). Clicking sound was the most common sign of TMD in both genders.<sup>5</sup> Study on dental students of Khyber medical college concluded that most of the students (60.7%) did not suffer from TMD's. More male students suffered from mild to moderate TMD's, whereas females suffered exclusively from severe TMD's. There was an increased prevalence of TMD's as students progressed from first to final year BDS.<sup>6</sup> Ali *et al.*, concluded from a study on dental students of Karachi that there is an association between anxiety and depression and symptoms of TMDs among junior and senior dental undergraduates and they are experiencing approximately similar levels of TMDs features and depression as of the medical undergraduates mostly due to the higher studies burden, stringent criteria of clinical medical education and certainly dearth of the stress management skills.<sup>7</sup> Differences in prevalence of different studies is considered to be because of various methods being used and different understanding of TMDs.

Previous studies show that stress, anxiety and other psychological conditions can rise the intensity of TMJ symptoms especially in patients who are suffering from chronic pain. However, the etiology of these disorders is not clear yet and thought to be multi factorial.<sup>8,9</sup> Many studies indicate that the sign and symptoms of TMJ disorders increase with age<sup>10</sup> while many suggest otherwise.<sup>11</sup> A prospective study which investigated the sign and symptoms of TMJ for over 20 years showed that mild sign and symptoms are often present in early childhood.<sup>12</sup> It is also thought that individuals could be predisposed with inheritance of specific genes.<sup>13</sup> Functional disabilities of TMJ are characterized by clicking sounds, soft tissue pain, luxation and other symptoms.<sup>3, 14, 15</sup>

Although several epidemiological studies have been conducted in students of foreign universities, more local studies are still necessary to find out the prevalence of this condition in our different student groups, as well as to establish regional differences. There is also a need to reform the medical education system in Pakistan to reduce stress and anxiety among students.

## METHODS

A cross sectional survey was conducted from Nov 2015 to June 2016. A total of 132 undergraduate physical therapy students years from Rawalpindi and Islamabad participated as per inclusion criteria. Individuals with history of acute trauma to the face, any serious systemic pathology, diagnosed cases of RA/OA, having Surgical conditions, Malignancy and Congenital malformations were excluded.

Sample of 132 individuals was selected. Non probability convenience sampling method was used for the recruitment of individuals.

Helkimo anamnestic index, 3 knuckle test, and numeric pain rating scale were the outcome measures participants filled a closed ended e questionnaire to submit their data.

## RESULTS

A total of 132 individuals responded to the online survey with a mean age of  $21.39 \pm 1.15$ . Out of 132, 59.85% were females.

When assessed through Helkimo anamnestic index 84 (63.64%) participants had no symptom of TMJ pathology, 18.18% (n=24) had only one symptom, and the remaining 18.18% (n=24) had two or more symptoms. 21.21% (n=28) individuals experienced clicking sound in the TMJ, 15.2% (n=20) had rigidity of the jaw during awakening, 21.2% (n=28) individuals experienced fatigue during jaw movement, 3% (n=4) had difficulty in opening mouth, 12.1% (n=6) had pain localized to masticatory muscles, 6.1% (n=12) experienced pain while moving mandible, 3% (n=4) experienced luxation of mandible, and no one had ever experienced locking in the TMJ area. Moreover, 3 knuckle test was performed to assess mobility of the temporomandibular joint. Majority of the individuals 81.82% had negative 3 knuckle test. When measured through numeric pain rating

scale, most of the participants 75.76% (n=100) no pain in the TMJ and associated structures, while the remaining 24.5% had mild to moderate pain. When the results of different components of helkimo anamnestic index, 3 knuckle test and NPRS were

combined, the results showed that 48.5% (n=64) had one or more symptom of TMDs in the past, while the rest 51.52% had no related symptom. Overall in males 47.17%(n=39) had symptoms and 49.37%(n=25) of females had the symptoms.

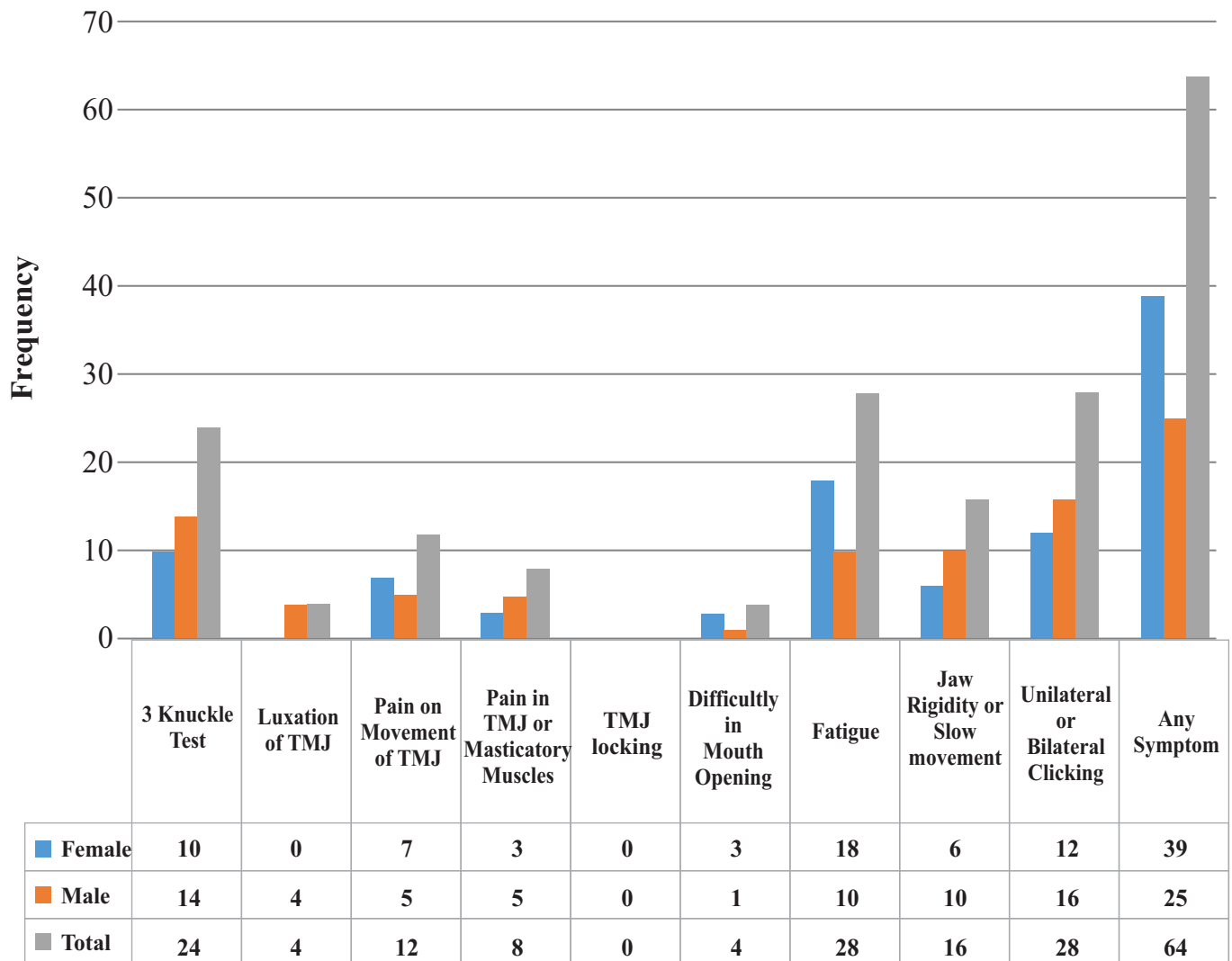


Figure 1: Participants with Positive TMD Symptoms.

**DISCUSSION**

The results of the current study indicated that one or more symptoms related to TMJ pathologies were present in 48.5% students from three different undergraduate physical therapy colleges/universities of Rawalpindi and Islamabad. Similarly, as reported by our study, previously it was thought that the frequency of TMJ related pathological symptoms in undergraduate students, ranging in age from 18 to 25 years, is higher when compared with the older subjects<sup>17</sup> but these findings are in contrast with other research studies

in which they reported very low incidence (2.9%) in young adults and a slight increase in incidence with age especially in a longitudinal study of 10 years with a sample of 2255 subjects.<sup>18</sup>

The disagreement between the previous studies and our study may be due to the volume of sample size or it could be attributed to the demographic distribution of the participants. Previously, the research studies reported that TMD symptoms were found to be more prevalent in males but it was different in our study as the results show, TMD symptoms were almost equally distributed among

both genders.<sup>19</sup>

However, the results of this particular study indicated noteworthy differences in the prevalence of TMJ related symptoms among both sexes, with male participants showing an increased frequency of experiencing clicking sounds, rigidity and pain while moving mandible than females, but apart from this, other symptoms were equally present in both sexes, which is somewhat in accordance with the previous published studies.<sup>20</sup>

Kaberi *et al.*, conducted a study in India and found that students had high prevalence of TMD and found that almost 27% of the individuals had one or more symptom and approximately 64% of the individuals had one or more sign of TMD. The present study also had the results similar to their finding i.e. 37% prevalence of symptoms and approximately 50% prevalence of signs.<sup>21</sup>

Amal al Khotani *et al.*, conducted a study and found that TMD was common among children and adolescents in Saudi Arabia. They found that 27% of the participants had at least one diagnosis of TMD and myofascial pain at 15% was the most common diagnosis. In the present study, these proportions were quite high, with almost 48% of the individuals having at least one symptom of TMD.<sup>22</sup>

Farideh *et al.*, conducted a study in Irani dental and non-dental students and found that TMDs were more prevalent 80% in dental students, while in nondental students it was 62%. With respect to gender females were more affected 80% while men 62%. In the present study, prevalence was 48.8% in physical therapy students. And gender difference is not significant as males had 47.17% and females had almost same 49.37% prevalence.<sup>23</sup> In the present study, the common symptoms reported by the participants were joint's clicking sound, rigidity of the TMJ, and feeling of fatigue, which was also found to be true in previous studies.<sup>24</sup>

## CONCLUSION

There is moderate frequency of temporomandibular disorders in undergraduate physical therapy students with multiple reported symptoms. This call for need to increase awareness among health professionals and introduction of preventive

measures in physical therapy students.

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The material submitted for publication may be in the form of an original research, a review article, a case report, recent advances, adverse drug reports or letter to the editor. Original Articles should normally report original research of relevance to basic or clinical medicine and may appear either as papers or as short communications. The papers should be of about 2000 words, with not more than six tables or illustrations; short communications should be about 600 words, with one table or illustration and not more than five references. Review article should consist of structured overview of a relatively narrow topic providing background and recent developments with reference of original literature. An author is eligible to write a review article only if he/she has published at least three original research articles and some case reports on the same topic.

Letters should normally not exceed 400 words, have

not more than 5 references and be signed by all the authors; preference is given to those that take up points made in articles published in the journal. Editorials are written by invitation.

Clinical case reports must be of academic and education value and provide relevance of the disease being reported as unusual. Brief or negative research findings may appear in this section. The word count of case report should be 800 words with a minimum of 3 key words. It should have a non-structured abstract of about 100 – 150 words (case specific) with maximum of 5 – 6 references. Not more than 2 figures shall be accepted.

Authors should keep one copy of their manuscripts for reference, and send three copies to the Editor FUMJ. The author should also submit an electronic copy of the manuscript typed in MS Word. Any illustration or photographs should also be sent in duplicate.

Each manuscript should include a title page (containing mail address, fax and phone numbers of the corresponding author), structured abstract, text, acknowledgements (if any), references, tables and legends. Each component should begin on a new page, in the following sequence; title page, abstract and 3-5 key words; text; acknowledgement; references; tables and legends for illustrations.

The manuscript should be typed in double spacing on 8” x 11” white bond paper with one inch margin on both sides. There should be no more than 40 references in an Original Article and no more than 60 in a Review Article. The CD containing soft copy of the article should be sent with the manuscript.

### TABLES, GRAPHS AND ILLUSTRATIONS

Tables and illustrations should be merged within the text of the paper, and legends to illustrations should be typed on the same sheet. Tables should be simple, and should supplement rather than duplicate information in the text; tables repeating information will be omitted. Each table should have a title and be typed in double space without horizontal and vertical lines on an 8 1/2” x 11” paper. Tables should be numbered consecutively with Roman numerals in the order they are mentioned in the text. Page number should be in the upper right corner. If abbreviations are used, they should be explained in foot notes and when they first appear in text. When

graphs, scattergrams, or histogram are submitted, the numerical data on which they are based should also be provided. All graphs should be prepared on MS Excel and sent as a separate Excel file. For scanned photographs highest resolution should be used.

### SI UNIT

System International Unit (SI Unit) measurements should be used. All drugs should be mentioned by their generic names. Trade names may however, be mentioned in brackets, if necessary.

### ABSTRACT

Abstracts of original article, comprising of upto 250 words, should be in structured format with following sub-headings.

I. Objective, ii. Design, iii. Place and duration of study, iv. Patients/materials & Methods, v. Results, vi. Conclusion.

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### INTRODUCTION

This should include the purpose of the study. The rationale for the study should be summarized. Only pertinent references should be cited; the subject should not be extensively reviewed. Data or conclusions from the work being reported should not be presented.

### METHODS

Study design and sampling methods should be mentioned. The selection of the observational or experimental subjects (patients or experimental animals, including controls) should be described clearly. The methods and the apparatus used should be identified (manufacturer's name and address in parentheses), and procedures described in sufficient detail to allow other workers to reproduce the results. References to established methods should be given, including statistical methods; references and brief description for methods that have been published but are not well known should be provided, new or substantially modified methods should be described, giving reason for using them, and evaluating their limitations all drugs and chemicals used should be identified precisely, including generic name(s), dose(s) and route(s) of administration.

### RESULTS

Results should be presented in a logical sequence in the text, tables and illustrations. All the data in the

tables or illustrations should not be repeated in the text; only important observations should be emphasized or summarized.

### DISCUSSION

The author's comment on the results supported with contemporary references. Critical analysis of similar work done by other workers, its comparison with own work with possible reasons for any differences found should be included.

### CONCLUSION

Conclusion should be provided under separate heading and highlight new aspects emerging from the study. It should be in accordance with the objectives.

### REFERENCES

Reference should be numbered in the order in which they are cited in the text. At the end of the article, the full list of the references should give the names and initials of all authors (unless there are more than six when only the first six should be given followed by *et al*). The author's names are followed by the title of the article; title of the journal abbreviated according to the style of the Index Medicus (see "List of Journals Indexed", printed yearly in the January issue of Index Medicus); year volume and page number; e.g. Farrell RJ.

Rational approach to iron deficiency anaemia in pre menopausal women. Lancet 1998; 352:1953-4.

References to books should give the names of editors, place of publication, publisher and year. The author must verify the references against the original documents before submitting the article.

### PEER REVIEW

Every paper will be read by two staff editors or members of the editorial board. The papers selected will then be sent to 2-3 reviewers. If statistical analysis is included, further examination by a statistician will be carried out.

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# FOUNDATION UNIVERSITY MEDICAL JOURNAL

Vol-3 No.2, Jul - Dec 2018

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