

To Determine the Relation of Oral Health Status and Selected Correlates among Students Attending Various Universities of Lahore, Pakistan

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ABSTRACT

When health is concerned, we must pay attention to all the parts of human body specially the oral cavity. Oral cavity is the gateway of many diseases in human body. There are many reasons for this spread, one of the reason is food. In this regard, the health care of oral cavity is the most essential constituent of general health and wellbeing of any individual. Low health literacy is the cause of all oral health related issues. Health education creates awareness among people that for a better life style it is equally important to seek and get proper health care as obtaining of other necessities of life. The grave consequences of low health literacy have been reviewed many times. This study was conducted on the young adults of Pakistan currently enrolled at different universities and colleges of Lahore, Pakistan. The main objective of the study was to know about the oral health literacy level of the participants and then find out its relationship with their oral health status which was find out after clinical examination. The purpose of the study was to get an idea about the health outcome of the most efficient group of population. Sample for this study will be collected in 2 steps. Step 1 was conducted by doing the clinical examination of the participants in order to assess oral health index. Step 2 was conducted by doing the short interviews of each participant in order to assess oral health literacy of the participants. All the data was complied. The results of REALD 30 word list from all 400 participants were analyzed and the average score was calculated. The average score came out to be 22.46. With this study, it was proved that education plays a significant role in improving oral health status. Further studies can be conducted to help spreading awareness and basic education related programs for uneducated people.

INTRODUCTION

When health is concerned, we must pay attention to all the parts of human body specially the oral cavity. Oral cavity is the gateway of many diseases in human body. There are many reasons for this spread: one of the reasons is food. Whatever food content we take it must go through our mouth, if that food is contaminated it will directly affect our body systems.

The impact of oral disease to the quality of life is very significant. Pain in the tooth is considered as one with high intensity, longer duration and low threshold level pain, the suffered person would not be able to do his routine work at his job or at home therefore a grave loss of time and mental trauma occurs. This leads to the idea of improving attitudes of dental staff, making the language of all health care material easy and reader friendly and conducting small educational workshops for public awareness. This practice has been getting popular throughout the whole dental community including clinical practice, dental education of both patients and students and dental research facilities (Lee et al., 2012).

It has been seen that oral health literacy is not always associated with education or level of literacy of an individual. People living in developed countries getting higher education and living in environment where all the facilities are available to them showed high level of literacy and good oral hygiene status. While some people specially immigrants living in some other country showed high level of both literacy and health literacy but exhibited poor oral hygiene. The reason could be the fact that they are living in unfavorable circumstances with constant tension about language barriers, house, rent, job, educational expenses and other staples of life like food and clothing. Under these circumstances getting health care is the last thing on their minds and unless an emergency occurs they do not visit health care clinics (Calvasina et al., 2016).

Same is the attitude of working woman with very low income and living under unfavorable and unattended environment even in their own country (Lee et al., 2012). The result is that they effect the health care of not only themselves but also the minors who are completely dependent on them for guidance and care. If the guardian or parent does not show care towards the health care

needs of their families their dependents would be left unattended. As a result, a large number of pediatric cases have been reported in past few years.

Females tend to stay neat and clean, they are more conscious esthetically and want a beautiful smile. As a result, they avoid bad habits and have low pain threshold which causes them to visit their physicians and dentist regularly. Males are more careless and show negligence towards their hygiene, they have generally a high pain threshold so they do not visit health care clinics unless certain symptoms of some disease appear which might cause disturbance in their routine life at job and at home. As a result, females show better smile and healthy outcome as compared to males (Holtzman et al., 2014).

Age factor is also studied but no significant relation was established until now. It has been seen that people with same age group behave similarly, while people with contrasting difference in their age behave differently. Group of elder population showed less understanding and less compliance towards health care. Very young population are dependent on their care takers, they exhibit behaviors similar to their adults. Only young generation attending schools, colleges and universities showed better level of literacy, they understand the health care system, its consequences in case of neglect and adapt well to health care requirements. Further studies are needed to understand the role of age variance in health literacy and its outcome (Sharma et al., 2016).

Pakistan has a distinct advantage in a population profile concentrated with younger groups. This age group is the most efficient one and it is believed that they are more prone to change in their behaviors and attitudes if given the proper guidance. The benefits of health care system and promotion of adaption of positive attitude and behavior is much easier to impart on the minds of these youngsters. By using young population as study groups, the severity of low oral health literacy can be identified hence this issue can be addressed accordingly.

In the light of all the discussed facts we have designed this current study. This study was conducted on the young adults of Pakistan currently enrolled at different universities and colleges of Lahore, Pakistan. The main objective of the study was to know about the oral health status and establish its relationship with sociodemographic features such as age, gender, visits to dental

clinic and educational background. The purpose of the study was to get an idea about the health outcome of the most efficient group of population. This information would help analysts in designing further studies to get a thorough understanding of the level of oral health status in Pakistani population. The collected data will help in designing and development of different strategies conducted by the combined efforts of government, research analysts and health care sector for the awareness and improvement of health care and controlling the health care related arising issues of different diseases among general population.

METHODOLOGY

Study Design

Quantitative Methodology: The research was based entirely on quantitative methodology. WHO oral health survey was used as a tool for assessment of oral health status. The scoring was done after the examination of the collected samples from both clinical examination and interview. Then the comparison was done and relationship was determined between different variables of the study and conclusion was made.

Sample size

Population Selection: Students attending different universities of Lahore were selected as a target population for the study. Two universities were selected from government sector i.e. Forman Christian college (FC) and Punjab university (PU). Two universities were chosen from private sector i.e. Superior University and University of Lahore (UoL) for this purpose. The two private universities that were selected are based in near the outskirts of the main city; while the government universities are situated in the central city, as shown in the figure below. Students attending government universities were mostly city dwellers; while the students from private universities are mainly boarders, living on university campuses or private hostels.

Calculation of Sample size: When the sampling procedure is performed the core objectives we keep in mind are the followings constraints. First one is the time factor that is how much time is available for the study, second one is the money factor that how much investment is available for utilization. By keeping in the mind the time and money factor the third one is the accuracy or the outputs of the studies with minimal error and variation. Primarily, these three factors cooperate in the sampling design.

Although hundreds of universities from other private and public sectors are available for contemporaneous study but in this research the budget and time factors were in mind with basic focus on the accuracy of the results with minimal level of variation for precise and accurate results. That is why two public level and two private universities are selected. Constituents for the present lot of sample size selection are 95% level of confidence, 0.5 the standard deviation (50% response rate) and margin of error 5%, then by using the sample size calculator the sample size was calculated, which is 385 students. But we used 400 students in this study to mitigate any error. The above rates are derived from the previous studies in this field.

$$n = \frac{pq(z)^2}{d^2}$$

$$n = \frac{(.5)(.5)(1.96)^2}{(0.05)^2}$$

384.5 by rounding off the numbers 385 are considered. And we have used 400 students as sample size to alleviate the discrepancies and random errors in data collection.

Type of Hypothesis: Null hypothesis was tested in the study. Null hypothesis is usually the hypothesis that states sample observations' results occur purely from chance.

The numeric data satisfying the parametric assumptions was analyzed with Student's t-test and ANOVA test.

Selection Criteria: Following is the inclusion criteria which was followed strictly while choosing the candidates for this study.

1. Both genders were included.
2. They were at least 18 years' old

Exclusion Criteria

1. Those who refused to give consent were not included in the study
2. Physically impaired patients were excluded from the study

Data Collection

Duration of Study: The duration of the study was 4 Months. From May 2016 to August 2016.

Study Setting: For the interview and clinical examination of the participants, comfortable arm chairs were arranged in a vacant room. Then these arm chairs with stable back were used to examine oral cavities of the participants. Patients were seated on their chairs and mouth mirrors and community periodontal index (CPI) probes were used for the examination of their oral cavities.

When the participants were selected, next step was to take informed consent from all the study subjects. Those who refused to give consent were not included in the study. None of the participant was forced to take part in the study they all volunteered. The participants were also told that they can leave from this procedure at any time if they feel uncomfortable. After getting their signature on the consent form their socio-demographic details such as age, gender and education status as required by the study objectives were recorded. Then they were proceeded for next step which was their clinical examination and conduction of interview.

Tools for taking the sample: To measure oral health status WHO Oral Health Survey proforma was used.

WHO Oral Health Survey proforma: WHO oral health survey proforma was taken from Oral Health Surveys Basic Methods, 5th edition published by world health organization in 2013.

The purpose of publishing this manual was to promote the developed and underdeveloped countries so that they can get inspiration and design different studies and research proposals which can be used for the benefit of the population on international level. This manual contains guidelines for the researchers to conduct various studies after evaluating the oral health literacy and oral health status of the sample population. It also contains guidelines for the risk factor evaluation. The oral health performa was given for thorough assessment of the oral cavity

WHO proforma is used for recording of clinical examination. It is a detailed performa which covers almost all the significant diagnostic variables such as status of periodontium, structure of enamel, dental erosion, dental trauma, oral mucosal lesions, presence or absence of dentures and need for emergency treatment. From this proforma a generalized picture of oral cavity can be made which will help in assessment of oral health status.

Cronbach's Alpha: In statistics Cronbach's alpha is used to test the reliability of the tool. It can also be used to correlate the two test that measure the same variables. The reliability of the tool is accepted when its Cronbach's alpha lies between range 0.7-1.0.

- The Cronbach's alpha of WHO oral health assessment form is 0.85 (Sandhya et al., 2005).

Cronbach's alpha	Internal consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Figure 3.2: Internal consistency of Cronbach's alpha

Collection of the sample: Clinical examination for the assessment of oral health status

In our current research, first of all these participants were clinically examined by an expert dentist to record the various components of WHO Oral Health Survey proforma. Scores for REALD-30 were recorded after clinical examination. The clinical examination was done at the respective universities as it only needed few diagnostic instruments and presence of a proper dental chair or clinical setting was not necessary. It saved time and resources as 400 students were supposed to be examined. Arrangement of these clinical examinations at some hospital faculty or private clinics would increase the total research expenditures and resources which would be difficult to achieve and out of the scope of this current research. Once the consent was taken and tools were determined for the research the participants were prepared for their clinical examinations.

For the clinical examination, in a vacant room, comfortable arm chairs were arranged. Then these arm chairs with stable back were used to examine oral cavities of the participants. Patients were seated on their chairs and mouth mirrors and community periodontal index (CPI) probes were used for the examination of their oral cavities. All the components of the WHO Oral Health Survey were recorded for every participant. From this proforma a generalized picture of oral cavity can be made and the scoring for other variables can be deduced such as DMFT index (decayed, missing and filled teeth), periodontal index and dental aesthetic index.

Derivatives of WHO oral health assessment form: The following are the derivatives recorded from the data collected by the WHO oral health survey proforma

1. Decayed, Missing and Filled Teeth (DMFT) index as well as its individual components (decayed teeth [DT], filled teeth [FT], and missing teeth [MT])

2. Dental Aesthetic Index (DAI) score.

DMFT Index: For past 75 years in many epidemiology studies DMFT index which is also known as decayed, missing and filled teeth index has been used for the evaluation of carious lesion and to know its prevalence in the oral cavity. It can be calculated by using simple diagnostic tools such as mirror and probe. This ease of calculation had made it possible to do the clinical examination under any kind of circumstances. There is no need of proper clinical setup. It is much advanced form was introduced in 1931 where each surface of the tooth that has been affected is noted thus giving rise to DMFS i.e. decayed, missing and filled surfaces.

For our study, we have used only DMFT index.

DT Number of decayed teeth in permanent dentition

MT Number of missing teeth due to caries in permanent dentition

FT Number of filled teeth in permanent dentition

DMFT Number of decayed, missing due to caries and filled teeth in permanent dentition.

DMFT can be calculation by simply counting the number of decayed teeth, missing teeth or filled teeth and then add the scores. E-g, if 3 decayed teeth, 4 missing teeth and 1 filled teeth is present the DMFT index would be 8.

For much detailed evaluation of carious prevalence of the individual, the variables of the DMFT index can also be studied individually. Contribution of each component to total caries index can be calculated by dividing the individual constituent such as DT, MT and FT with the total DMFT.

WHO severity criteria for caries: The severity level of caries prevalence of any population can be calculated with the help of the data collected with the DMFT index.

Following are the values established by WHO for the assessment of severity level of caries among population. If the score of the DMFT index came below 5 then that means the population lies under very low caries prevalence. If the DMFT index came between the range 5.0-8.9 then the population lies at low caries prevalence. The DMFT index with range 9.0-13.9 signifies moderate level of caries prevalence while DMFT index of

more than 13.0 indicates high prevalence of caries. High prevalence of the caries gives a very grave picture of the society.

Dichotomization of Variables of WHO assessment form: For analytical purpose, certain components of the Oral Health Survey proforma will be dichotomized as absent and present of a particular condition. Scores other than "0" or "9" for any of the boxes in each component meant the condition is present.

Data Analysis

Descriptive Analysis: Cross tabulation and Frequency Distribution Results

Frequency distribution of gender: For this study, equal number of male and female participants were selected. It was concluded that gender has no effect on DMFT (decayed, missing and filled teeth) and any other oral manifestations.

Table 4.1: Frequency distribution and percentage of gender for DMFT score.

Gender	Frequency	Percent
Male	200	50.0
Female	200	50.0
Total	400	100.0

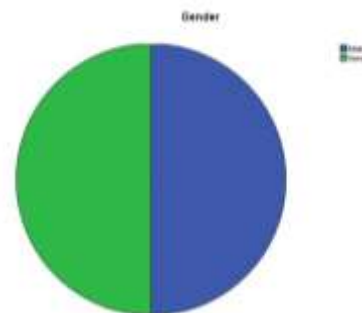


Figure 4.1: Pie chart of frequency distribution of gender

Frequency distribution of age: The target population for the study was young adults of the society. Mostly these participants were of the age 20-21 years old. It was observed that people with similar age range have similar level of health literacy.

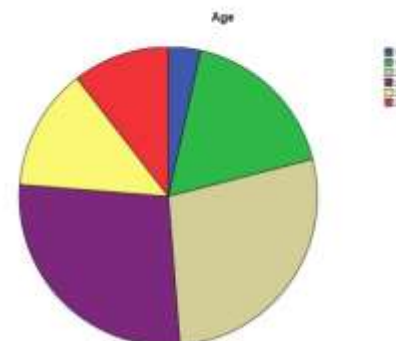


Figure 4.2: Pie chart of frequency distribution of age

Frequency distribution of participants of various department:

In this study, we took the sample from various departments of four selected universities. The purpose was to analyze the behavioral differences between students of the various departments and calculate their level of health literacy and oral health. It can be seen from the frequency distribution and pie chart that the majority of the selected participants lie in MBBS, BBA and Arts. These three fields are very different from each other. It was hypothesized that since these departments teach different norms hence, their students would behave differently as well. They would have different health literacy skill and oral health. Those results are discussed in detail later in this chapter.

Table 4.3: Frequency distribution and percentage of various departments.

Department	Frequency	Percent
MBBS	70	17.5
DPT	60	15.0
Aviation	28	7.0
BBA	81	20.2
BScs	28	7.0
Pharma D	32	8.0
Mass com	20	5.0
Arts	81	20.2
Total	400	100.0

Frequency distribution of visits at dental clinics: After analyzing the data of the sample population it can be seen that out of 400 participants almost half of the participants visit dental clinics while the other half answered no with number of the participants answered yes for dental visits slightly more than those who answered no for dental visits. 2 of them did not give any response.

Table 4.4: Frequency distribution and percentage of visits at dental clinics.

Visit Dental Clinic	Frequency	Percent
No	175	43.8
Yes	223	55.8
2	2	.5
Total	400	100.0

Frequency distribution of decayed teeth: Majority (158) of the participants showed no decayed teeth. A quarter of the participants (108) showed 2 decayed teeth. Maximum number of the decayed teeth i.e. 9 decayed teeth were found in 2 participants.

Table 4.6: Frequency distribution and percentage of decayed teeth.

Decayed Teeth (DT)	Frequency	Percent
0	158	39.5
1	49	12.2
2	108	27.0
3	53	13.2
4	17	4.2
5	4	1.0
6	7	1.8
8	2	.5
9	2	.5
Total	400	100.0

Table 4.7: Frequency distribution and percentage of the missing teeth.

Missing Teeth	Frequency	Percent
0	354	88.5
1	26	6.5
2	16	4.0
3	4	1.0
Total	400	100.0

Frequency distribution of the missing teeth: More than two third of the participants showed no missing teeth. Only 3 participants showed maximum number of the missing teeth i.e. 4.

Frequency distribution of the filled teeth: Frequency distribution of the filled teeth was found similar to the missing teeth with more

Table 4.11: Tabulation of DMFT index of different departments.

Departments	DMFT Index											Total
	0	1	2	3	4	5	6	7	8	9	14	
MBBS	20	2	18	12	4	6	4	0	2	0	2	70
DPT	30	6	12	2	2	4	2	2	0	0	0	60
Aviation	10	2	8	4	2	0	2	0	0	0	0	28
BBA	23	8	16	21	9	2	2	0	0	0	0	81
BSCS	10	0	8	4	0	2	2	0	0	2	0	28
Pharma D	14	4	6	6	2	0	0	0	0	0	0	32
Mass com	08	2	4	2	0	4	0	0	0	0	0	20
Arts	25	13	24	8	0	3	8	0	0	0	0	81
Total	140	37	96	59	19	21	20	2	2	2	2	400

Loss of Attachment: Loss of attachment analysis showed that almost 300 students have gingival pocket depth of 0-3mm, which is a sufficient amount that is 75% of the participants. 70 students have 4-5mm loss of attachment that number is 17.5% of the study.

than two thirds of the participants (345) having no filled teeth. Only 2 participants showed maximum number of the filled teeth i.e. 6.

Table 4.8: Frequency distribution and percentage of the filled teeth.

Filled teeth (FT)	Frequency	Percent
0	345	86.2
1	10	2.5
2	30	7.5
3	9	2.2
4	4	1.0
6	2	.5
Total	400	100.0

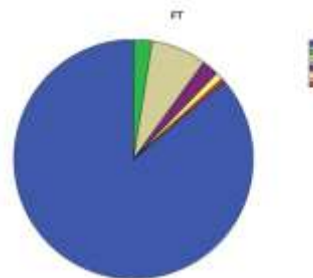


Figure: Pie chart of frequency distribution of filled teeth

Frequency distribution of the DMFT score: Frequency distribution of the DMFT scored showed that 140 participants have 0 DMFT. Only 2 participants scored highest score i.e. 14 DMFT with maximum number of decayed missing and filled teeth.

Table 4.9: Frequency distribution and percentage of the DMFT score.

DMFT	Frequency	Percent
0	140	35.0
1	37	9.2
2	96	24.0
3	59	14.8
4	19	4.8
5	21	5.2
6	20	5.0
7	2	.5
8	2	.5
9	2	.5
14	2	.5
Total	400	100.0

Departments against DMFT Tabulation: The analysis bespeaks about the different departments' students having DMFT, 0 to 14. Most of the students who participated in this study belong to MBBS, Arts and BBA. Majority have 0 DMFT and on the average 96 students have 2 DMFT (decayed, missing, filled teeth). Just 2 students were found having DMFT above the level of 7 to 14.

Interesting is that no one has loss of attachment more than 6-8mm. 0-3mm pocket depth is normal. It showed that more than 50% of participants showed healthy periodontium. Only 17.5% showed periodontal problems.

Table 4.12: Frequency distribution and Percentage of loss of attachment of periodontal tissue.

	Frequency	Percent
0-3mm	298	74.5
4-5mm	70	17.5
6-8mm	32	8.0
Total	400	100.0

Enamel Fluorosis Severity: 90% of the students have normal enamel; the number is 359 students out of 400, which is much greater amount to those that have normal enamel. Just 5% demonstrated questionable severity of enamel fluorosis that are 20 students. 4% participants showed mild and 1% percent showed very mild severity.

Table 4.13: Frequency distribution and percentage of Severity of Enamel fluorosis.

	Frequency	Percent
Normal	359	89.8
Questionable	20	5.0
Very Mild	4	1.0
Mild	17	4.2
Total	400	100.0

Dental Erosion Severity: 394 of the participating students have no sign of erosion that is 98% of the study. Just 4 have enamel lesion that is 1% of the contributors and 2 portrayed dental lesions that is 0.5% of the information providers. Pulp involvement is not shown by anyone.

Table 4.14: Frequency distribution and Percentage of Severity of Dental Erosion.

	Frequency	Percent
No sign of erosion	394	98.5
Enamel lesion	4	1.0
Dentinal Lesion	2	0.5
Total	400	100.0

Dental Trauma Status: 99% of the students showed no sign of injury that amount is 398 out of 400 and just 2 students 0.5% of the study illustrated treated injury. Out of 400 no one showed enamel fracture, dentine fracture, pulp involvement, teeth missing due to trauma or exclusion of teeth.

Table 4.15: frequency distribution and Percentage of students having history of Dental trauma.

	Frequency	Percent
No sign of injury	398	99.5
Treated injury Total	2	0.5
	400	100.0

Denture Status: Dentures are used to replace missing teeth. No missing teeth was present and no denture is found in upper or lower arch among the 400 students which is 100%.

Table 4.16: Frequency distribution and Percentage of students having upper denture.

	Frequency	Percent
No denture	400	100.0

Table 4.17: Frequency distribution and Percentage of students having lower denture.

	Frequency	Percent
No denture	400	100.0

Oral Mucosal lesions: All the participants' outcomes showed that no abnormal soft tissue anomaly or mucosal lesion is found in any participant.

Table 4.18: Frequency distribution and Percentage of students having oral mucosal lesion.

	Frequency	Percent
No abnormal condition	400	100.0

Intervention Urgency: 39% of the participants contributed to prompt treatment that are the 157 students. 35% favored to routine treatment or preventive treatment they needed. 58 were those where no treatment is recommended and 42 were those who need urgent treatment due to pain which were 10 percent of the overall study.

Table 4.19: Frequency distribution and Percentage of different Interventional emergencies.

	Frequency	Percent
No treatment recorded	58	14.5
Preventive or routine treatment needed	143	35.8
Prompt treatment	157	39.2
Immediate treatment needed due to pain	42	10.5
Total	400	100.0

Correlation Analyses

Testing by Using T-Statistic

Testing the DMFT Level in Males and Females: t-test is utilized to test the equality of mean among the Male and Female students keeping the DMFT level as tool of measurement. As the Null hypothesis in t-test was that both variables have equal level of DMFT while the alternative hypothesis was that both male and female have different level of DMFT.

T-test results incorporated that the t value is 0.310 which is statistically significant with p-value (0.757>0.05) to support to the rejection of alternate hypothesis and to accept the null hypothesis that was both male and female have equal level of DMFT. Hence male and females with increase REALD SCORE would show better oral hygiene status.

Testing the DMFT in the group who are visiting to Dentist or not: To test out that those students who visit dentist regularly and those who don't visit have equal DMFT index as null hypothesis. Where alternative hypothesis is contrary to null, that is both type of students has varying DMFT index.

Table 4.22: Calculation of DMFT index difference in males and females (t-statistic of DMFT by using gender factor as a factor).

	t-test for Equality of Means				
	t	df	Sig. (2-tailed)	95% Confidence Interval of the Difference	
				Lower	Upper
DMFT - Equal variances assumed	310	398	.757	-.347	.477

Our outcomes illustrated the t-value 1.401, the significance of the results showed that p-output (0.03<0.05), to the rejection of the null hypothesis which was that those students who visit dentist regularly and those who don't have equal DMFT index. While it strongly supported to accept our alternative hypothesis that the students who visit dentists and those who don't have different DMFT index. Students who visit dentist regularly showed less DMFT index showing better oral hygiene while those who do not visit dentist showed increase DMFT score hence having poor oral health status.

Table 4.23: Calculation of DMFT index difference between those who visit dental clinics and those who don't (t-statistics of DMFT index by using visits to dentist as factor).

	t-test for Equality of Means				
	t	Df	Sig. (2-tailed)	95% Confidence Interval of the Difference	
				Lower	Upper
DMFT index- Equal variances assumed	1.401	233	.030	-.870	5.148

Analysis of Variance (ANOVA)

ANOVA by using Different Age Groups: Analysis of variance technique is applied to test the DMFT level in different age groups. Under the null hypothesis that all age groups have equal level of DMFT as comparing to the alternative hypothesis that different age groups have varying number of DMFT.

Results showed for 400 students having different age groups that $F = 1.128$, our results incorporated the p-value 0.300 that is strongly evident to acceptance of null hypothesis. The results are interpretable, as the age groups of students concluding in this study have similar number of DMFT.

Table 4.25: Calculation of DMFT Index difference between different age groups (Depicting the ANOVA of DMFT Index).

DMFT Index	Sum of Squares	df	Mean Square	F	Sig.
Between age groups	26.610	5	5.322	1.218	.300
Within age groups	1721.668	394	4.370		
Total	1748.278	399			

DMFT testing by using different departments: Analysis of variance is implied on the data of 400 respondents to test that students of all departments have equal level of DMFT, while the alternative hypothesis is that number of DMFT varies as department varies.

Table 4.26: Calculation of DMFT score difference between participants from different departments (Illustrating ANOVA of DMFT with different departments).

DMFT Index	Sum of Squares	df	Mean Square	F	Sig.
Between age groups	71.977	7	10.282	2.405	.020
Within age groups	1676.300	392	4.276		
Total	1748.278	399			

The results poured out $F = 2.405$ and the p-value is 0.020. As the p-value is less than 0.05 which indicated that the rejection of null hypothesis is true, that all departments' students have not similar level of DMFT, as the department varies the level of DMFT varies.

DEDUCTION OF RESULTS

Our clinical results are derived from WHO oral health assessment form 2013. This form has been taken from the book "Oral Health Surveys: Basic methods, 5th edition". This book is a manual which guides the intrigue scholars to evaluate the current situation of oral health status of any given population and then plan necessary measurements for its improvement.

For our research, we have generated information from this form and then evaluated those factors in details that gave us the general idea about status of oral health of our selected group of participants. These factors are DMFT index (decayed, missing and filled teeth), no of visits to dentist, periodontal status of participant, assessment of enamel fluorosis severity, assessment of tooth erosion, history of dental trauma, presence or absence of dentures, presence or absence of soft tissue anomalies like lesions or mucosal patches and need for any emergency treatment.

t-statistic is one of the fundamental criteria to check mean of the one variable against a fixed value. It's also utilized for paired samples data which is categorized on a single variable but in before and after condition. Sometime, it is also practiced to test the mean of two variables with each other that they are fetched from the distributions having equal or impaired means. Here it is applied to test the mean of the male data and female data with DMFT index and then compare the results of males with females. It is also used to test DMFT index with means of those who visit dental clinics and those who don't.

the results showed that gender does not affect DMFT index. We have participants belonged to the same group of age 18-25years facing similar external environmental factors as all of them were students. This explained our similarities with the male and

female DMFT index. Although some contradictions were found in previous researches by Khan et al. and Holtzman et al. where females scored low with DMFT index exhibiting better oral hygiene as compared to males. There is need for further research in this area to find out what are these causative factors that drives the females to attain a better oral hygiene as compared to males.

When compared the results of t-test of those who visit dental clinics and those who don't it has been observed that students who visit dental clinics have different scores of DMFT index as compared to students who don't visit the clinics. Students with regular dental visits exhibit better oral health status.

The acronym ANOVA refers to analysis of variance and is a statistical procedure used to test the degree to which two or more groups vary in an experiment. A great deal of variance usually indicates that there was a significant finding from the research. Here it is used to test how people with difference in their age scored with DMFT index. Similarly, how people in different departments scored with DMFT index.

The results showed that age difference have no effect on DMFT index.

While on the other hand we have observed variation in DMFT index among students with difference in their departments. This variation was random and no pattern was observed. The cause for this can be self-awareness factor.

We can relate to this by assuming that health literacy alone cannot help improving the oral health status there are many other factors that play equal role in obtaining and ideal healthy smile.

Next, we have evaluated the percentage of dental anomalies recorder after clinical examination. Periodontal tissue is a fibrous tissue which attaches the gums with the teeth. Due to food impaction, plaque and calculus this tissue suffers trauma and loss its integrity which is clinically manifested as loss of attachment of gum tissue with increase in periodontal pocket depth. 0-3mm depth of periodontal pocket is considered as normal. On clinical examination, we have seen that 75% of the participants that takes up to 300 students showed normal depth of periodontal pocket exhibiting a healthy periodontium. 17.5% (70 students) showed compromised periodontal tissue with pocket depth of 4-5mm while 8% (32 students) showed sever periodontal issues with pocket depth of 6-8mm. The prognosis in these severe cases is most of the time null and patient suffers the tooth loss.

Outer surface of the tooth called enamel, it has been examined for every student very carefully for any signs of fluorosis. Initial stages of fluorosis appear as small white patches which progresses into dark brown lesions. These lesions destroy the enamel structure making it weak and brittle on probing. It was observed that 90% i.e. 359 students have normal enamel. Remaining 10 % showed mild to very mild fluorosis. The cause of this mild type of fluorosis is imbalanced water fluoridation system that gradually incorporates fluoride in the enamel structure.

Dental erosion is also related to enamel and in severe cases with dentine but the causative agent for this kind of anomaly is acidic food or fizzy drinks. It is generally seen in older patients as this anomaly needs long time span to develop. 98% of the participants (394 students) showed no enamel erosion. 4 students showed enamel erosion and 2 students showed erosion that progressed to the dentine as well.

History of dental trauma was found almost null. Only 2 students out of 400 reported dental traumas. No missing teeth was recorded so there was no need for replacement of the teeth with dentures. The percentage of students having upper denture and lower denture was found 0%. The soft tissue evaluation was done for any white, red, patchy, small, large, with or without border lesions. No such lesion was found among 400 students.

At the end, intervention urgency was recorded for every participant. It was seen that 14% participants (58 students) needed no treatment, 35.8% participants (143 students) needed routine treatment, 39.2% participants (157 students) needed prompt treatment and 10.5% participants (42 students) needed emergency treatment.

DISCUSSION

On the basis of gender, DMFT index was tested by using t-statistic. By using the null hypothesis that both gender have equal level of DMFT. T-statistic proved the null hypothesis that both genders have similar level of DMFT. Similar results were found with Haridas et al. research. There are other sociodemographic factors such as race, ethnicity, educational background of their families and income status which might have caused this contrasting result.

After that DMFT index was tested out for those who visit dentist regularly and those who don't; t-statistic poured out different results for those who appointed dentist regularly and who don't. These results were in accordance with the results of the research done by Holtzman et al. at university based clinic. It was seen that patients who missed their regular dental appointments had bad oral health status.

The department factor has significant effect on DMFT; all the departments showed a variable result with DMFT index. With these scores, there is a need to add more factors in order to get a clue what might be causing these variations. Lee et al. found out a relationship between self-efficacy, oral health status and dental neglect. It was seen that where other factors such as education and social background is important, self-efficacy is also a significant factor. Absence of self-efficacy would cause dental neglect which will lead towards developing bad oral health status.

These results showed that educated class of the society especially young people who are currently enrolled in different degree programs showed astonishingly good results. They exhibit low level of DMFT score with 90% participants scoring 02 with DMFT index i.e. number of decayed, missing and filled teeth. This proves their good oral hygiene status. Clinically it was observed that periodontal status of more than 50% participants was normal. Since almost all of them scored 02 with DMFT index they did not need any prosthesis so no upper or lower dentures were seen. They showed careful and positive attitudes towards self-preservation by showing 0 traumatic experiences, normal enamel structure and no gingival lesion.

With this study, it was proved that education plays a significant role in improving oral health status. Educated people show better understanding of their health-related requirements and showed keen interest towards learning and adapting habits that can help them stay healthy and attain a better quality of life. They can easily communicate with dental team and understand the necessity of following their required treatment protocols by showing up for appointments, regular intake of medicines and follow necessary precautions. Education taught them self-awareness and sense of responsibility. If a potential problem arises, they know how to seek help and resources in order to solve the issue. In the light of this research, further studies can be conducted to help spreading awareness and basic education related programs for uneducated people

Summary: The results summed up that REALD-30 score and the DMFT index have negative relationship while DAI and REALD-30 showed positive relationship. Both REALD-30 score and DMFT index tested out differently for those who visit dental clinics regularly and those who don't which shows that the dentist visits have a significant effect on the DMFT index and REALD-30 score. The department factor has a significant effect on DMFT index and REALD-30 score, as the department of students varies the level of DMFT and REALD-30 score differs. Gender discrimination and age variation did not show any effects on REALD-30 score and DMFT index.

The results of the study proved our hypothesis regarding oral health literacy and oral health status of the young generation of Pakistan enrolled in different degree programs. They had good understanding of their health-related requirements and showed keen interest towards learning and adapting habits that can help them stay healthy and attain a better quality of life. Education taught them self-awareness and sense of responsibility. If a potential problem arises, they would know how to seek help and resources in order to solve the issue. Their REALD-30 scores were

high and they were able to pronounce most of them correctly even when they did not know the meanings of few words. They also exhibit low level of DMFT score with 90% participants scoring 02 with DMFT index. This proves their good oral hygiene status. The present study focused on one group of people, further research can be done by expanding target population such as by selecting different age groups, different professions and different cities etc

Limitations of the study

1. Some variables such as caries and periodontal diseases take longer time to develop, participants with these values might be practicing bad oral hygiene for a long period of time and the exact factors responsible for these ailments cannot be assessed accurately in a cross sectional study.

2. Our study did not include data regarding oral health literacy status and social backgrounds of the guardians of the participants. This could help us giving a better understanding of the circumstances that leads to developing healthy habits among youngsters.

CONCLUSION

Keeping the strength point and limitations of this study in account following conclusion is drawn from the study,

1. People under different degree programs of education showed different behavior towards oral hygiene practices.
2. Those who visit the dental clinics regularly showed improved oral hygiene status.
3. Sociodemographic variables of the study i.e. age, gender and race did not affect the oral health status of the target population.

Basic education programs may provide a better platform in order to improve oral health literacy skills. These programs can be arranged by mutual collaboration of public officers of the government, social media, health care providers, educational departments, research facilities, policy makers and public.

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