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ORIGINAL ARTICLE

Sociodemographic Factors and Frequency of Dental Clinic Visits Associated with Oral Health Literacy in the Early Adolescence

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ABSTRACT

The aim of this study is to evaluate the associations between oral health literacy and selected sociodemographic factors and frequency of dental clinic visits in early adolescents.

Methodology: A cross sectional study has been conducted for the duration of six Months from April 2021 to September 2021. Students attending four 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. A total of 400 students belonging to different departments participated in the study that were clinically examined and interviewed. The students belonged to the different departments of the under- survey universities. To measure oral health literacy REALD-30 was used as a tool. The validity of the tool is checked by Cronbach's alpha (0.89). The variables were investigated using validated questionnaires: oral health literary (REALD-30), sociodemographic characteristics and frequency of dental visits.

Result: The results summed up that REALD-30 score came out differently for those who visit dental clinics regularly (p-value 0.029) and those who don't which show that the dentist visits have a significant effect on REALD-30 score. The department factor has a significant effect on REALD-30 score, as the department of students varies, the REALD-30 score differs. The F-statistics and the p-value are calculated and their significance is checked, that F=5.357 and the p-value is (.000<0.05), that strongly support that the department factor has a significant effect on the REALD-30 score. Gender discrimination and age variation did not show any effects on REALD-30 score (p-value 0.1)

Keywords: Dental Health, Oral Health Literacy, Public Health, Early adolescence

INTRODUCTION

Health literacy includes the ability to read and understand the written text, effectively communicate health-related information, navigate the healthcare system, to attain and maintain good health.(1) It can be defined as "the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions."(2)

Well-being is a fundamental human right and an overall social objective which is basic for the improvement of the quality of life of individuals.(3) According to the world health organization (1946) health is not merely an absence of disease rather it is characterized as a state of complete mental, physical and social wellbeing.(4) A good oral health is the condition of mouth liberated from any disease influencing the oral cavity and its encompassing structures. It has stayed as a basic aspect of a person's overall well-being and overall prosperity. Oral health is defined as a "standard of health of the oral and related tissues which empowers a person to eat, talk and socialize without active disease, inconvenience or shame and which adds to general prosperity".(5)

An individual's health literacy capacity is mediated by a number of factors that include education, gender, age and its adequacy is affected by language, behavior of individuals, characteristics of health-related settings and socio-culture factors. Health literacy has been found to be a strong predictor of an individuals' health, health behavior and health outcomes.(1)

The impact of sociodemographic characteristics and behavioral factors on health outcomes has been reported in various literatures.(6) In the 7th global conference by World Health Organization's (WHO's) on Health Promotion, health literacy has been enlisted as one of the five key tracks for promoting health.(7) Oral health literacy (OHL) has gained prominence in the dental literature in the last decade. Similar to health literacy, OHL has also proved to be critical in reducing oral health disparities and in promoting oral health. Individuals with limited OHL were reported to be at higher risk for oral diseases and the problems related to those diseases. Lower literacy has been linked to problems with the use of preventive services, delayed diagnoses of medical conditions, poor adherence to medical instructions, poor self-management skills and higher health care cost (8).

According to numerous studies, evident link exists between health literacy and health outcome i.e. these two variables are directly proportional to each other. Low level of health literacy leads to low health status or compromised health which usually leads towards worst health outcome (8, 9). In contrast people with high or moderate level of health literacy show good understanding of health information, the disease process and its associated treatment protocols and also show compliance towards treatment. As a result, they show better health and ultimately good health status of both general physical and oral health.(2) Their improved health creates a positive impact on their behaviors and attitudes, they show much better performance at their jobs and in their daily routine life which significantly improves their quality of life and living standards.(6) This positive outcome urges them to get more benefits from health system for themselves and also for their families and exhibit an overall better health status (10).

The purpose of current study is to find out understanding of health literacy among educated class of community. Better health literacy develops competencies of the individual to assimilate, comprehend and adapt to healthy practices and reduce risk behaviors. The level of communication between the provider and the patient both in the clinical setting, as well as community level, can be improved by early detection of patients with inadequate OHL. At the community level, it is important in order to appropriately design educational materials and community intervention programs that coincide with the literacy level of the target population. Willingness of community as whole and young students in particular is a key factor to promote oral health education. If a community is mobilized, huge amount of change can occur in terms of better health practices.

METHODOLOGY

A cross sectional study has been conducted for the duration of six Months from April 2021 to September 2021. Students attending

four 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. A total of 400 students belonging to different departments participated in the study that. The sampling technique was non-probability convenience sampling (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 was 385 students. To mitigate any error 400 students were used for sample. Inclusion criteria was followed strictly while choosing the candidates for this study i-e Both genders 18-25 years of age who were able to understand and communicate in English and were without any cognitive, visual and hearing impairment were included in the study. Those who refused to give consent and physically impaired were excluded from the study

The research was based entirely on quantitative methodology. REALD-30 test was used for assessment of oral health literacy. The scoring was done after examination of the collected data from the interviews. Then the comparison was done and relationship was determined between different variables of the study. The research protocol was approved by the Ethical Board of Punjab University, informed consent was taken from all the study participants. The interviews were conducted in a vacant comfortable room by dental experts. Each interview with the participant took about 5 min. Participants were instructed not to pronounce those words for which they did not know the correct pronunciation. That was done in order to check the possibility of subjects pronouncing the words correctly by chance. REALD-30 scores of all 400 participants were duly noted

After the collection and compilation of data, rudimentary tools were utilized for statistical analysis. According to the nature of the data; cross tabulation, descriptive analysis, frequency analysis and percentages were implied. Associations among the different variables were tested using robust bivariate correlation. To know about the equality of mean between the variables, t-test was used while the analysis of variance was also entrenched to test the effect of various departments on REALD score. ANOVA was applied to analyze the output of students regarding the REALD-30 by different age groups.

Data Analysis: Frequency Distribution Results

Frequency Distribution Of Participants Of Various Departments: Sample from various departments of four selected universities has been taken. 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.

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.

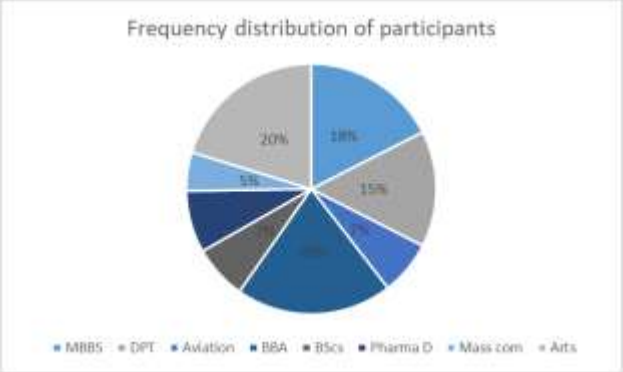


Figure 4.3: Pie chart of frequency distribution of the participants from various departments

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

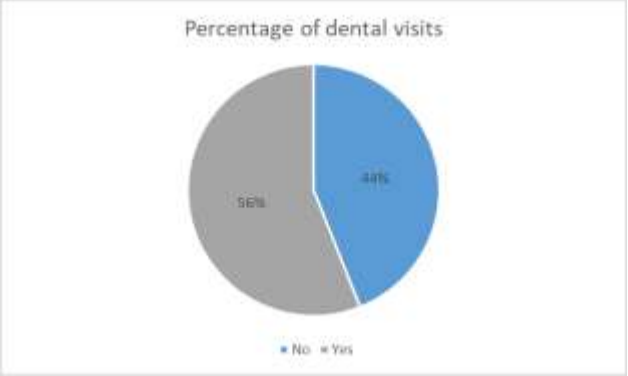


Figure 4.4: Pie chart of frequency distribution of visits at dental clinic

Frequency Distribution Of Reald Score: Frequency distribution of REALD-30 score shows that only 6 participants were able to get highest score 29. Only 2 participants get the lowest score 11. 48 participants scored 22 while the rest are distributed variously between score 11-29.

Table 4.5: Frequency distribution and percentage of REALD score.

REALD Score	Frequency	Percent
11	2	.5
13	2	.5
14	14	3.5
15	14	3.5
16	22	5.5
17	17	4.2
18	8	2.0
19	19	4.8
20	13	3.2
21	32	8.0
22	48	12.0
23	18	4.5
24	41	10.2
25	25	6.2
26	45	11.2
27	43	10.8
28	31	7.8
29	6	1.5
Total	400	100.0

RESULTS

Our results are based on the score of READ-30 words list test. READ-30 is most widely used tool for assessment of oral health literacy. (11)

The results from our study shows that both males and females scored similar type of scores with READ-30 words test, hence gender does not affect READ-30 words test.

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 READ-30 words list as compared to students who don't visit the clinics. Students with regular dental visits showed more familiarity with READ-30 words, they were able to pronounce almost all the words.

The results of Anova showed that age difference have no effect on READ-30 words test. While on the other hand we have observed variation in READ-30 score among students with difference in their departments.

READ-30 with Dentist Visit: t-test was applied to test out that whether the dentist visit effect the READ-30 score or not. The t-statistic value and the p- value are measured, that poured out (t=2.203) with p-value (0.029<0.05). Results provide roots to conclusion that those who visit dentists regularly have high READ SCORE; they were able to pronounce more words from READ-30 words list while those who neglect dental visits have low READ SCORE.

Table 4.24: Calculation of READ-30 score difference between those who visit dentist and those who don't (t-statistics of READ-30 score 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
READ-30 score - Equal variances assumed	2.203	223	.029	-.686	12.354

ANOVA of READ-30 by using the age group as a differencing factor: To analyze the output of students regarding the READ-30 by different age groups, the ANOVA is applied. To test either the age factor is involved and contributing to the score or it has no effect on it. The F statistic resultant to the value (F=1.86) and the p-value is (0.100>0.05), incorporating to acceptance of null hypothesis that the age factor has no significant effect on the READ-30 score.

Table 4.27: Calculating READ-30 score difference between different age groups (Showing the ANOVA on READ-30 and various age groups).

DMFT Index	Sum of Squares	df	Mean Square	F	Sig.
Between age groups	164.020	5	32.804	1.860	.100
Within age groups	6949.340	394	17.638		
Total	7113.360	399			

READ-30 Score analyzing by using various departments as a differencing factor: The data was collected from different departments. To, analyze the effect of department on the score, the analysis of variance techniques us implied.

The F- statistics and the p-value are calculated and their significance is checked, that F=5.357 and the p-value is (.000<0.05), that strongly support that the department factor has a significant effect on the READ-30 score.

Table 4.28: Calculation of READ-30 score difference between participants from different departments (Showing the ANOVA of READ-30 by using different departments).

DMFT Index	Sum of Squares	df	Mean Square	F	Sig.
Between age groups	621.058	7	88.723	5.357	.000
Within age groups	6492.302	394	16.562		
Total	7113.360	399			

Estimation of Mean score of REALD 30

Table 4.29: Mean score of READ-30-word list test.

	N	Minimum	Maximum	Mean	Std. deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. error	Statistic	Std. error
READ score	400	11	29	22.46	4.222	-.534	.122	-.683	.243

The results of READ 30-word list from all 400 participants were analyzed and the average score was calculated. The average score came out to be 22.46. We can conclude that on average, the young adults of Pakistani population would answer correctly for 22 words out of 30 words list.

DISCUSSION

Oral health literacy plays a significant role in attaining a better oral health status. The impact of sociodemographic characteristics and behavioral factors on health outcomes has been reported in various literatures.(2, 6, 8, 9) In the 7th global conference by World Health Organization's (WHO's) on Health Promotion, health literacy has been enlisted as one of the five key tracks for promoting health (7). Since then, many studies have been conducted to find out more about this correlation. But a very little literature is available regarding oral health literacy specially in Pakistan. Ramandeep et al. in his study in a rural district of India found out that the illiterate people who belonged to the low-income families clearly lack understanding of oral health literature, therefore their oral health status was found to be very poor proposing that education might have a significant role in oral health literacy (12). In our study we hypothesized that educated people would show high level of oral health literacy therefore they would exhibit better oral health status.

In Haridas et al. research age of the patients attending the hospital and READ-30 showed a negative correlation i.e. young people exhibit better oral health literacy skills(13) while in Jones et al. article age factor showed a positive correlation with people above 40 years of age showing high READ score (8). In our study analysis of variance (ANOVA) outcome showed that different age groups have similar READ-30 score. Which is similar to the result of Studies in different countries that analyzed the different levels of oral health literacy between gender and reported no statistically significant difference (2, 9).

In the light of these results we can say that education is the key factor causing the variation in the results among above mentioned studies. All of our participants were students enrolled in universities, their literacy skills were almost same causing them to have similar health literacy level thus they had similar READ-30 score. The level of oral health literacy was reported to be higher with a higher level of education which has confirmed the results of other studies (14). Still a detailed study focused on the different age groups of educated people and its role in health literacy can be planned to give us a clearer picture.

By testing the READ-30 score against various departments, outcomes poured out that the department factor has a significant effect on the READ-30 score. 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 (15). 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 (8).

These results showed that educated class of the society especially young people who are currently enrolled in different degree programs showed astonishingly good results. Their REALD-30 scores were high which signifies their high level of literacy (16). The level of oral health literacy has a statistically significant relationship with dentist visits. Previous studies showed that individuals with lower literacy skills had lower oral hygiene and brushed less (14).

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 (17).

The results of this study are important for indicating associations that should be explored in longitudinal studies and offer information that can be useful to the establishment of public policies

Strength of the study: This is a cross sectional study which was designed to find out effects of different sociodemographic variables and role of education with oral health literacy. This study is the pioneer research in this region to find out relationship among the given variables.

Limitations of the study

1. READ-30 words list only satisfied reading criteria, we could not assess whether the participants know the meaning of the words as well or not.

CONCLUSION

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

1. People with basic literacy skills secured high scores with READ-30 words list test.
2. High READ-30 score is associated with high level of oral health literacy.
3. People under different degree programs of education showed different behavior towards oral health literacy and oral hygiene practices.
4. Those who visit the dental clinics regularly showed improved oral hygiene status.
5. Sociodemographic variables of the study i.e. age, gender and race did not affect the oral health literacy 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.

Annexures

READ-30: Interview/ READ-30 Start Time: Study ID Number

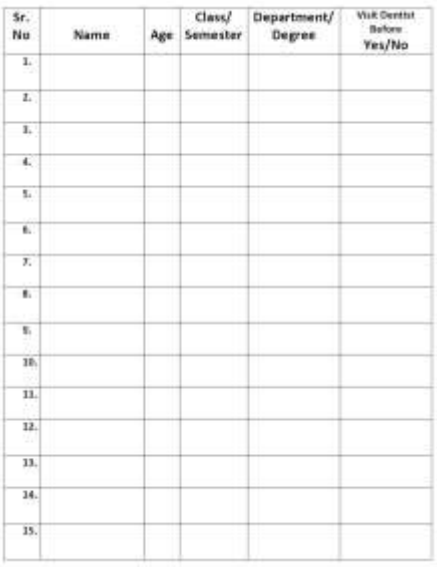
Following will be read to the participant:

Now, I am going to show you cards with one word on every card. I would like you to read the word out loud. If you do not know the answer, please say, “don’t know.” Do not guess.

Dental REALM end time:

Score:

1. Sugar	2. Smoking	3. Floss
4. Brush	5. Pulp	6. Fluoride
7. Braces	8. Genetics	9. Restoration
10. Bruxism	11. Abscess	12. Extraction
13. Denture	14. Enamel	15. Dentition
16. Plaque	17. Gingiva	18. Malocclusion
19. Incipient	20. Caries	21. Periodontal
22. Sealant	23. Hypoplasia	24. Halitosis
25. Analgesia	26. Cellulitis	27. Fistula
28. Temporomandibular	29. Hyperemia	30. Apicoectomy



Sr. No	Name	Age	Class/ Semester	Department/ Degree	Visit Dentist Before Yes/No
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					

Figure 2: READ- 30 Rapid Assessment of Adult Literacy in Dentistry Proforma for sociodemographic variables & dental visit

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