

# Measuring Oral health literacy in dental patients: Contribution towards preventive dentistry in Pakistan



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**ABSTRACT:** Oral health literacy (OHL) is essential for identification of ways to access health related information and its application to control over the healthy life. Oral health literacy covers knowledge and reading skills, understanding/comprehension and decision-making skills. This study aimed to measure the OHL level of patients attending private dental hospital.

**METHODOLOGY:** Cross-sectional descriptive study design was used. After taking informed consent the validated modified structured Functional Oral Health Literacy questionnaire (OHL-L) was administered consisted of demography, oral health knowledge and oral health literacy items.

**RESULTS:** A total of 285 participants (131 male and 154 female) included in the study. The mean age of participants was 38.2 years (standard deviation [SD] = 1.3). Overall, 32(11.2%) had inadequate, 164(57.5%) had marginal and 89(31.2%) had adequate oral health literacy. There was statistically significant difference among OHL-Levels with age groups ( $p=.001$ ) and educational years ( $p=.002$ ).

**CONCLUSION:** The study concluded that marginal oral health literacy pertaining in the adult patients visiting private dental hospital. There is a need to look at the health literacy in the context of large systems-social systems, cultural systems, education systems and public health systems. Further investigation is needed to develop appropriate intervention strategies to improve oral health literacy for better oral health outcomes. The effectiveness of the health program lies in the fact that people need to understand and interpret it correctly to lead a good quality of life.

**KEY WORDS:** Mesh words: Oral Health Literacy, Functional health Literacy, Health Education, Preventive Dentistry, Oral Care.

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## INTRODUCTION

Oral health literacy (OHL) is widely accepted as an individual intangible resource to invest in individual empowerment.<sup>1</sup> OHL is defined as "the degree to which individuals have the capacity to obtain, process and understand basic oral health information and services needed to make appropriate health decisions".<sup>2</sup> Thus, OHL is essential for identification of ways to access health related information and its application to control over the healthy life. Therefore,

oral health literacy is a pathway to reduce oral health disparities in population. Oral health literacy covers knowledge and reading skills, understanding/comprehension and decision-making skills.<sup>3</sup>

The inclination of health services from curative to preventive aspects raises the importance of oral health literacy. Globally, many studies linked low OHL of the people with an overall inadequate oral health status, reduced dental appointment keeping behaviour, low understanding medicine leaflets and increased hospital admissions.<sup>4-6</sup> Understanding level of OHL is essential for bridging the communication gap between patients and dentists.<sup>3</sup> In Pakistan, there is limited literature that identifying barriers in local population. However, deficient communication, perceived health, general literacy level, language barriers and compromised general health status found to be major barriers in accessing other medical care.<sup>7</sup> There is considerably high burden of oral diseases that are preventable and OHL

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has been associated with reduced incidence of oral diseases.<sup>5,8,9</sup> Therefore, designing oral health education material according to oral health literacy level of population could help in accessing needed health information and elimination of the barriers. In our setting OHL documentation was found scarce and not measured. This study aimed to measure the OHL level of patients attending private dental hospital and it would facilitate the step towards preventive dentistry in Pakistan.

## METHODOLOGY

Cross-sectional descriptive study design was used. The prevalence of 44.3% was taken as reference adequate health literacy among adults with 5% margin of error, 95% confidence interval and the calculated sample size was  $n=285$ .<sup>3</sup> Medical record number was used for simple random sampling. Every alternate patient with even number was recruited in the study. Patients' age 18 and above were included in the study. Patients on follow up visits and with severe dental pain or bleeding were excluded from the study. After taking informed consent the validated modified structured Functional Oral Health Literacy questionnaire (OHL-L)<sup>3</sup> was administered, consisted of 20 items. The questionnaire consists of demography, oral health knowledge and items to investigate individual's:

- Capacity to access; reading and listening (e.g. questions about information sources, preventive strategies, history forms, appointment card)
- Capacity to process or understand; numeracy skills, understanding of treatment and alternatives (e.g. questions about prescription after extraction, pre and post instructions by dentists)
- Capacity for decision making skills (e.g. questions about different clinical scenarios such as regarding caries, periodontal disease and oral cancer)

Data collected by principal investigator and two trained house surgeons. Inter-interviewer reliability contained by piloting the questionnaire among 20 patients. The "correct" answers were labeled as 1 and "incorrect" as 0. OHL-L divided in three levels. Cut off values were 0-9 for inadequate OHL, 10-15 marginal OHL and 16-20 for adequate OHL.<sup>3,10</sup> Primary objective was to measure oral health literacy and categorize the patients in OHL-levels. Secondary objective was to assess the difference in OHL-L among various age groups, gender, education and profession.

SPSS version 20.0 was used for statistical analysis. Cronbach's alpha was used for questionnaire reliability assessment. Frequency, percentages (gender, age, education and profession), mean and standard deviation (age) were employed as descriptive statistics. Chi square test was used

for calculating statistically significance difference of OHL-L among demographic variables.

## RESULTS

### Participants:

A total of 285 participants (131 male and 154 female) were selected in the study. The mean age of participants was 38.2 (standard deviation [SD]= 1.3) ranging from 18 to 69 years. The characteristics of study sample are shown in table 1.

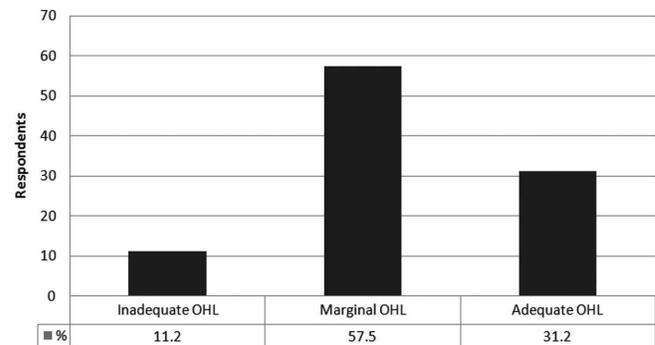


Figure 1: Percentage of participants in OHL-Level (OHL-Oral Health Literacy)

### Descriptive findings:

Overall, 32(11.2%) had inadequate, 164(57.5%) had marginal and 89(31.2%) had adequate oral health literacy (Figure 1). There was statistically significant difference among OHL-L with age groups ( $p=.001$ ) and educational years ( $p=.002$ ). However, no statistically significant difference between male and female oral health literacy ( $p=.40$ ) was

Variables	n*	%	Inadequate OHL n	Margin OHL n	Adequate OHL n	p-value**
<b>Gender</b>						
Male	131	46	17	70	44	0.40
Female	154	54	15	94	45	
Total	285	100	32	164	89	
<b>Age Groups</b>						
18-29	88	30.9	14	60	14	0.001
30-49	140	49.1	9	76	55	
50-69	57	20.0	9	28	20	
Total	285	100	32	164	89	
<b>Educational Years</b>						
Primary-Intermediate	115	40.3	15	64	36	0.02
Bachelor	117	41.0	14	71	32	
Master	24	8.4	2	14	8	
More	5	1.7	0	2	3	
Not Mentioned	24	8.4	6	10	8	
Total	285	100	37	161	87	
<b>Occupation</b>						
No job	40	14.0	4	24	12	0.82
Housewife	86	30.1	6	51	29	
Medical	14	5	2	9	3	
Education	18	6.3	1	9	10	
Other(Business, Engineer etc)	104	36.4	21	58	30	
Student	23	8.0	5	12	6	
Total	285	100	32	163	90	

\*n=sample size

\*\*Obtained from Pearson's Chi-Square test

Table 1: Frequency distribution of respondents among OHL-Level with respect to demographic variables

found. Similarly, no difference among professions ( $p=.82$ ) and OHL-L was observed (Table 1).

Responses of each item of functional oral health literacy questionnaire were tabulated in Table 2. The major source of oral health information was found to be television 101(35.4%). Respondents found difficulty in understanding dental education materials and magazines 166(59.3%).

OHL-L (n=285)	Yes		No	
	n	%	n	%
<b>ACCESS: READING ,LISTENING</b>				
Ability to read English	216	75.8	69	24.2
Ability to answer History Forms	150	52.6	135	47.4
Ability to read Dental Magazines and Educational Material	169	59.3	116	40.7
Dental Related Information Source:				
Newspaper	58	20.4	227	79.6
Television	101	35.4	184	64.6
Radio	21	7.4	264	92.6
Internet	55	19.3	230	80.7
Dentist	98	34.4	187	65.6
Family, Friends, Relatives	166	58.2	119	41.8
<b>UNDERSTAND: NUMERACY, COMPREHENSION</b>				
	Correct		Incorrect	
Ability to understand Dental Magazines and Educational Material	169	59.3	116	40.7
Ability to understand Instructions given by Dentist	233	81.8	52	18.2
Ability to understand Appointment Card	212	74.4	73	25.6
Ability to understand Prescription Card	184	64.6	101	35.4
Ability to understand 1+1+1,500 mg,TDS	171	60.0	114	40.0
Medication continuous even after symptoms subsides	177	62.1	108	37.9
Ability to understand the current dental treatment procedure	48	83.2	237	16.8
Radiograph is always necessary	241	84.6	44	15.4
Single and multiple visits can be required for any dental procedure	245	86.0	40	14.0
<b>DECISION-MAKING</b>				
Ability to choose among the treatment alternatives	203	71.2	82	28.8
Correct decision if little bleeding occurs after brushing or flossing?	143	50.2	142	49.8
Correct decision if pain and swelling occur in month?	170	59.6	115	40.3
Correct decision to remove stains?	161	56.5	124	43.5
Blood pressure and Sugar level should be check prior dental treatment?	232	81.4	53	18.6
Removal of gauze at right time after extraction	194	68.1	91	30.2
Eating of hot food at right time after extraction	91	30.2	194	68.1

\*Functional Oral Health Literacy Questionnaire (20 Items)

**Table 2:** Responses of each item  
Functional Oral health literacy (OHL)-L\*

Majority of respondents found difficulty in understanding instructions given by dentist 233(81.8%). Similarly, respondents found difficulty in correct decision if they are having bleeding gums while brushing and flossing 143(50.2%).

#### *Reliability:*

The Cronbach's alpha coefficient was found to be 0.828 that interpret as the good internal consistency reliability.

#### *Validity:*

Comparison was made among different variables. Previously, it was hypothesized that questionnaire discriminated well among the study subgroups that differed in education. Majority of participants lied in adequate OHL -L had bachelor degree (37%).

## DISCUSSION

The results specify that more than half (57.5%) of the

study participants had marginal health literacy. The reason could be the study was conducted in urban private hospital with better general literacy level. Similar to other studies, people have low education level scored low in OHL-scales.(11, 12) Likewise, other study conducted by Rai S. in the private dental setting found more than half(67%) respondents lied in medium OHL-level.(10) Contrary to this, Naghibi S. reported 16.2 % respondents had marginal OHL and 39.2% had inadequate OHL in general population.(3)Hence, in dental hospitals patients already receiving health information and getting treatments could impact on the OHL scores. Nevertheless, to reduce selection bias and over estimation of the OHL scores, present study conducted on the randomly selected patients who attended dental hospital for the first time.

Findings of the present study showed the significant association of age with OHL. These findings are in accordance with Rai S. and D'Curz.<sup>10,13</sup> However, Naghibi S and Tam A found no association of age with OHL.<sup>3,14</sup> Contrary to his finding other study by Holtzman JS et. al found that OHL decreases with increasing age.<sup>4</sup> In present study almost half of the respondents (49.1%) belonged to age group 30-49 years and majority of respondents (30%) were housewives. This may also interpreted as they are dependent on their spouse or children for decision making. Results also showed majority of the respondents have been associated with any profession and thus, could increase their information sources. However, it is widely accepted that there is no association of gender with OHL.<sup>3,4,10</sup>

In literature majority of the researchers used oral health literacy instruments in dental settings to measure the level of OHL in patients. Most widely used are Rapid estimate of adult literacy-dentistry (REALD).<sup>11,15</sup> Adult Health literacy instrument for Dentistry (AHLID)<sup>16</sup> and Health literacy skills instrument (HLSI)<sup>17</sup>etc. In present study functional oral health literacy instrument have been used. To the best of our knowledge it for the first time that in any dental hospital OHL-Level of the patients have been measured. OHL-L has additionally decision making component contrary to other instruments which only include reading and understanding components of the health literacy.

In developing countries emphasize have not been given on the oral-health related information, lack of sensitization of dentists about oral health literacy needs, complicated dental magazines and materials.<sup>18</sup> Although more than half of respondents had ability to read English and dental magazines/materials in present study, however, majority of them seek help to fill history forms and understanding the actual meaning of dental magazines/materials. Majority of the participants had accessed information from family, friends, relatives, television and dentists consistent with

the findings from study.<sup>10</sup> Social interactions have the powerful impact on the individual in Pakistan.<sup>19</sup> Dentists as the direct source of information should avoid medical jargon and clearly understand the level of oral health literacy of their patients to reduce the communication barrier.<sup>20,21</sup> This could be interpreted as even better OHL, people lacking in decision making abilities that may hinder in better oral health status. Flynn p et. al in their study assessed improved communication between dental hygienists and patients after assessing their OHL-Level.<sup>22</sup> Results showed many of the respondents facing difficulty in understanding appointment cards, prescription cards and post treatment instructions. They compromised in decision making for opting treatments. These findings are consistent with Rai S and Baskaradoss J.<sup>10,23</sup> Tam A et. al explored the association of OHL with patient's dental knowledge, understanding and interpretation of oral health information provided through dental written materials. They recommend to incorporating the measured oral health literacy approach to increase the ability of understanding and decision making of the patients.<sup>14</sup>

In several dental researches it has been evidently proved that OHL associated with better dental appointment keeping behavior,<sup>6,23</sup> people with dysfunctional ability to socially interact and self expression (alexithymia),<sup>24</sup> better children oral health status,<sup>9</sup> regular follow up care,<sup>15</sup> low prevalence of caries and periodontal disease.<sup>5</sup> Therefore, OHL considered as the way to access and understand oral health information, interpret the information correctly and implicate in correct decision making.

The current study conducted in urban private hospital setting thus, the external generalizability is questionable. Hence, the future research would be planned to measure OHL in general population of the same area and different areas of the city to determine more precise oral health literacy level of the population. Moreover, patients visiting hospitals were not screened if they visited any private dental clinic prior; this could over estimate the results.

### CONCLUSION

The study found marginal oral health literacy in adult population visiting private dental hospital. There is a need to look at the oral health literacy in the context of large systems-social systems, cultural systems, education systems and public health systems. Further investigation is needed to develop appropriate intervention strategies to improve oral health literacy for better oral health outcomes. The effectiveness of the program lies in the fact that people need to understand and interpret it correctly to lead a good quality of life.

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### DISCLAIMER

The article has not been presented in a conference or published in any abstract book.

### CONFLICT OF INTEREST

None to declare.

### FUNDING DISCLOSURE

None to declare.

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