

**ORIGINAL ARTICLE****ORAL HEALTH LITERACY AMONG CLIENTS VISITING A RURAL DENTAL COLLEGE IN NORTH INDIA-A CROSS-SECTIONAL STUDY****Gambhir Ramandeep<sup>1</sup>, Singh Arshdeep<sup>2</sup>, Kapoor Vinod<sup>2</sup>, Pannu Parampreet<sup>3</sup>****ABSTRACT**

**BACKGROUND:** Limited health literacy among adults is one of the many barriers to better oral health outcomes. It is not uncommon to find people who consider understanding oral health information a challenge. Therefore, the present study assessed oral health literacy among clients visiting Gian Sagar Dental College and Hospital, Rajpura.

**MATERIALS AND METHODS:** A cross-sectional study was conducted on 450 participants who visited the Out Patient Department (OPD) of Gian Sagar Dental College and Hospital for a period of two months (Nov-Dec, 2013). A questionnaire was given to each of the participants. Oral health literacy was graded on a 12-point Likert scale based on the total score. Oral Health Literacy of the participants was assessed as low, medium and high on the basis of responses. Statistical analysis was done using SPSS-15 statistical package. ANOVA and Student t-test were used to do comparisons between groups.

**RESULTS:** Low oral health literacy scores were reported in 60.2% (271) participants. More than 60% of the study participants had knowledge about dental terms such as 'dental caries,' and 'oral cancer.' Only 22% of the graduates had a high literacy score. Mean oral health literacy score according to educational qualification was statistically significant ( $p < 0.05$ ), whereas there was no significant difference in terms of age and gender ( $p > 0.05$ ).

**CONCLUSION:** The majority of the participants had low literacy scores. There is a need to address these problems especially among rural population by health care providers and the government.

**KEYWORDS:** Oral health, literacy, clients, knowledge, education

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**INTRODUCTION**

Health literacy is defined as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate decisions" (1). Low health literacy is often described as 'The Silent Health Epidemic' in which there is a limited capacity to obtain, comprehend and act on health information (2). The same definition used in oral context is called 'Oral Health Literacy (OHL)'. Sometimes, dental care is not considered within

the boundaries of a healthy lifestyle and its importance is often neglected. Healthy teeth can last for a lifetime if proper preventive care is taken regularly.

Oral health literacy is interplay between culture and society, the health system, education system, and oral health outcomes indicating that it may be a new determinant of oral health and should be considered more intensively in oral health research (3, 4). Knowledge of oral health is considered to be a prerequisite for health related behavior. It has been shown that rural Indian

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community has low level of oral health awareness and practice as compared to urban community. Sometimes, people possessing adequate literacy skills may also find understanding oral health information challenging.

Current evidence suggests that OHL is associated with various factors like education level, ethnic group, utilization of dental services, knowledge regarding oral health and oral self-care behavior (6-8). People with low health literacy levels may find it difficult to comprehend and use information in written materials containing new ideas and unfamiliar terminology, whereas people who possess good levels of health literacy more easily comply with the self-care instructions, precautions, medications and regular follow ups (9).

In the past few years, awareness regarding the importance of literacy in dental profession has grown and efforts have been concentrated towards adapting the concept of health literacy to practice of dentistry and for research purposes (10, 11). Dental professionals can render great help to clients with low oral or general health literacy, thus empowering them to active role towards oral health care. Therefore, a study is needed to determine oral health literacy levels among dental clients so that they can make good decisions about oral health. Therefore, the present study was conducted to assess the oral health literacy among clients seeking dental care in Gian Sagar Dental College and Hospital, Rajpura.

## MATERIALS AND METHODS

**Study setting:** A cross-sectional study was conducted on the clients visiting the Out-Patient Department of Gian Sagar Dental College and Hospital, Rajpura. The study was conducted from November-December 2013. There is a single OPD room inside the Department of Oral Medicine and Radiology where all the clients report after making the OPD card from the reception desk. The average waiting time for the clients to get examined is 10-15 minutes depending upon the number of clients who reporting. This practice is similar with the practice in every dental teaching institution in India. A detailed medical and dental history of the clients is taken on a structured case-history sheet, and a thorough oral clinical examination is performed. The clients are then

referred to the respective departments according to their treatment need, and necessary the required investigations are conducted.

**Study population:** The study population consisted of new clients who were visiting Gian Sagar Dental College and Hospital to obtain some kind of dental treatment or routine dental check-up. Clients who made repeated visits were not included in the study. Participants were chosen for inclusion in the study using following criteria: minimum 18 years of age, without any cognitive, hearing or vision impairment, and not having any difficulty in understanding the questionnaire given by the principal investigator.

**Study sample and sampling technique:** A cross-sectional study using a 12-item structured questionnaire was conducted to assess oral health literacy in a sample of patients (n=500) seeking dental care at the OPD of the dental college. A consecutive sampling technique was adopted in the present study. The sample size was estimated by the use of a sample size calculation for estimating a single proportion ( $\alpha = 0.05$ , the prevalence of adequate oral health literacy). Only new clients who visited the dental college during the study period and agreed to participate were included in the study till the estimated sample size was reached. A total of 450 clients participated in the current study. The response rate was 90%. A pilot survey was conducted on 10% of the study population to assess the feasibility of the study.

**Measurement and instrument:** Measurement was done on the basis of operational definition which defines 'Oral Health Literacy' as: "Oral health literacy is 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."(12). The instrument for the study was a self-made questionnaire written in English language. Each participant was handed over a copy of this questionnaire. The questionnaire was pre-tested for validity and reliability and modified accordingly. The reliability of the questionnaire was good (0.85). The questionnaire included two sections- Section A was a General section' which contains socio-demographic details of the participants. Section B was 'Oral Literacy' section which consisted of 12 close ended questions assessing the degree of oral health literacy. The terms used to collect oral health literacy were

collected from a sample of oral health pamphlets and brochures and commonly used terms in dental settings. The terms used represented a wide range of dental topics including dental diseases, preventive dental prospects, various oral hygiene aids and name of multi-nationwide charitable dental cleft surgery campaign known as 'Smile Train.'

**Data collection procedure:** Copies of the questionnaire were distributed to the clients while they were waiting in the out-patient department. One of the investigators was present with the participants while the questionnaire was being filled to make sure that the participants were able to understand the questions and respond accordingly. Oral health literacy score was calculated on the basis of each participant's response. Each positive response was scored as '1' and negative as '0'. The total score was a simple sum of responses ranging from 1 to 12, the answers of which were graded on a 12 point Likert Scale. Categorization of oral health literacy scores was done at three levels- Low (0-4), Medium (5-8) and High (9-12).

**Statistical analysis:** The present study employed descriptive statistical analysis. Numbers and percentages were used to compute results on categorical measurements. Results were statistically analyzed using SPSS package version 15.0 (SPSS, Chicago, IL, USA). Analysis of Variance (ANOVA) was employed to find the significance of study parameters between three or more groups of participants and Student's t-test was used to find significance between two groups: significance was set at <0.05.

**Ethics and informed consent:** Ethical clearance was obtained from the Institutional Ethics Committee. The clients were fully informed about the study and written informed consent was obtained. One of the investigators was always present with every participant while he/she was filling the questionnaire and posed indirect

questions regarding the contents. This was done to reduce 'social desirability bias' as far as possible as indirect questioning provides a superior representation of respondents' underlying true scores (13). The respondents were also assured that their unwillingness to participate in the study would not affect their treatment.

## RESULTS

The present study was conducted among 450 clients who visited Gian Sagar Dental College and Hospital for routine dental check-up and necessary treatment.

**Socio-demographic characteristics:** The ages of the study participants ranged from 20-25 years with the majority belonging to 26-35 years (50.4%). There were 241 males (53.6%) and 209 females (46.4%) in the study population (Table 1). Educational status of the study participants revealed that 16.6% of them were educated till high school and the majority (37.4%) completed graduation. The postgraduate participants were only 16.3%, and the rest had completed 12<sup>th</sup> standard or equivalent qualification (Figure 1).

**Table 1:** Distribution of study participants on the basis of age and gender

Age-group (in years)	No	%
20-25	48	19.2
26-35	227	50.4
36-45	135	30
46-55	26	5.7
56 and above	16	3.5
<b>Total</b>	<b>450</b>	<b>100</b>
<b>Gender</b>		
Male	241	53.6
Female	209	46.4
<b>Total</b>	<b>450</b>	<b>100</b>

P<0.05 (Statistically significant)

Tests used-Student-t test, ANOVA

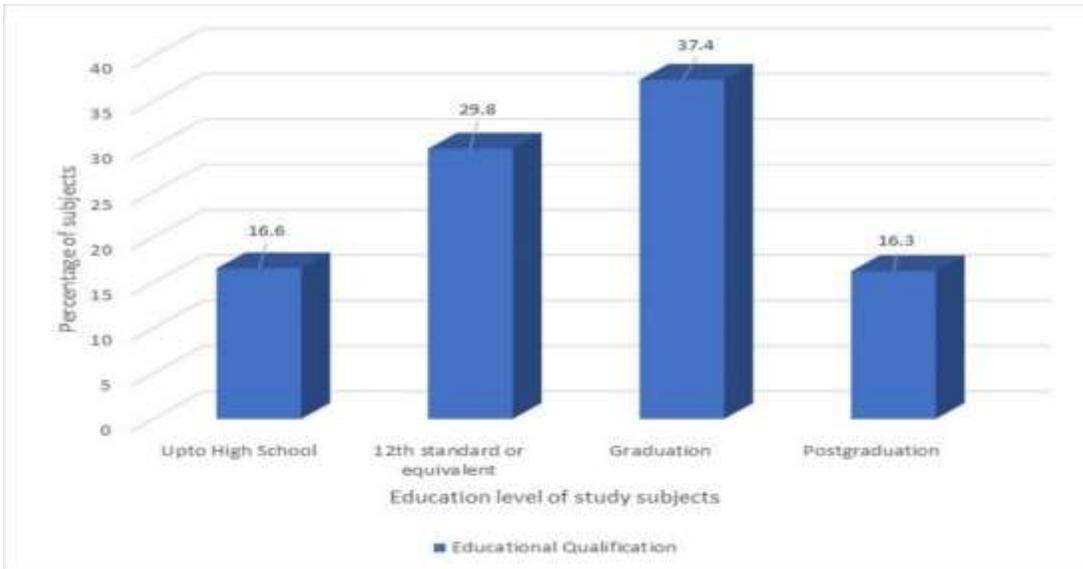


Figure 1: Educational qualification of study subjects

**Knowledge about dental terminology:** Figure 2 depicts the proportion of participants who were knowledgeable about various dental terms used in the questionnaire. More than 60% of the study participants were knowledgeable about dental terms such as ‘dental caries,’ and ‘oral cancer.’

More than 40% of them possessed knowledge about other dental terms like ‘dental prosthesis,’ ‘oral mouthwash,’ ‘gingivitis,’ and ‘dental plaque.’ Very few participants (<30%) were knowledgeable about ‘Smile Train’ and ‘dental abrasion.’

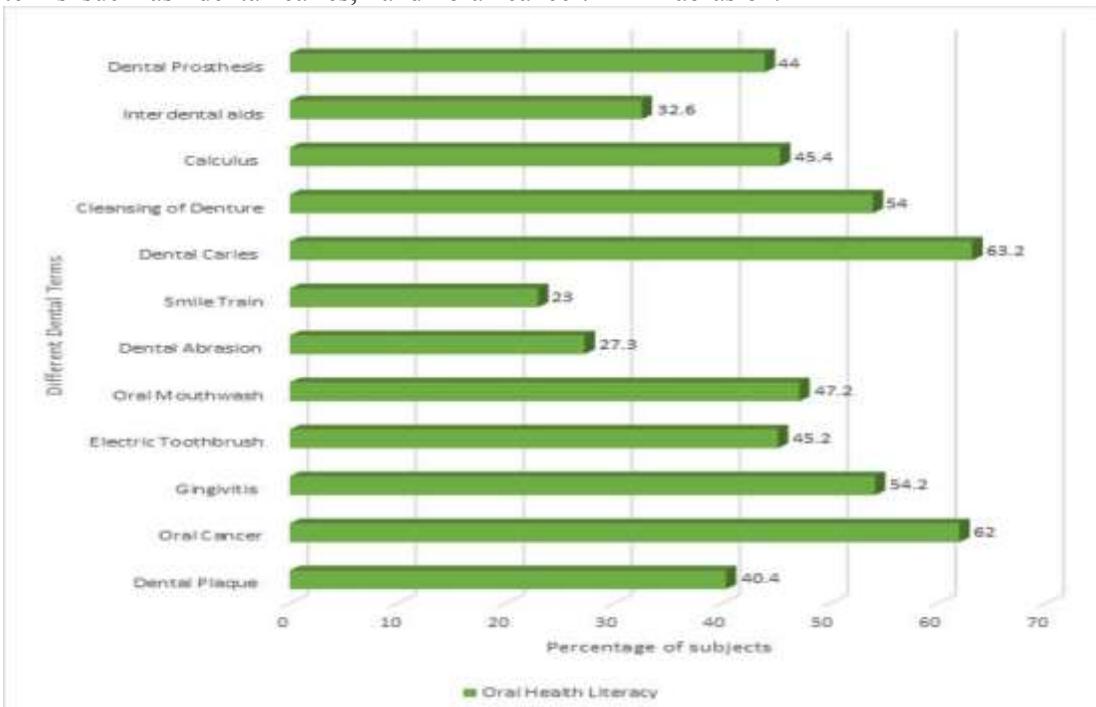


Figure 2: Knowledge regarding common dental terms among the subjects

**Oral health literacy level:** Among the study participants, 60.2% (271) had low literacy scores, 29.7% (123) had a medium score and 12.5% (56) had a high literacy score (Table 2). When education level of the study participants was compared with literacy level, it was seen that 63% of the graduates had low literacy scores and only 15.4% had high literacy scores. Surprisingly, only 22% of the postgraduates had a high literacy score (Table 3). Mean oral health literacy scores according to different socio-demographic profiles are summarized in Table 4. Mean health literacy score according to educational qualification was statistically significant ( $p < 0.05$ ), whereas there

was no significant difference in terms of age and gender ( $p > 0.05$ ).

**Table 2:** Oral health literacy levels among study participants

Oral health literacy level	Number of participants	Percentage of participants
Low	271	60.2
Medium	123	29.7
High	56	12.5
Total	450	100

**Table 3:** Health literacy levels among participants with varying educational category

Educational Qualification	Total no. of participants	Oral health literacy levels					
		Low		Medium		High	
		NO	%	NO	%	No	%
Upto high school	75	57	76	14	18.6	4	5.4
12 <sup>th</sup> standard & equivalent	134	68	50.7	42	13.3	24	17.8
Graduation	168	106	63	36	21.4	26	15.4
Post-graduation	73	28	38.3	29	39.7	16	21.9
Total	450	259	57.6	121	26.9	70	15.6

**Table 4:** Mean oral health literacy of study participants according to different socio-demographic variables

Socio-demographic variable	Oral health literacy score		P-value
Age (in years)	Mean	Standard Deviation	
20-25	3.23	2.62	F=1.825 P= 0.067
26-35	6.54	3.86	
36-45	5.56	2.21	
46-55	4.64	3.18	
56 and above	5.87	1.46	
Total	5.69	2.67	
Gender			F=1.745 P= 0.075
Male	4.96	2.56	
Female	5.45	2.32	
Total	5.12	2.62	
Educational qualification			F= 1.554 P=0.026
Up to High school	4.67	2.43	
12 <sup>th</sup> standard or equivalent	5.78	3.46	
Graduation	5.37	2.76	
Postgraduation	6.67	3.54	
Total	5.54	2.47	

P<0.05 (Statistically significant)  
Tests used-Student-t test, ANOVA

## DISCUSSION

Good oral hygiene, including healthy dentition and supporting structures, is an important part of our general health. People have underestimated consequences of bad oral health which have led to bigger problems which later on become difficult to treat. Awareness regarding our oro-dental health highly depends on one's literacy level. Reports of a study reveal that low level of oral health literacy possibly interferes with ability to process and understand oral health information (14). Moreover, level of literacy also influences regularity on the part of the clients seeking dental treatment (15).

As per population census of India 2011, the literacy rate of India is 74.04% showing improvement of almost 9% as compared to the previous census (16). Due to the lack of studies about oral health literacy among Indian population, this study is of prime importance in this field and moreover emphasis was also given to assess the relative effect of age, gender and educational qualification of participants on literacy levels. Improvement in oral health literacy leads to adoption of preventive oral health practices consequently leading to better oral health.

Number of male participants in the present study was almost similar with a study conducted by Cruz et al (17) and more as compared to some other studies conducted in Japan (9). Literacy rate of male participants in the present study was lower as compared to the female participants, which is contrary to the literacy rate of India obtained by recent Indian census (16). Sixty-three per cent of graduates in the present study had low literacy scores which is dissimilar with the findings of some other studies conducted in Iran where better educated participants had higher literacy scores (18). Very few postgraduates had a high literacy score in the present study. This finding is in agreement with another study conducted in Texas (19). Mean literacy score in the present study is comparatively much less than another study conducted among female caregivers (20).

The results of the present study show that less than 50% of the study participants did not have the knowledge about common dental terminology like dental abrasion, electric toothbrush, oral mouthwash, etc. This indicates that common

people are unable to read routinely used educational materials, cannot fully understand written oral health information and are not attracted towards brochures and pamphlets related to oral health. This is contrary to some other studies conducted in an urban dental setting (2). Limited understanding of oral health information can lead to poor oral health status and dental neglect (21).

Some other studies used several instruments to test the oral health literacy of the study participants. Some of the commonly used instruments are REALD-30, Oral Health Literacy instrument, TOFHLA etc. (22-24). These instruments cannot be strictly used for the present study participants as the dental school is situated in a rural area. For this reason, the authors used a self-structured questionnaire containing common dental terminology that could possibly be identifiable by the study participants. A limitation of the present questionnaire is that the participants were only asked if they were familiar with or knew the dental terminology; they were not questioned regarding the meanings of the terms.

Improving oral health literacy requires intensive collaborative efforts among health providers, researchers, educators, policymakers, public officials, the commercial sector and public (25). Several interventions were carried out worldwide to improve oral health literacy levels amongst people residing in rural areas (26). Various steps have also been taken by the government of India since the last few years to improve literacy rate among the rural and under privileged population. These include free education programs to poor people living in villages and towns, set ups of new school and colleges in rural areas and several committees have been formed to ensure proper utilization of funds allotted to improve literacy rate (16). Easy-to-understand oral-health-education materials that are written in the clients' native language can significantly improve literacy among rural population

It can be concluded from the present study that the oral health literacy level of the majority of the study participants (60.2%) was low. Moreover, the number of postgraduates with high literacy scores was very few (22%). Therefore, higher educational qualification cannot guarantee health literacy. Health providers should need to become

far more knowledgeable regarding oral health literacy so that social and cultural factors that influence oral health can be addressed. Researchers should concentrate more on examining the full array of literacy skills-reading, writing, speaking, listening, and basic mathematics and their relationship to health outcomes. This broader domain still needs to be explored.

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