Adult Oral Health Literacy Among Urban And Peri-Urban Population In And Around Chennai, India - A Comparative Study

Raj A[1], Sugavanesh P[2], Kumar PDM[3], Sivasamy SS[4], Balan IN[5]

ABSTRACT

Aim: Poor oral health literacy can impede one's ability to seek oral health and make appropriate oral health care decisions. The study was conducted with an aim to assess and compare the oral health literacy among urban and peri-urban adult population in Chennai, India.

Materials and Methods: A cross sectional study was conducted among 100 subjects each selected from peri-urban and urban areas in Chennai city. The oral health literacy was assessed by administering the Rapid Estimate of Adult Literacy in Dentistry (REALD-30). The data obtained was analyzed using Mann Whitney U test.

Results: The mean oral health literacy score for peri-urban people was 2.7 ± 1.19 and for urban people was 6.35 ± 2.12 and this difference was statistically significant (z value -10.37, p value - 0.001).
Conclusion:The oral health literacy of peri-urban adult population was found to be low when compared to the urban population.

KEY WORDS: Health knowledge, health literacy, oral health literacy, REALD-30

[1] Post Graduate Student
Department of Public Health Dentistry
Ragas Dental College and Hospital, Chennai, India

[2] Senior Lecturer
Department of Public Health Dentistry
Ragas Dental College and Hospital, Chennai, India

[3] Professor
Department of Public Health Dentistry
Ragas Dental College and Hospital, Chennai, India

[4] Senior Lecturer
Department of Public Health Dentistry
Ragas Dental College and Hospital, Chennai, India

[5] Senior Lecturer
Department of Public Health Dentistry
Ragas Dental College and Hospital, Chennai, India

Contact Author

Dr. Anil Raj
Email ID: anil.raj@aol.com

INTRODUCTION

Over the past several decades, researchers' understanding of the causes and treatment of diseases has grown exponentially. However, there are profound and consequential health disparities globally. Apart from the financial issues, lack of access to providers, and cultural factors are prime social determinants. The growth in information technology and the rapid advances in scientific knowledge require that the public have an ever-increasing understanding of diseases to make good decisions about their health (1). Health Literacy has recently emerged as a key item on the research agenda in medicine and public health.
Literacy is the "Ability to read and write" or "to be educated". The term" health literacy" was first used in a paper published in the year 1974 that discussed how health education affects the health care system, the educational system, and mass communication (2). Oral health literacy refers to "the degree to which individuals have the capacity to obtain, process and understand basic oral health information and services needed to make appropriate health decision. Poor oral health literacy can impede one's ability not only to seek out the needed oral health information but also to process, understand and use it to make appropriate oral health care decisions (3).

As with general health, achieving and maintaining oral health requires one

to be able to understand, interpret and act on various types of health information. Oral health communications in the form of brochures, forms, and providers' explanations of procedures and treatments are often dense, and full of jargon, obscured by technical words instead of more familiar terms used in everyday speech. As a result, these communications are often difficult to understand, especially for individuals with limited literacy skills. This situation creates a significant barrier to improve oral health, exacerbating other barriers such as those related to economics, insurance coverage, and access (4).

Reading skills are important for access-ing health information, using health care services, managing one's health and achieving desirable health outcomes. Health literacy is increasingly described as the currency for improving the quality of health and health care. In number of studies, literacy has been shown to be a powerful predictor of health status, health-related behaviors and health related knowledge (5, 6).

In the oral health context, literacy can be considered as a skill necessary for people to understand the cause of poor oral health, to learn and adopt fundamental aspects of positive oral self-care behaviors, to communicate with oral health care providers, to place their names on dental treatment waiting lists or organize appointments, to find their way to dental clinic, to fill out necessary forms and to comply with any required regimes, including follow-up appointments and compliance with prescribed medication (2).

Chennai is a vast city, with people having different knowledge level regarding their oral health. Thus a survey was needed to determine the level of oral health literacy among the population of Chennai and its effect on their ability to make good decisions about oral health. To our knowledge this is the first study to be conducted to assess the Oral health literacy among the people of Chennai. An understanding of oral health literacy is an important beginning step in determining the relative importance of barrier to oral health.

MATERIAL AND METHODS

Ethical clearance for the present study was obtained from Institutional Review Board, Ragas Dental College and Hospital. A cross sectional survey was conducted among people of urban and peri urban areas of Chennai city. Urban areas are within the corporation limits of Chennai city and Peri-urban areas are areas surrounding cities or geographical place where rural meet urban. Hundred subjects were selected each from of urban and peri-urban area, using criteria based sampling technique. Subjects aged 18-60 years old who could speak and read English without obvious signs of cognitive impairment, visual or hearing problems were included in the study. Subjects who were under the influence of drug or alcohol intoxication were excluded.

Study Tool

A questionnaire was also used for collecting socio demographic details from the study subjects. Data on oral health literacy was collected using the Rapid Estimate of Adult Literacy in Dentistry (REALD-30) (7). REALD-30 is a 30 – item scale consisting of words

Table 1: REALD-99 Instrument			
Column 1	**Column 2**	**Column 3**	**Column 4**
1.Bite	26.Approval	51.Veneer	76.Malignant
2.Sugar	**27.Pulp**	52.Panoramic	77.Esthetics
3.Smoking	28.Mouth rinse	53.Orthodontics	78.Diagnosis
4.Tooth	29.Splint	54.Instrument	**79.Abscess**
5.Floss	30.Tooth paste	55.Nutrition	**80.Incipient**
6.Habits	31.Mouth guard	56.Inflammation	**81.Halitosis**
7.Brush	**32.Denture**	**57.Restoration**	82.Calculus
8.Diet	33.Fracture	**58.Fluoride**	83.Avulsion
9.Dentist	**34.Enamel**	59.Bacteria	**84.Malocclusion**
10.Canine	35.Erupt	60.Evaluation	85.Incisor
11.Socket	36.Tongue	**61.Plaque**	86.Transmissibility
12.Molar	**37.Sealant**	62.Biopsy	87.Microorganisms
13.Oral	**38.Genetics**	63.Sterilization	**88.Gingiva**
14.Filling	39.Varnish	64.Prescription	89.Ankylosis
15.Bleeding	40.Referral	65.Suture	**90.Dentition**
16.Snacking	41.Copayment	66.Radiograph	**91.Bruxism**
17.Bridge	42.Coverage	67.Trauma	**92.Hyperemia**
18.Cavity	43.Surgery	**68.Extraction**	**93.Analgesia**
19.Recall	44.Sedation	69.Operative	94.Amalgam
20.Implant	45.Deductible	70.Porcelain	**95.Hypoplasia**
21.Cancer	46.Diabetes	71.Benign	**96.Apicoectomy**
22.Braces	47.Discolored	**72. Periodontal**	**97.Tempromandibular**
23.Speech	**48.Caries**	**73. Fistula**	98.Neuralgia
24.Teething	49.Infection	74. Fluorosis	99.Malalignment
25.Bleach	50.Cyst	**75.Cellulitis**	

*Highlighted words contained in the REALD-30

 REALD, Rapid Estimate of Adult Literacy in Dentistry

selected from the original REALD-99 (8) (Table 1), which were chosen based on anatomy, etiology, prevention and treatment of oro-dental diseases. The words in REALD-30 were arranged in order of increasing difficulties, based both on average word length, number of syllables and difficult sound combination. The subjects were asked to read aloud the list of words in REALD-30 to interviewer. The subjects were asked to pronounce only those words for which they knew the meaning clearly.

Two common simple words were chosen for each of the REALD-30 dental terms (9). One of the words, the Key, was meaningfully associated with the REALD-30 dental terms and other, the distracter, was not. For example, for the REALD-30 word 'Sugar' the key word is sweet and the distractor word is bitter. Subjects were instructed not to guess. The reading difficulty of the key and distracter words was kept minimal to ensure that a person with low literacy level could understand them.

Data Collection

Written informed consent was obtained from all the study participants after explaining the purpose and procedures of the study after the subjects agreed to participate in the study. The data was collected through face to face interview during October-November 2013. Interviewer displayed the dental words and asked the respondent to pronounce it. If the word was pronounced correctly, the interviewer asked him or her to select the appropriately associated word. The interviewer recorded whether the respondent provided the correct verbal pronunciation for each dental term as well as whether or not the respondent correctly associated the dental term to the key word if asked. A score was given for every correct pronunciation, provided the subject associated it with correct key-word. Hence the total score had a possible range of 0 to 30. The questionnaire was investigator-administered however, in case of any difficulty in understanding; the investigator explained the questions to the subjects. It took an average of 10 minutes to answer the questionnaire.

Statistical Analysis

The data was entered in Microsoft excel spreadsheet and analyzed using Statistical Package for the Social Sciences (SPSS) version 19. Descriptive statistics was used to summarize Sociodemographic details of study subjects. The oral health literacy of the subjects was expressed as Mean and Standard deviation. The oral health literacy score of the subjects was subjected to test of normality and was failed to show normal distribution (Kolmogorov Smirnov test; $p < 0.05$). Comparison between urban and peri-urban subjects was carried out using Mann Whitney U test. P value of < 0.05 was considered statistically significant.

RESULTS

Table 2 shows the Socio demographic details of subject in urban and peri-urban areas. Table 3 shows mean oral health literacy scores based on the different columns and location of the study participants. The mean oral health literacy score for subjects belonging to peri-urban area was 2.7 $\pm$ 1.19 and for urban people it was 6.35 $\pm$ 2.12 and this difference was statistically significant (z value -10.37, p - 0.001). Column wise comparison showed that the urban population fared better than the peri-urban population. There was no significant difference in the oral health literacy between males and females residing at peri-urban area while in urban area, the oral health literacy of males was better than females.

DISCUSSION

Oral health is an integral part of over-

Table 2: Socio demographic details of subject in urban and peri-urban areas

VARIABLES	URBAN	PERI-URBAN	P-VALUE
AGE (Mean±SD)	33.57±12.57	35.87±11.56	0.06*
Gender (Male)	70	65	0.52^
EDUCATION			
Profession	08	0	0.001^
Graduate	74	17	
Intermediate	18	26	
High school	0	50	
*Unpaired t test			
^Chi square test			

Table 3: Comparison of Oral health literacy between male and female in urban and peri-urban area

AREA		MALES Mean ± SD	FEMALES Mean ± SD	P- values
PERI-URBAN	COLUMN 1	2.13 ± .68	2.26 ± .96	.58
	COLUMN 2	.48 ± .55	.34 ± .56	.21
	COLUMN 3	.094 ± .33	0	.13
	COLUMN 4	.013 ± .11	0	.55
	TOTAL	2.72 ± 1.12	2.61 ± 1.38	.38
URBAN	COLUMN 1	2.93 ± .566	2.68 ± .64	.06
	COLUMN 2	1.60 ± .79	1.22 ± .52	.03
	COLUMN 3	1.21 ± .74	.95 ± .72	.16
	COLUMN 4	.84 ± .62	.59 ± .59	.09
	TOTAL	6.60 ± 2.13	5.45 ± 1.87	.02

all health and well-being. As stated in Oral Health 'nature and nurture are inextricably linked, and mind and body are both expressions of our human biology, so to, we must recognize that oral health and general health are inseparable (4).

India is a developing country with a population of approximately 1.27 billion. The oral diseases constitute a considerable public health problem in India not only causing pain, agony, functional and esthetic problems but also limit social interactions and affects psychology and economy of individuals, families and society. According to the National Oral Health Survey of India more than 50% of the population in all age groups suffers from dental caries and periodontal disease. Oral cancer accounts to about 0.3% in 35-44 years age group and 0.4% in 65-74 years age group. About 0.8% in 35-44 years age group and 29.5% in 65-74 years age group are edentulous (10).

There are many reasons why these preventable oral diseases are so widespread and why people do not adopt practices that have been scientifically shown to be effective in maintaining oral health. While citing other factors like cultural, financial etc., literacy or more specifically health literacy emerges as one of the major key issues. As per Population Census of India 2011, the Literacy rate of India has shown as improvement of almost 9 percent. It has gone up to 74.04% in 2011 from 65.38% in 2001, thus showing an increase of 9 percent in the last 10 years. It consists of male literacy rate 82.14% and female literacy rate is 65.46% (11). Average literacy rate of Chennai in 2011 were 90.18% with male and female literacy of 93.70% and 86.64 % respectively. When addressing health literacy, it is important that a nation's literacy level is improved first and subsequently the health and the oral health literacy. Increase in health literacy leads to adoption of effective disease prevention methods, successful adherence to treatment regimen and ultimately improved oral health status.

Oral health literacy is now believed to be an important determinant of oral health, one that intersects with other determinants in myriad ways. Although, literacy is not the only pathway to better oral health outcomes, it is certainly an important avenue. Hence, any effort to improve oral health outcomes should take into account the oral health literacy of the patient. For effective disease management and maintenance of oral health, one must be able to understand, interpret, and act on health information, whether it is communicated verbally or in written form. Studies done by Sharma G et al (12) and Haridas R et al (13) showed that the OHL was associated with (Oral health related quality of life) OHRQoL and oral health status.

Maintaining good oral health requires an individual to understand and act on health information, whether communicated verbally or in written form. Although little research has been undertaken to examine Oral Health Literacy (OHL) levels, ample justification exists for pursuing research in this area. We found the average OHL in our study to be a mean of 2.7 (SD = 1.19) for peri-urban and 6.35 (SD = 2.12) for urban. Although no cutoff points have yet been established for the REALD-30 to determine what score would indicate inadequate oral health, this estimate was lower than what has been previously reported in other investigations using the same instrument. Using REALD-30, Jones and colleagues examined the OHL literacy levels among patients in a private dental office and reported a mean 23.9 (SD = 1.3) (1). Lee and colleague investigated OHL levels among patients in an outpatient medical clinic using the same instrument, finding a mean score of 19.8 (SD = 6.4) (7). Miller and colleagues reported a mean score of 20.7 (SD = 5.5) among a sample seeking dental care in a university setting, North Carolina at Chapel (14).

Very few studies have been reported on health literacy in dental settings. Cruz et al (4) in their study on Indian adults seeking dental care found that low level of health literacy may interfere with their ability to process and understand basic health information. The limited research that has been done focuses mostly on assessing the reading level of dental educational materials and consent forms. Unlike other studies found in literature where the authors have used the readability scales (REALD, TOFHLA, STOHFLA), the present study used REALD- 30 to identify patients with low literacy levels, since it is short version of REALD-99 it take less time than other literacy instrument and unlike other instrument it is based on etiology anatomy, prevention and treatment of dental disease.

The result of this study suggest that, peri-urban peoples have low level of oral health literacy than urban people in Chennai, that may interfere in their ability to process and understand basic oral health information and is potential barrier to effective prevention, diagnosis, and treatment of oral diseases. The reasons behind this may be lack of education, learning disabilities, cognitive decline in older adult etc. Studies have linked low oral health literacy with worse oral health outcomes such as oral health status and dental neglect (15, 16).

CONCLUSION

Health education, a widely accepted approach in prevention of oral diseases, is a process of transmission of knowledge and skills necessary for improvement in quality of life. One of an important determinant of oral health and health education is literacy regarding the oral health condition so that it might aid in making the right choices regarding oral health. In this study, though the overall oral health literacy scores of urban and peri urban population of Chennai was below acceptable levels, the urban

population fared better than their peri urban counterparts. This might have implications on the choices of their oral hygiene habits and thus affect their oral health.

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