# Utilization and Felt Need of Oral Health Care Services among Women in Chennai-Descriptive Cross-Sectional Study

N. Venkata Abinaya, Rajan Patil, and Bagvandas

*SRM Institute of Science and Technology, Kancheepuram 603203, India*

**Abstract:** Introduction: Oral health is window to overall health. There is a greatest burden of oral diseases on the underprivileged group. In developing countries like India the affordability to oral health care services is very limited thereby leading to poor oral wellness & millions suffer intractable toothache and poor quality of living and end up with few dentition. Objective: To assess the utilization level of oral health services among women in Chennai. Material and methods: A cross-sectional questionnaire survey was conducted among 200 women in Teynampet Zone in Chennai District, Tamil Nadu. The women were chosen by simple random sampling and were interviewed using the semi-structured questionnaire to assess their utilization level during the period of June to July 2016. The data were analyzed by SPSS Version 22. Result: Descriptive statistics and multivariate analysis—MANOVA were used to analyze the utilization level. Majority of the respondents were in the age group of 30-35years, most of the respondents had oral problem and almost everyone had visited dentist at least once within 3 years. Multivariate analysis—MANOVA also showed that the utilization levels were directly influenced by accessibility, availability and affordability and showed statistical significance ($p$ value < 0.05) and also from MANOVA analysis it showed that the respondents who had poor oral hygiene did not utilize oral health care services as the affordability was a problem although accessibility and availability was adequate. Conclusion: Our findings suggest that people who had oral problem had visited dentist in previous 3 years and most of the people who visited dentist had a good oral hygiene. Cost of the treatment affected the dental visits. They believed that visiting the dentist is necessary only for pain relief.

**Key words:** Chennai oral health, oral health problems, utilization of oral health care services, women oral health.

## 1. Introduction

Good oral health is a mirror of overall health and well-being [1]. One of the most common diseases in humankind is oral disease. Despite a high societal and economic encumbrance from oral disease, they receive only little attention in many countries and they are considered as a neglected area of international wellness [1, 2].

"Oral health is essential to general health and quality of life. It is a state of being free from mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal (gum) disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual's capacity in biting, chewing, smiling, speaking, and psychosocial wellbeing" (by WHO-Oral Health).

WHO appraisal that, oral disease is the fourth most costly condition to treat, if a curative approach is taken, rather than focus on prevention, even though there are no comprehensive data on economic price of oral disease available around the globe [3]. There are millions of work hours lost annually due to direct and indirect costs incurred by curative treatment and by poor assiduousness due to oral disease, leading to long term economic impingement hampering both the individual and societal progress [4]. The intervention of oral diseases remains unaffordable and inaccessible for large proportion of the population in

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**Corresponding author:** N. Venkata Abinaya, Ph.D., B.D.S,M.P.H Public Health Researcher, research fields: epidemiology, environmental research, dental research, biological research.

both low and middle income countries and also in some high income countries due to the lack in their infrastructure [5, 6].

There is a lacking in defining the dental (oral) health as a trouble and limited availability of comprehensive and trustworthy information on the oral health care services, globally. Due to growth in privatization of oral health care services in most of the countries across the globe as a result of diminished government activity spending is likely to diminution the ease of access and universality of oral health care and thereby escalating the inequality [7].

The emerging oral dental diseases are the major public health problem in developing countries like India. At present, in India, there are greater than 289 dental colleges, generating around 25,000 dental graduates every year, and there are enough dental experts available for providing oral health care [8]. Despite this, even the basic fundamental oral well-being education and simple intervention for ache relief and immediate care for acute transmission and trauma is unavailable to extensive population. In addition, the recent epoch growth in economy and advances in health science have widened the gap exacerbating the inequity in approach to oral health care in particular and health care in general [9].

According to Schuurs et al. [10] three factors viz., dental anxiety, dental fear, preference for preservation of teeth and family dental health problem were found to be associated with regular and irregular attendance. Although India is rapidly progressing in all the other fields, it is very sad to know only few believe in regular dental check-ups and visits.

Only 15-20% of people in India are able to get dental services through national schemes and 80-85% of people are spending money from their pocket for dental services [11]. Although, dental practitioner ratio is high in cities or in urban areas, people still do not show consistency in dental care or dental attendance. Use of dental services is more discretionary than use of either physician or hospital services because oral conditions are not life threatening [12].

Thereby previous research studies explore only about factors such as gender, age, education level, race, ethnicity and geographic locations which influences the utilization of oral health care services. In an attempt to ascertain the factors, this study is done for understanding the factors such as household economic conditions of women in Chennai and their accessibility, availability, affordability which will give a picture of the oral health care services delivery and felt needs will pave way for improved service delivery for the community for determining appropriate oral health care programs and strategies at both individual and community health care levels.

## 2. Materials and Methods

### 2.1 Study Area

The study was conducted in Tamil Nadu state in Chennai district from June 9th to July 12th, 2016. There are 4,646,732 people with literates 3,776,276 and with average literacy rate (%) 90.18% as per 2011 census, with a total land cover area of 1,189 km sq. (459 sq. mi). It is considered as the 22nd most populous city in Asia and 40th most populous city in the world. Chennai is comprised of 15 zones, 200 wards and 155 divisions. The Chennai (Madras), the capital city of Tamil Nadu is the 4th largest metropolitan city in India. The survey was conducted in the Teynampet Zone (9th) which consists of 17 wards (109-126).

### 2.2 Study Design

This was a cross-sectional descriptive house to house survey study conducted to the know the utilization level and felt needs of oral health care services among women in Chennai district. The study was mainly based on the semi-structured quantitative questionnaire constructed with 6 sections and also included to check Oral Hygiene Status by using OHI-S index developed by John. C. Greene and Jack. R. Vermillion by using mouth mirror and dental explorer.

*2.3 Data Collection and Sampling Procedure*

The study was house to house survey conducted in the field area of Teynampet Zone (9th) which consists of 17 wards (109 to 126), cluster sampling was done and wards were divided into 2 clusters each. From each cluster through simple random sampling, one ward was selected (the ward number selected was 114 and 125). The total population of the wards was 8,028, and women population of the ward was 3,605. The list of household was obtained from the voters list. The total household in both the wards were 7,852, through simple random sampling 222 households were selected proportionately to cover or interview 200 women between the age (18 to 58 years) through semi structured questionnaire residing in selected houses to assess their dental utilization followed by assessing their oral hygiene status through oral hygiene index-simplified (OHI-S) (developed by John. C. Greene and Jack. R. Vermillion, 1960). The selection criteria included residents of the two wards (114 and 125) and excluded people who did not agree to participate in the study. Sample size was calculated using n = $Z^2(pq)/d^2$ with 29% unmet needs of oral health care services among women [13] with margin of error 7% for 95% of confidence interval, the sample size was calculated to be 161 and with 20% of non-response rate, the sample size was estimated to be 196 rounded to 200.

Reliability of the study was checked through Cronbach's alpha which was said to be 94.2%

2.3.1 Pre-test Questionnaire

Prior to the data collection, questions were pre-tested among the group of 30 individuals, revealing no need for any further corrections.

2.3.2 Ethical Clearance

Informed consent was obtained from all participants in the study. And the ethical clearance was given from SRM university ethical clearance board to conduct the study.

2.3.3 Questionnaire

A semi structured questionnaire was constructed with 5 sections. The first section includes social demographic features (details regarding name, age, religion, marital status, education, occupation, place of employment, family income). The second section includes individual practices (brushing time, frequency, frequency in changing brush, alternate methods to treat their oral problems). Section 3 talks about accessibility which includes type of dental set up visited, time, distance, transportation to reach the dental service and Section 4 includes affordability (treatment fee, insurance, reimbursement, retirement benefits, post treatment expenses, etc.) and the last section was availability which included information about waiting time in OP, specialist availability, equipment availability, satisfaction of treatment, etc., and questions also include treatment underwent, reason for visit, etc. The answer "Yes" was scored 2 and "No" was scored 1 and if question includes "Don't know" it was given 1, "Yes"—3 and "no"—2 was scored respectively. Options like "Not Applicable" (NA) and skip were coded zero. OHI-S status was taken using mouth mirror and dental explorer and scores were given according to OHI-S standard scoring systems.

Statistical analysis: Data were analyzed through statistical package for social service version 22.0. Descriptive statistics such as mean and frequency were used to present the demographic characters, frequency distribution for accessibility, availability and affordability and felt needs. Multivariate analysis was done to examine whether utilization level was influenced by accessibility, availability and affordability and also to check the relationship of oral hygiene status with accessibility, affordability, and availability and utilization level.

## 3. Results

Table 1 demonstrates the socio-demographic characteristics of respondents. Out of 200 respondents interviewed, majority of them were within the age group of 30-35 years (22.5%) followed by 36-41 years

(18.5%), most of them were Hindus (84%) almost all the respondents were married (83.5%). Most of the respondents were graduates (44%) followed by high school completed (43%). Out of 200 respondents 61% were not employed.

Table 2 explains about the general description of oral problem. Out of 200 respondents 62.5% had oral problems, which was 25 percent more when compared to women who did not have any oral problems. And among those who had oral problems ($n = 125$), almost all of them had visited dentist within past 3-year time period (96%). And among those who visited dentist within past 3 years ($n = 120$), majority of them have preferred private clinics or hospital for treatment which was almost 78 percent more compared to respondents who preferred government and institutional based set up for treatment respectively, among those 120 people who visited dentist, 70 percent had undergone treatment. Among those respondents who have undergone treatment ($n = 84$), majority of them have gone to extract their tooth (47.6%), which was the leading treatment comparatively to all other conservative treatment listed.

Table 3 represents the percent distribution of accessibility, affordability and availability of oral health care services. It is evident from Table 3 on accessibility, out of 120 who had visited dental clinic within past 3 years, majority of them have travelled 4 to 6 km (60.8%), and the time taken to reach dental clinic was 30-45 minutes (60%) and all have them had proper transport to reach dental clinic (100 percent).

From Table 3, it is evident that, out of people who have undergone treatment ($n = 84$), majority of them have told that the treatment cost was medium (52.4%) and most of them did not have insurance for treatment coverage (52.4%). Majority of the respondents did not have reimbursement facility for the treatment (40.5%).

From Table 3, it is evident that, out of 120 people who have visited dentist for oral problem, most of the respondents have spent less than 30 minutes in OP

during their visit to dental office (58.3%) and majority of them were moderately satisfied with the manpower availability (51.7%). Almost all the respondents reported that, specialist was available during their time of visit (95.8%) and almost 62 percent of the respondents did not remember whether there were enough dental materials for their treatment during their visit.

Table 4 explains about the utilization level. Respondents who utilized the oral health service once within 3 years were between 30-35 years in age and most of them were married and were Hindu and were graduates in their education status. Those who utilized the services once within past years 3 years had adequate accessibility (mean value = 1.0530), affordability (mean value = 0.285) and availability (mean value = 0.5759). Respondents who utilized the

**Table 1 Socio-demographic characteristics of respondents ($n = 200$).**

| Age | Frequency | Percentage |
|---|---|---|
| 18-23 | 17 | 8.5 |
| 24-29 | 19 | 9.5 |
| 30-35 | 45 | 22.5 |
| 36-41 | 37 | 18.5 |
| 42-47 | 32 | 16 |
| 48-53 | 27 | 13.5 |
| 54-58 | 23 | 11.5 |
| Religion | | |
| Hindu | 168 | 84 |
| Muslim | 16 | 8 |
| Christian | 9 | 4.5 |
| Jain | 7 | 3.5 |
| Marital status | | |
| Married | 167 | 83.5 |
| Mot married/divorced | 25 | 12.5 |
| Widow/separate | 8 | 4 |
| Education status | | |
| High school | 86 | 43 |
| Primary school | 15 | 7.5 |
| Graduate | 88 | 44 |
| Professional | 5 | 2.5 |
| Post graduate | 6 | 3 |
| Occupation status | | |
| Employed | 78 | 39 |
| Unemployed | 122 | 61 |

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**Table 2   Percent description of oral problem among the respondents.**

| Oral Problem ($n = 200$) | Frequency | Percentage |
|---|---|---|
| Yes | 125 | 62.5 |
| No | 75 | 37.5 |
| **Dental visits made within past 3 years ($n = 125$)** | | |
| Yes | 120 | 96 |
| No | 5 | 4 |
| **Type of dental set up visited ($n = 120$)** | | |
| Private clinics or hospital | 102 | 85 |
| Government hospital | 9 | 7.5 |
| Institutional based dental set up | 9 | 7.5 |
| **Treatment underwent during the visit ($n = 120$)** | | |
| Yes | 84 | 70 |
| No | 36 | 30 |
| **Type of treatment underwent during the visit ($n = 84$)** | | |
| Denture | 2 | 2.4 |
| Root canal treatment | 17 | 20.2 |
| Scaling | 12 | 14.3 |
| Restoration | 13 | 15.5 |
| Extraction | 40 | 47.6 |

**Table 3   Percent description about accessibility, availability and affordability .**

| 1. Percentage distribution for accessibility factor ($n = 120$) | Frequency | Percentage |
|---|---|---|
| **Distance travelled to reach dental set up** | | |
| More than 6 km | 7 | 5.8 |
| Less than 3 km | 40 | 33.3 |
| 4-6 km | 73 | 60.8 |
| **Time taken to reach the dental facility** | | |
| Less than 15 min | 48 | 40 |
| 30-45 min | 72 | 60 |
| Availability of transport to reach the dental set up | 120 | 100 |
| **2. Percentage distribution for affordability ($n = 84$)** | | |
| **Opinion on dental treatment fees** | | |
| High | 26 | 31 |
| Medium | 44 | 52.4 |
| Low | 14 | 16.6 |
| **Insurance provision for dental treatment** | | |
| Yes | 19 | 22.6 |
| No | 44 | 52.4 |
| Don't know | 21 | 25 |
| **Reimbursement facility for dental treatment** | | |
| Yes | 32 | 38 |
| No | 34 | 40.5 |
| Don't know | 18 | 21.5 |
| **3. Percentage distribution for availability ($n = 120$)** | | |
| **Time spent in OP during the visit** | | |
| < 30 min | 70 | 58.3 |
| 30 min-1 hour | 50 | 41.7 |

Table 3 to be cntinued

| | | |
|---|---|---|
| Manpower satisfaction during dental visit | | |
|     Not at all satisfied | 3 | 2.5 |
|     Slightly satisfied | 16 | 13.3 |
|     Moderately satisfied | 62 | 51.7 |
|     Very satisfied | 39 | 32.5 |
| Specialist availability during the time of visit | | |
|     Yes | 115 | 95.8 |
|     No | 5 | 4.2 |
| Dental materials availability during the time of visit | | |
|     Yes | 42 | 35 |
|     No | 4 | 3.3 |
|     Don't know/can't remember | 74 | 61.7 |

**Table 4   The summary statistics for the utilization of care health care level, based on accessibility, affordability and availability with mean and standard error.**

| Group | Accessibility | Availability | Affordability | OHI-S |
|---|---|---|---|---|
| Corrected model | 1068.210    0.000* | 278.721    0.000* | 780.098    0.000* | |
| Utilization level 1 (once within 3 years) | 1.0530 (±0.02) | 0.285 (±0.20) | 0.5759 (±0.02) | Poor OH |
| Utilization level 2 (twice within 3 years) | 2.5356 (±0.29) | 1.1845 (±0.22) | 2.3646 (±0.06) | Good OH |
| Utilization level 3 (more than twice within 3 years) | 2.6289 (±0.37) | 1.1682 (±0.018) | 2.2786 (±0.038) | Fair OH |

* Significant at 5% level; OH: oral hygiene; OHI-S: oral hygiene index-simplified.

**Table 5   The multivariate comparisons between the groups based on accessibility, affordability and availability.**

| Groups | Utilization level 1 (once within 3 years) | Utilization level 2 (twice within 3 years) | Utilization level 3 (more than twice within 3 years) |
|---|---|---|---|
| Utilization level 1 (once within 3yrs) | | | |
| Utilization level 2 (twice within 3years) | | | (affordability, availability)* |
| Utilization level 3 (more than twice within 3 years) | | (affordability, availability)* | |

* The mean difference is not differentiating at 5% level.

oral health service once within 3 years were between 36-41 years in age and most of them were married and most of them were Hindu followed by Muslim and Christians and were graduates in their education status. Those respondents who visited twice within past 3 years had adequate accessibility (mean value = 2.5154) but it was not affordable for the respondents when they visited the dentist for the second time (mean value = 2.3322). Respondents who utilized the oral health service once within 3 years were between 36-41 years in age and most of them were married and most of them were Hindu followed by Muslim and were high school in their education status. Those respondents who visited dentist more than twice

within past 3 years had adequate accessibility (mean value = 2.6289) but affordability and availability was not adequate (mean value = 2.2786 and mean value = 1.1682). It is evident from the study that the multivariate analysis computed has shown the utilization levels of all the three groups were directly influenced by accessibility, availability and affordability and showed statistical significance with $p$ value < 0.05.

From Table 5, it is evident that, Group 1 (belongs to patients who have visited dentist once within 3 years) is different from the other two groups (Group 2—visited dentist twice within 3 years and Group 3—visited dentist more than twice within 3 years) in

**Table 6  The sample adequacy and variance between the components.**

| KMO and Bartlett's test | | |
|---|---|---|
| Kaiser-Meyer-Olkin measure of sampling adequacy | | 0.936 |
| Bartlett's test of sphericity | Approx. Chi-Square | 2,689.067 |
| | df | 21 |
| | Sig. | 0.000* |
| Table of variance | | |
| First component variance | 82.7% | |
| Second component variance | 12.86% | |

KMO and Bartlett's test showed sample adequacy of 94% with significance at 5% level.
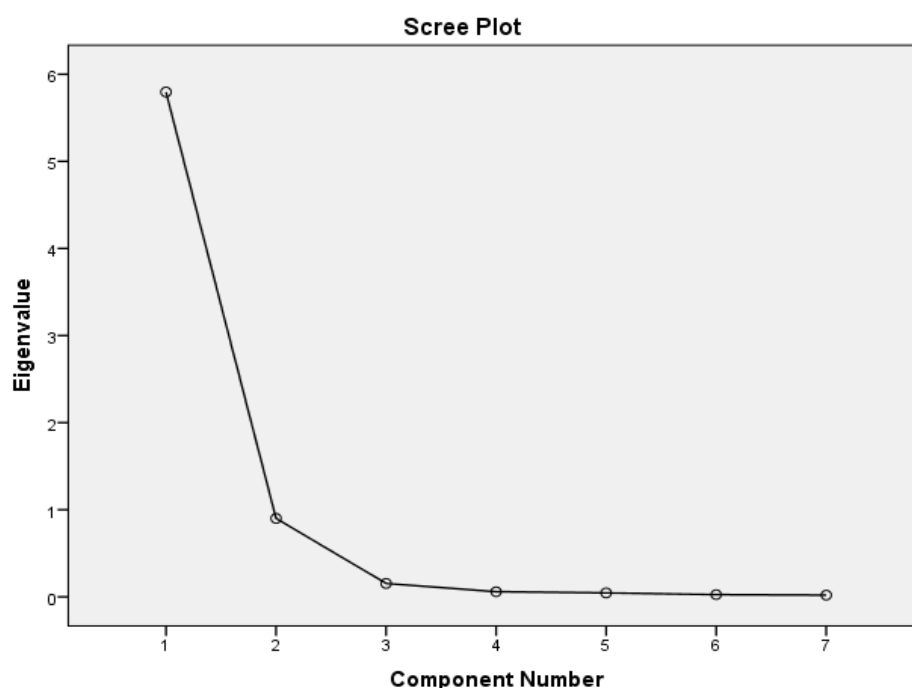


**Fig. 1  Scree plot.**

Scree plot showed a point of Inflexion at 2nd component.

**Table 7  The component matrix for felt need of oral health care services.**

| Component matrix[a] | | |
|---|---|---|
| | Component | |
| | 1 | 2 |
| Fear | 0.947 | 0.049 |
| Anxiety | 0.989 | 0.056 |
| Pregnancy | 0.981 | 0.055 |
| Childcare | 0.976 | 0.055 |
| None to accompany | 0.989 | 0.056 |
| Others (no problem) | 0.954 | 0.061 |
| No time/cost | -0.343 | 0.939 |
| Extraction method: principal component analysis. | | |

[a] 2 components extracted.

terms of accessibility, availability and affordability. As a practicing dentist (from patients point of view), participants who were in Group 1 being the first time to visit the dentist, due to severity and pain related to the oral problem made the patients visit dentist irrespective of their accessibility, availability and affordability. And most of the patients were unaware of the cost and availability of the specialist based on the dental treatment procedure during their first visit. But during their second or the consecutive visits (according to the study within 3 years), patients have declined to visit the dentist although they have oral problem, majorly due to availability and affordability for the respective dental procedure, which was advised to them during the first visit i.e. the mean difference is not differentiating at 5% level between Group 2 and Group 3 for the variable affordability and availability respectively.

According to Fig. 1, the point of inflexion was at the second component, so thereby the first two components were taken into considerations for further interpretation. According to Table 6, KMO and Bartlett's test showed a sample adequacy of 94% with significance at 5 % level, which conveys us that the sample size (200 samples) was adequate for performing factor analysis for grouping the felt need variables. The variance between the first and second component was 82.7% and 12.86% respectively.

Table 7, describes about the magnitude and direction of the 1st and the 2nd component matrix. According to Table 7 by performing factor analysis, factors for less utilization of oral health care services, were fear, anxiety, pregnancy, childcare, none to accompany and some respondents did not have any oral problem to visit the dentist. And the factors for visiting the dentist at the least were cost and time to visit the dentist and utilize the dental care.

## 4. Discussions

The main aim of the study was to evaluate the utilization level on the basis of (accessibility, availability and affordability), felt needs. Most of the respondents were between the age of 30-35 years (22%) and most of the respondents were graduates (44%) and high school completed (43%). The utilization level of oral health care services was 60%. But according to Shailee Fotedar et al. [14] study the utilization visiting dentist twice was in a smaller percentage.

Majority of the respondents had oral problem to about 62.5 percent and 4 percent of them having oral problem did not visit dentist due to fear and negligence. And according to other studies fear and anxiety was what was hindering them to visit the dentist.

According to the results by multivariate analysis—MANOVA, this study has shown that the utilization was influenced by accessibility, availability and affordability. But the level of utilization of oral health care services was once within 3 years for whom affordability was a problem. But in previous study by Shailee Fotder et al. [14], as noted, financial reasons were not considered as an individual barrier by respondents because dental care was provided free of charge or with minimal charge through government health care services. This was contradictory to the situation in most of the countries worldwide for e.g. in USA, there had annual income of more than 80,000 USD which were reported to have regular dental visits 4.5 times more often than those having annual income of less than 20,000 USD [9].

Most of the respondents in the study had easy accessibility and availability since this study was conducted in the urban area of Chennai. Most of the respondents have visited private clinic 85 percent because of the quality of treatment provided. Similar results were found in the Kakatkar et al. [15] study where there was no significant relationship between distance and dental visits. According to Bommireddy et al. [7] study most preferred treatment centers by study subjects were private dental hospital (24.7%) and reason identified was accessibility (15.11%).

Majority of the respondents who had a problem of affordability were majorly due to lack of insurance

coverage (52.4%) and lack of reimbursement facility (40.5%) although there were 44 percent graduates and 39 percent employed women. But previous studies done by Syrjala et al., Kakatkar et al. [15] have yielded results that the dental visits were influenced by income and price of dental care. They have found that the higher the education group found the expense of treatment less restrictive than the lower education group. Most of the developed countries have health insurance which covers dental services which can be speculated for high utilization which is non-existent in India.

## 5. Conclusion

This study has revealed that people who had oral problem had visited dentist in previous 3 years. Many have preferred private clinics because of the quality treatment provided. Cost of the treatment also affected the dental visits. They believed that visiting the dentist is necessary only for pain alleviation. Unlike most western countries, specific insurance plans are not common in India. Dental health insurance can bring about good dental health care percolating from grass root levels. Utilization of oral health care is a complicated phenomenon and multidimensional human behavior. Individual utilization of health care is possibly affected by many factors that are not linked to the health care per se but shape individuals demand for health care. There is a need for people to visit dentist on a regular basis even in the absence of dental related problems so that, the disease initiation can be recognized and early dental cure can be rendered.

## Acknowledgements

## Conflict of Interest

None.

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