**UTILIZATION OF DENTAL SERVICES AND PERCEPTION TOWARDS DENTAL INSURANCE AMONG SOFTWARE PROFESSIONALS IN CHENNAI CITY-A CROSS SECTIONAL SURVEY**

**INTRODUCTION**

Good health can be considered as a fundamental right of every human being, oro-dental health being an integral part of the same1. Oral health and having a great smile are important not only for appearance and sense of well-being, but also for overall health of the individual, self -pride, confidence and accomplishment.2 Poor oral health affects the quality of life, appearance and self-esteem and has been linked to behavioural and developmental problem. Adequate use of health services and factors predictive of this behaviour is essential to improve the oral health outcomes.3

Dental care utilization refers to “the percentage of the population who access dental services over a specified period of time”.3 Dental care utilization depends on many factors of which are internal and external. Internal factors include oral diseases restrict activities in school, at work, and at home causing millions of school and work hours to be lost each year worldwide. Moreover, the psychosocial impact of these diseases often significantly diminishes the quality of life.3 External factors include the adequacy of dental care and ability to pay.3 The escalating cost of dental treatment has been an important barrier in the utilization of services in developing countries.4

India serves as a home for around 47 crore workers which come from the unorganized as well as the organized sector of the industry.4 The prohibitive cost of dental treatment has become a hindrance that deprives people from readily availing services from qualified clinicians. Some individuals do have dental insurance cover through their jobs but for most, only the medical expense may be partly covered by self-bought insurance plans while dental expenses are left to be paid from one’s own pocket. Paying the full price for dental treatment can be overwhelming and challenging, especially if major dental work needs to be done.1 Dental insurance potentially influences dental visiting patterns by lowering the cost at the time of accessing care and regular dental visiting has been associated with better oral health.

Dental insurance is an insurance to protect people against dental costs.5 In the early 20th century, dental insurance and dental benefit programs did not exist. Their emergence and rapid growth have helped to change the general perception of dentistry, transforming it in the public eye from a feared, undervalued profession into a regular and necessary part of health care, a vital part of the maintenance of overall quality of life.4 It insures against the expense of treatment, care of dental disease and trauma. It has been found to be associated with higher rates of visiting for a check-up and regular dental visiting and was correlated with patient acceptance of prescribed dental treatment, which suggests that insured individuals may face lesser financial barriers to comprehensive dental care.5

In India if dental insurance is made available for all, people would be more than ready for seeking preventive and prophylactic dental care, thus reducing the burden of dental diseases and avoiding the expenses of future dental treatment. India is a country with a very price sensitive market. So being insured would be a boon for one and all.4

A better apprehension regarding dental insurance in India is needed to gain clarity. Software professionals being the most reputative people and the most common professionals, their dental need and utilisation of dental services aids in gaining knowledge about the people’s perception. Since there is a paucity of data on dental services being covered under social health insurance and their utilisation in the Indian scenario, an attempt is made here to assess the, utilization of dental services and perception towards dental insurance among software professionals in Chennai city.

**MATERIALS AND METHODS**

A cross-sectional survey was carried out to assess the utilization of dental services and perception towards the dental insurance among (MNCs)Multi-national companies in Chennai city.

**SOURCE OF DATA**:

The source of data was primary in nature for which a close ended questionnaire survey was conducted.

**STUDY POPULATION:**

A detailed list of software companies was procured from NASSCOM (National Association of Software and service companies), a trade association of Indian Information Technology and business process outsourcing companies.

**INCLUSION CRITERIA**:

* The subjects who have given voluntary informed consent.
* Subjects working in Multinational companies in Chennai city.

**EXCLUSION CRITERIA**:

* The software professionals who refused to participate in the study.
* Software employees whose companies which are not under NASSCOM.

**ETHICAL APPROVAL:**

The ethical clearance was obtained from the institutional review board of Karpaga Vinayaga Institute of Dental sciences, Madhuranthagam dated on 23.12.2020.

Before the administration of the questionnaire the aim and the potential benefits of the study were clearly explained to all the study participants. An informed consent was attached to the google forms and sent through email **(ANNEXURE I)**. Informed consent was obtained from all the participants, after they thoroughly understood the contents of the information sheet.

**OBTAINING APPROVAL FROM THE AUTHORITIES:**

The nature and purpose of the study was explained and Prior permission was obtained from Human Resources Manager (HR), Chief Technology Officer (CTO) and Chief Executive Officer (CEO) of software companies, to conduct the study among the employees.

**SAMPLE SIZE:**

The sample size was calculated based on the population size of 2500, with confidence interval of 85%, alpha error at 3.5%, a sample size of 364 was estimated using Morgan’ s table. The total of 364 Participants were assigned for the study.

**SAMPLING METHODOLOGY:**

A Convenience sample of 364 Software professionals who fulfilled the above-mentioned criteria were included in the study. The participants list was drawn from Chief Executive Officer (CEO)s of 25 Multi -National Companies in Chennai city. After contacting them through email or telephone and explaining them about the details of the study, the questionnaire was sent to individual software professionals through email as google forms.**(ANNEXURE II)**

**FORMULATION OF QUESTIONAIRE:**

To the best of our knowledge, this study is a pioneer work in this region and the questionnaire designing process was done by adopting various questions from different articles and research studies which were done with similar study design. After thorough examination of all these questions,15 items were finalised. The questions were then modified and certain changes were made based on the needs of the target sample.

A self-administered questionnaire was designed to assess the utilization of dental services and perception towards the dental insurance among (MNCs)Multi-national companies in Chennai city. The questionnaire composed of two segments. Part A comprises of 8 questions, which aims at Utilization of Dental services, in which Participants were asked to answer regarding their Last dental visit, place of dental treatments, barriers in achieving dental treatments, Importance of dental care and Frequency of dental visits. Part B comprises of 7 questions, related to perception towards Dental Insurance, in which the questions focus on usage of dental insurance, benefits of dental insurance, source of knowledge about dental insurance and mode of payment for dental treatments. The participants were asked to fill the questionnaire.

**VALIDATION OF THE QUESTIONNAIRE:**

The questionnaire was tested for content validity by five Panellists - **Social and Preventive Medicine, Public health dentist, Human Resources manager, A Software Engineer and a Life Insurance Corporation agent.** Questionnaire was assessed for content validity index (CVI) relevance with simplicity, clarity, ambiguity and objectivity were checked and the CVI score is 0.8.The questionnaire was pretested among 13 IT professionals in Chennai city to assess the utilization of dental services and perception towards the dental insurance by test-retest design. It was given to same persons twice with two days apart. Reliability was assessed for the utilization of dental services and perception towards the dental insurance. The Cronbach’s alpha statistic was 0.87 which indicated significant correlation. These participants were not included in the main study.

**DATA COLLECTON:**

A self-administered closed ended questionnaire which consists of two parts which cover dental service utilisation and Perception towards Dental insurance. **(ANNEXURE III)** A total of 15 statements (items) were included in the measure. Demographic details of the participants were collected. Software Professionals were asked to answer the dental service utilisation and dental Insurance related questions. All the participants were asked to respond each item in the questionnaire by choosing the most appropriate answer. Confidentiality and anonymity of the participants were assured.

**STATISTICAL ANALYSIS:**

Data thus collected were entered in Microsoft excel sheet to prepare master chart and analysed using SPSS version 20 (IBM). Descriptive and Inferential statistics, Chi-square tests were used to analyse the data. P value ≤ 0.05 was considered significant.

**RESULTS**

The present study was conducted to assess the utilization of dental services and perception towards dental insurance among software professionals in Chennai city. Among 364 study subjects, 61.5% were male and 38.5% were female. The mean age of the study subjects was found to be 29.87 ± 6.52.**(Table.1)**

Among the study subjects 33.6% have visited the dentist 1-2 years ago, of which 25% were female and 19.7% were male and it was found to be statistically significant **P < 0.041**.75% of the study subjects visits private dental clinics for the treatment, of which 67% were females and 62.1% were males and it was found to be statistically significant **P< 0.015**. Both the gender preferred equally for prevention to their oral problems and it was found to be not statistically significant **P>0.05**. Fear was found to be more among female 31.3% compared to male 28.6%.49.3% of the study subjects visited a particular dental clinic in their previous dental visit for their good service, of which 44% were female. Among the study subjects,42.9% found the dental care is important, of which 58.5% were male and 52.5% were females, which was found to be statistically significant **P<0. 013.**The Perception about frequency of visiting a dentist Once in a year was found to be same in both the gender. **Table.2.**

The perception towards the benefit of dental insurance policy among the study subjects was found to be 55.8% and the most common benefit was seeking treatment at early stages, and it was found to be very highly statistically significant **P<0.000**. Among the study subjects, only 2.5% of them were using insurance policy for dental treatments, due to the Denial of claims [Female 13.6% and Male 12.9%] .55.8% were not aware about the benefits of dental insurance policy of which [Female 61.4% and Male 52.2%]. Internet was found to be the most common Source of Knowledge about dental insurance [Male-38.8% and Female 37.1%]. There is a significant difference **P<0.036** was found among the males and females regarding the lack of knowledge towards the dental insurance policy. Among the study subjects, 54% may preferred lower premium for the dental insurance. Majority of the study subjects [38.6% Females and 44.6% Males] prefer to pay fee for their dental treatment through Dental insurance.61.5% of the study subjects do not have dental insurance in their company, and it was found to be statistically significant. **P<0. 044. Table.3**

Among the study subjects 36.5% [34.8% males and 60.7% Females] have utilized preventive procedures.27.7% have utilized for diagnostic procedures whereas only 5.2% of the study subjects have utilized for aesthetic purpose. None of the study subjects have utilized it for implants and it was not found to be statistically significant. **[Table.4 & Figure.1]**

**RESULTS**

**Table. 1 Distribution of Study Subjects based on age and gender**

|  |  |  |  |
| --- | --- | --- | --- |
| **Gender** | | | **Age** |
|  | Frequency  (n) | Percentage  (%) | Mean ± SD |
| Male | 224 | 61.5 | 29.87 ± 6.52 |
| Female | 140 | 38.5 |
| Total | 364 | 100 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table.2 Utilization of Dental services based on gender** | | | | | |
| **Questions** | **Responses** | **Gender** | | **Frequency n (%)** | **P value** |
| **Male** | **Female** |
| Last dental visit | 1 year ago | 59(26.5%) | 89(24.5%) | 30(21.4%) | **0.041\*** |
| 1-2 years ago | 44(19.7%) | 91(25%) | 47(33.6%) |
| 2-5 years ago | 43(18.1%) | 67(18.1%) | 24(17.1%) |
| Never had a dental visit | 34(15.2%) | 55(15.1%) | 21(15.0%) |
| >5 years | 44(19.7%) | 63(17.3%) | 18(12.9%) |
| Place of Dental  Treatment | Private clinics | 139(62.1%) | 244(67%) | 105(75.0%) | **0.015\*** |
| NGO clinics | 0(0%) | 2(0.5%) | 2(1.4%) |
| Primary Health Centres | 25(11.2%) | 31(7%) | 6(4.3%) |
| Dental college hospitals | 21(9.4%) | 32(8.8%) | 11(7.9%) |
| Doesn’t visit any place | 39(17.4%) | 55(15.1%) | 16(11.4%) |
| Preference for Prevention\ Treatment  of Oral problems | Prevention | 115(51.6%) | 186(51%) | 70(50.0%) | 0.668 |
| Treatment | 19(8.5%) | 28(7%) | 9(6.4%) |
| Both | 89(39.9%) | 150(41.3%) | 61(43.6%) |
| Reasons for not undergoing Dental treatment in spite of experiencing dental problem | Fear | 64(28.6%) | 114(31.3%) | 50(35.7%) | 0.127 |
| No time | 65(29.0%) | 113(31%) | 48(34.3%) |
| No access | 22(9.8%) | 32(8.8%) | 10(7.1%) |
| Too expensive | 73(32.6%) | 105(28.8%) | 32(22.9%) |
| Reasons for preferring a particular dental clinic in previous dental visit | Good service | 91(40.6%) | 160(44%) | 69 (49.3%) | 0.249 |
| Insurance | 28(12.5%) | 47(12.9%) | 19 (13.6%) |
| Access | 21 (9.4%) | 35(9.6%) | 14 (10%) |
| Cost effective | 23 (10.3%) | 30(8.2%) | 7 (5%) |
| Emergency | 8 (3.6%) | 15(4.1%) | 7 (5%) |
| Popular clinic | 53 (23.7%) | 60(11.2%) | 24 (17.1%) |
| Importance of Dental care | Somewhat important | 34 (15.2%) | 60(16.5%) | 26(18.6%) | **0.013\*** |
| Important | 131(58.5%) | 191(52.5%) | 60(42.9%) |
| Very important | 59 (26.3%) | 113(31%) | 54 (38.6%) |
| Perception about frequency of dental visits | Once in 6 months | 31(13.8%) | 51(14%) | 20 (14.3%) | 0.211 |
| Once in a year | 70 (31.3%) | 115(31.6%) | 45(32.1%) |
| When you get pain | 81(36.2%) | 119(32.7%) | 38(27.1%) |
| Don’t know | 42 (18.8%) | 79(21.7%) | 37(26.4%) |

**Table.3 Perception of Dental Insurance based on gender**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Questions** | **Responses** | **Gender** | | **Frequency n (%)** | **P value** |
| **Male** | **Female** |
| Usage of dental insurance policy | Yes | 5(2.2%) | 4(2.9%) | 9(2.5)  355(97.5%) | 0.709 |
| No | 219(97.8%) | 136(97.1%) |
| Reasons for not using any Dental insurance policy | Slow payments | 22 (9.8%) | 18 (12.9%) | 40(11%) | 0.530 |
| High Premium | 30 (13.4%) | 11 (7.9%) | 41(11.3%) |
| Denial of claims | 29 (12.9%) | 19 (13.6%) | 144(39.6%) |
| Complicated paperwork | 56 (25%) | 35(25%) | 91(25%) |
| Others | 87(38.8%) | 57(40.7%) | 48(13.2%) |
| Perception about the benefit of dental insurance policy | Yes | 93 (41.5%) | 47 (33.6%) | 140 38.5%) | 0.221 |
| No | 14 (6.3%) | 7 (5%) | 21 (5.8%) |
| Don’t know | 117 (52.2%) | 86 (61.4%) | 203 (55.8%) |
| Reasons for the benefit of dental insurance policy | Reduce financial burden | 112(50%) | 37 (26.4%) | 140(38.5%) | **0.000\*\*** |
| Make treatment easily available | 40 (17.9%) | 43 (30.7%) | 21(5.8%) |
| Let people seek treatment  at initial stage | 72(32.1%) | 60(42.9%) | 203(55.8%) |
| Source of Knowledge about dental insurance (Policy/Schemes) | Newspapers/Magazines | 30(13.4%) | 16 (11.4%) | 46(12.6%) | 0.621 |
| Internet sources | 87 (38.8%) | 52 (37.1%) | 139(38.2%) |
| Radio/Television broadcasting | 7 (3.1%) | 6(4.3%) | 13(3.6%) |
| Colleague | 88 (39.3%) | 53 (37.9%) | 141(38.7%) |
| Agents | 12 (5.4%) | 13(9.3%) | 25(6.9%) |
| Factor that Prompts to buy a dental insurance policy | Brand image of the company | 21 (9.4%) | 9 (6.4%) | 30(8.2%) | **0.036\*** |
| Excellent past record of performance | 18 (8%) | 11 (7.9%) | 29(8%) |
| Impression created by the company ads | 10 (4.5%) | 0 (0%) | 10(2.7%) |
| Smart marketing of the company | 5 (2.2%) | 8 (5.7%) | 13(3.6%) |
| I don’t know | 170 (75.9%) | 112 (80%) | 282(77.5%) |
| Dental insurance premium would make dental treatment affordable | Yes | 101(45.1%) | 53(37.9%) | 154(42.3%) | 0.397 |
| No | 7(3.1%) | 5(3.6%) | 12(3.3%) |
| May be | 116(51.8%) | 82(58.6%) | 198(54.4%) |
| Preferred mode for dental fees payment | Insurance | 100(44.6%) | 54(38.6%) | 154(42.3%) | 0.491 |
| Personal Payments | 85(37.9%) | 57(40.7%) | 142(39%) |
| Reimbursement | 39(17.4%) | 29(20.7%) | 68(18.7%) |
| Having Dental insurance in their company | Yes | 15(6.7%) | 6(4.3%) | 21(5.8%) | **0.044\*** |
| No | 142(63.2%) | 82(58.6%) | 224(61.5%) |
| Don’t know | 64(28.6%) | 43(30.7%) | 107(29.4%) |

**Table.4 Utilization of various Dental procedures based on gender**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Procedures** | **Male** | | **Female** | | | **P value** |
|  | **Yes** | **No** | **Yes** | | **No** |
| **Diagnostic** | 61(27.2%) | 163(72.8%) | 40(28.6%) | 100(71.4%) | | 0.781 |
| **Preventive** | 78(34.8%) | 146(65.2%) | 55(39.3%) | 85(60.7%) | | 0.392 |
| **Restorative** | 33(14.7%) | 191(85.3%) | 21(15%) | 119(85%) | | 0.944 |
| **RCT** | 41(18.3%) | 183(81.7%) | 34(24.3%) | 106(75.7%) | | 0.354 |
| **Ortho** | 8(3.6%) | 216(96.4%) | 5(3.6%) | 135(96.4%) | | 1.000 |
| **Extraction** | 42(18.8%) | 182(81.3%) | 21(15%) | 119(85%) | | 0.358 |
| **Aesthetics** | 6(2.7%) | 218(97.3%) | 4(2.9%) | 136(97.1%) | | 0.919 |
| **Implant** | - | 224(100%) | - | 140(100%) | | - |
| **Replacement** | 11(4.9%) | 213(95.1%) | 8(5.7%) | 132(94.3%) | | 0.737 |
| **Nil** | 74(33.0%) | 150(67.0%) | 108(77.1%) | 32(21.8%) | | 0.112 |

**DISCUSSION**

The present study provided important insights regarding utilization of dental service and perception towards dental insurance among software professionals. In our practice, we are seeing many patients with IT background with various health problems ranging from physical illness to emotional and psychological problems. General health problems often attribute to various oral problems.Knowledge of the software professionals regarding their dental visit, frequency of dental visit, Importance of dental care, barriers in utilizing dental services and perception towards dental insurance like its benefits, barriers in using dental insurance, source of knowledge about dental insurance policies were assessed in the current study. Dental visits are recommended biannually in order to reduce the burden of oral diseases.6 Around 45% of the study subjects have visited the dentist Once in a year whereas, in a study conducted by Sladjana Siljak in 2019 among European adults showed only 20% of the participants visits dentist once in a year.6 Increase in frequency of dental visit may be because of the education and awareness among our study subjects. Around 34% of the study subjects had previous dental visits 1-2 years ago, in which 25% of females have more awareness regarding the importance of dental visits which is similar to the study conducted by Rafi Shaik et al in 2018.7

Oral health is an integral part of general health and most of the oral diseases requires a professional dental care.7 To attain maximum health benefit one should utilize the dental services. Dental care utilization refers to “the percentage of the population who access dental services over a specified period of time”. It is determined by the use of dental services and as such can be expressed in terms of dental visits made and services received over a specified period.8 In our study 70% of them were aware about that Prevention of oral disease is more important than treatment, whereas in a study conducted by Murtomaa et al in 1993 among Finnish adults showed that only 23% of the Population were aware about the prevention of oral disease.9 Increase in awareness in our study could be because socializing and adequate knowledge about the importance of dental care.

In our study 75% of them preferred private clinics for the dental visits whereas in a study conducted by V.S Bommireddy et al in 2016 among Rural elderly population showed that 96% of the participants preferred Dental institution.10 This may be due to easy access to private clinics as they are residing in Chennai city. Also 75% of the females preferred private dental clinics, because of the easy accessibility than males who preferred Public health centres and dental college hospitals for economic reasons. The major barrier reported for not undergoing Dental treatment in spite of experiencing dental problem is fear, among which women showed higher fear 31.3%, which is comparable to other reported studies conducted by Ulf Berggren et al in 1993.11 Around 34.3% of them found that Lack of time is also a barrier for not visiting dentist which is similar to other reported studies conducted by Gao et al in 2013.12 This is indicative of the fact that utilization may be influenced by awareness, educational level, anxiety and fear among the population. Utilization depends on internal and external factors. Internal factors include perceived need for care and cultural preferences. External factors include the adequacy of dental care and ability to pay.13 Barriers that the patient experience in accessing oral health care includes the cost of treatment, individual health status, disability, transportation facilities, dental care services near to residence, adequacy of dental workforce, and beliefs. Studies on patterns and barriers of utilization provide a basis for formulation and execution of oral health promotion programmes.14 Around 49% of the participants prefer a particular dental clinic in their last dental visit because of the good service, shorter waiting time, satisfaction and quality of care and this is in contrast to the study conducted by V.S Bommireddy et al in 2016 in which participants preferred accessibility as the reason.10

The present study revealed that study subjects had poor awareness about the benefits of dental insurance policy. Only 2.5% of them are using dental insurance in their company.39.6% of them identified denial of claims as the biggest possible reason for not using dental insurance and it is similar to the study conducted by Joshi et al in 2019.5Around 50% of the male participants in our study have more concern that dental insurance can reduce financial burden. Due to lack of knowledge regarding dental insurance policy, around 77.5% of the study subjects are not aware about the factor influencing to buy a dental insurance policy, which is in contrast to the study conducted by Joshi et al in 2019.5

Insurance companies offer limited coverage for a few dental procedures under general health insurance plans. Most insurance covers are only for dental treatment involving 24-hour hospitalization or life-threatening situations. There is no comprehensive stand alone for dental treatment.15 Indian dental insurance plans are mainly of two types: I. Stand-alone dental insurance plan: This type of plan covers the expenses related to general dental problems such as periodontitis and extraction of permanent teeth due to ailments such as caries. The amount of expense to be reimbursed as well as the period of such cover is fixed. This type of plan is generally provided by the popular dental care product companies in association with one of the insurance companies. II. Dental insurance cover as part of general health insurance plan: This type of dental insurance is provided by the general insurance companies as part of their own general health insurance schemes such as health advantage policy or student medical policy. One can claim dental expenses along with the other kinds of reimbursements such as the cost of medicines or hospitalization.16

Data collected through a self-reported questionnaire may have subjective variation. Factors such as oral hygiene practices, socio economic status, level of education, income and medications were not included in the study. Each country has varied health care policy system; hence it is not easy to compare our findings with other studies. Efforts should be made to increase awareness and educate the public on the utilization of dental services and promote community participation and ownership. Radical steps must be taken to simultaneously educate the people at large about the significance of oral health, timely treatment as well as make good dental insurance cover available by both government and private agencies. Health insurance which covers dental services in developing countries can be speculated for the higher utilization. We suggest that Insurance providers should introduce a comprehensive dental insurance plan which would be of great benefit to the software employees and also act as money spinner in these gloomy days of recession. It would serve as motivational factor for the people to visit dentist regularly.

**Figure.1**

**CONCLUSION**

The present study reveals that the software professionals are utilizing the dental services adequately. More than half of them have utilized dental services in the past two years, they have enough awareness about the dental importance and they prefer prevention is better than cure. But they have poor awareness regarding the benefits covered in their health insurance plans although they showed a positive attitude towards dental insurance plans. Only very few of them are benefitted by the dental insurance policy.

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