

# Utilization of Dental Services and Perception Towards Dental Insurance Among Software Professionals in Chennai City: A Cross Sectional Survey

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## Abstract

**Aim:** To assess the utilization of dental services and perception towards dental insurance among the Software professionals who are working in Chennai city.

**Materials and methods:** A cross sectional questionnaire survey was conducted among 364 software professionals in Chennai city, to identify the utilization of dental services and their perception towards dental insurance policy. After reviewing the related articles, a questionnaire including demographic data, utilization pattern, and perception towards the Dental insurance were framed. In order to standardize and validate the questionnaire content Validity Index was used and Reliability test was done by test-retest method. Google forms were sent to the study subjects to collect information. Collected data were analysed using descriptive statistics and Chi-square test.

**Results:** The software professionals were aware about the utilization of dental services, their last dental visit was 1-2 years ago (34%), their place of preference of dental treatment was to be private clinics (75%) and about (50%) of the participants preferred prevention of oral disease is as important than treatment. The major barrier for not utilizing dental service was to be fear in which female showed more fear for dental treatments. Their perception towards frequency of dental visits was found to be once in a year (32%). Regarding dental insurance perception the software professionals had very less knowledge about the benefits of dental insurance policy. Only 2.5% of them are using dental insurance offered by their company.

**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. Efforts should be taken to increase the awareness regarding dental insurance and their benefits.

**Key Words:** IT professionals, Dental service utilization, Dental insurance, Chennai city.

## Introduction

Good health can be considered as a fundamental right of every human being, oro-dental health being an integral part of the same [1]. 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 reputable 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 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 (IIT) 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, chennai 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. 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.

### Formulation of Questionnaire

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 Collection

A self-administered closed ended questionnaire which consists of two parts which cover dental service utilisation and Perception towards Dental insurance. 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  $\leq 0.05$  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  $29.87 \pm 6.52$  (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).

**Table 1:** Distribution of study subjects based on age and gender.

	Gender		Age
	Frequency (n)	Percentage (%)	Mean $\pm$ SD
Male	224	61.5	$29.87 \pm 6.52$
Female	140	38.5	
Total	364	100	

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 and Figure 1).

## 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

**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%)	<b>0.041</b>
	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%)	<b>0.015</b>
	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%)	

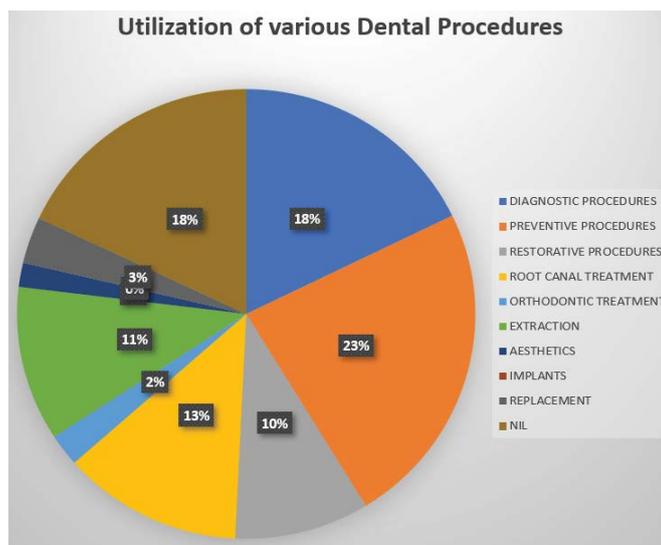
Importance of Dental care	Somewhat important	34 (15.2%)	60(16.5%)	26(18.6%)	<b>0.013</b>
	Important	131(58.5%)	191(52.5%)	60(42.9%)	
	Very important	59 (26.3%)	113(31%)	54 (38.6%)	
Perception about frequency of dental visits	Once in 6 months	31(13.8%)	51(14%)	20 (14.3%)	0.211
	Once in a year	70 (31.3%)	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)	0.709
	No	219(97.8%)	136(97.1%)	355(97.5%)	
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%)	<b>0.000</b>
	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%)	<b>0.036</b>
	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%)	<b>0.044</b>
	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
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



**Figure 1:** Utilization of various dental procedure.

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 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 [5]. Around 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 [14]. Indian dental insurance plans are mainly of two types:

- 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.

- 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 [15].

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.

### 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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