ORIGINAL RESEARCH PAPER
Volume - 13 | Issue - 08 | August - 2024 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

PERCEPTION ABOUT ACCESSIBILITY AND AFFORDABILITY OF ORAL HEALTH SERVICES AMONG PATIENTS ATTENDING DENTAL INSTITUTIONS/HOSPITALS IN BANGALORE CITY: A CROSS-SECTIONAL SURVEY

Dentistry

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ABSTRACT

Introduction: Utilization of health service is a concept of expressing the extent of interaction between the service provider and the people for whom it is intended. There has been a lot of interest in understanding oral health care utilization behavior as it is important for the delivery of effective oral health care. **Aim:** To assess patient's perception about accessibility and affordability of oral health services in dental institutions/hospitals in Bangalore city. **Methodology:** A cross-sectional survey was carried out among 400 patients who attended dental institutions/hospitals in Bangalore city. A self-structured, pre-tested, close-ended questionnaire was self-administered to the patients which included patient's consent, demographic details & questions pertaining to perception about accessibility and affordability of oral health services. Face validity of the questionnaire was checked with the help of experts in the department of Public health dentistry. Reliability was also assessed & Cronbach's alpha was found to be 0.80. Descriptive statistics and Chi-square test was carried out to check the significant difference. **Results:** The age of participants was significantly associated with cultural beliefs and attitudes toward utilizing dental services. Additionally, socioeconomic status significantly impacted several aspects: the location of dental institutions, the perceived lack of advanced technology in these institutions, the cost of dental services and travel, the willingness to take a day off work to visit the dentist, and the preference for government hospitals over private ones. **Conclusion:** This study confirms that costs of dental services, travel costs, time constrains, location of dental institution, culture, belief and attitude of patients, preference of govt hospital over private hospital were the highly reported barriers associated with accessibility and affordability of dental services.

KEYWORDS

Perception, accessibility, affordability, dental services, utilization.

INTRODUCTION

"Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".

In the recent years, this statement has been amplified to include ***the ability to lead a "socially and economically productive life"***.[1]

Oral health is critical but an overlooked component of overall health and well-being among children and adults. According to WHO, oral health is a state of being free from chronic mouth and facial pain, oral and throat cancer, oral sores, birth defects such as cleft lip and palate, periodontal disease, tooth decay, tooth loss, and other diseases and disorders that affect the oral cavity.[2]

Oral diseases qualify as major public health problems owing to their high prevalence and incidence in all regions of the world, and the greatest burden of oral diseases is among disadvantaged and socially marginalized populations.[3]

Even though, during recent years dramatic changing pattern of oral diseases have been observed at a global level, oral health equality still remains as a dream to achieve.[4]

The high prevalence of oral health problems may be attributable not only to behavioral risk factors, but to barriers that prevent access to oral health care.

In order to improvise the dental care access, one needs to localize the barriers concerned with individual groups of population.[5]

Investigating patients' views, desires, opinions, and satisfaction with dental care may provide useful information in understanding or predicting patients' behavior and opinion about the dental services.[6]

In an attempt to ascertain the factors associated with the utilization of dental services, this study was carried out to collect the data regarding the demographic characteristics and patient's perception regarding the barriers that prevent the utilization of the oral health services.

METHODOLOGY

A cross-sectional survey was conducted to assess perception about accessibility and affordability of oral health services among patients attending dental institutions/hospitals in Bangalore city. A total of 4 dental colleges were selected out of 16 dental colleges in Bangalore city. The four dental colleges were randomly selected by employing lottery method. From each dental college around 100 subjects were selected according to convenience making a total of 400. The inclusion criteria included the patients visiting dental institution for treatment on the day of data collection. Patients who did not give written informed consent to participate in the study and who were eligible for any concession were excluded from the study. A self-structured, pre-tested, close-ended questionnaire was self-administered to the patients which consisted of written informed consent to participate in the study, demographic details and questions pertaining to perception about accessibility and affordability of dental services. The investigator personally visited the dental institutions and administered the questionnaire to the patients. Instructions were given to the study participants about filling the questionnaire.

A pilot study was conducted on 30 patients, to check the feasibility and also to validate the questionnaire. Face validity of the questionnaire was checked with the help of experts in the Department of Public health Dentistry while content validity was checked by ensuring that the questions covered all the areas of perception mapped out by initial objective. The reliability of the questionnaire was assessed by using Cronbach's α and it was found to be 0.81 (acceptable). The study was carried out for the duration of one month in September, 2018.

Ethical clearance was obtained from the ethical committee of Vydehi Institute of Dental Sciences and Research Centre, Bangalore and required permission was obtained from the principals of the four dental colleges in Bangalore city before start of the study.

The statistical software namely SPSS 22, IBM Chicago was used for the analysis of the data and Microsoft word and Excel have been used to generate graphs and tables.

Statistical analysis was carried out to check the difference in statistical significance using Chi-square test as the data was categorical and p value was fixed at 5%.

RESULTS

A total of 400 individuals participated in the present study. Among the 400, 107 participants i.e., 26.8% belonged to the age group of 20-30 years, 176 i.e., 44% were between 31-40 years, 93 i.e 23.2% belonged

to 41-50 years and 24 i.e., 6% were ≥ 51 years.

Out of 400 study participants, majority of them i.e., 226 (56.5%) were males whereas, only 174 (43.5%) were females.

Majority of the participants – 251 i.e., 62.7% were married and 149 i.e., 37.3% were single.

Among 400 participants, most of the study participants, 210 i.e., 52.5% belonged to upper middle socio-economic class, followed by 138 i.e., 34.5% of them from lower middle class, 35 i.e., 8.8% belonged to upper class, and 17 i.e., 4.3% were from upper lower class. The socioeconomic status of the participants was classified according to Kuppuswamy socioeconomic status scale, 2018.[7]

The assessment of perceptions concerning the accessibility and affordability of dental health services among patients attending dental institutions/hospitals in Bangalore city was conducted using a 16-item questionnaire. The questionnaire responses were categorized into two groups: affirmative (YES) and negative (NO). The initial nine questions (Q1 to Q9) examined participants' perceptions regarding the accessibility of dental health services, while the subsequent seven questions (Q10 to Q16) explored perceptions concerning affordability. The distribution of participants based on their perceptions regarding accessibility and affordability of dental health services is presented in Table 2.

Table 3 illustrates the relationship between participants' age and the question of whether cultural beliefs and attitudes affect their opinion about using dental services. Notably, a majority of participants (41.5%) in the age group 31-40 years disagreed with the notion that culture, belief, and attitude influence their opinion about using dental services. However, 5% of participants aged 51 years and above agreed that cultural factors may affect their opinion, demonstrating statistical significance with a Chi-square value of 12.191 and a p-value of 0.016.

Table 4 explores the relationship between participants' socioeconomic status and various aspects related to dental services, including the location of dental institutions/hospitals, utilization of advanced technology, cost of services, travel expenses, time constraints, and preference for government hospitals over private facilities.

The perceptions of participants regarding various aspects of dental care provision were investigated, yielding notable findings. Regarding the ease of locating dental institutions or hospitals, a majority of upper middle-class participants (40%, n=160) and lower middle-class participants (24.5%, n=98) reported no difficulty, indicating a prevailing sentiment of accessibility. Statistical analysis revealed significant associations, with a Chi-square value of 9.303 and a p-value of 0.026.

Concerning the perceived lack of advanced technology and armamentarium in dental facilities, the majority of upper middle class participants (38.75%, n=155) and lower middle class participants (28.25%, n=113) answered negatively. This suggests a generally favorable perception of technological adequacy. Statistical analysis confirmed the significance of these findings, with a Chi-square value of 8.482 and a p-value of 0.037.

In terms of the perceived expense of dental services, a substantial proportion of upper middle-class participants (29%, n=116) and lower middle-class participants (26.75%, n=107) expressed agreement with the statement. This observation was supported by a highly significant Chi-square value of 48.307 and a p-value of 0.00.

Regarding the perceived costliness of travel to dental facilities, a majority of lower middle-class participants (24%, n=96) affirmed this notion, while a majority of upper middle-class participants (30.5%, n=122) disagreed. This contrast was statistically significant, with a Chi-square value of 52.044 and a p-value of 0.00.

Regarding willingness to take a day off work for dental visits, the majority of participants from both upper middle class (30.5%, n=122) and lower middle class (24.5%, n=98) reported a negative inclination. Statistical analysis demonstrated a highly significant association, with a Chi-square value of 23.268 and a p-value of 0.005.

Finally, preferences for hospital type revealed that while a significant proportion of lower middle-class participants (22.5%, n=90) and upper lower-class participants (2.75%, n=11) favored government hospitals over private ones, the majority of upper-class participants (6.5%, n=26) and upper middle-class participants (28.25%, n=113) did not share this preference. This discrepancy was statistically significant, with a Chi-square value of 23.268 and a p-value of 0.005.

Table 1: Distribution Of The Participants Based On Age, Gender, Marital Status And Socioeconomic Status.

Variables		Numbers	Percentage
AGE	20 – 30 years	107	26.8
	31 – 40 years	176	44
	41 – 50 years	93	23.2
	≥ 51 years	24	6
	Total	400	100
GENDER	Male	226	56.5
	Female	174	43.5
	Total	400	100
MARITAL STATUS	Married	251	62.7
	Single	149	37.3
	Total	400	100
SOCIOECONOMIC STATUS	Upper middle class	210	52.5
	Lower middle class	138	34.5
	Upper class	35	8.8
	Upper lower class	17	4.3
	Total	400	100

Table 2: Distribution Of The Participants Based On Their Perception About Accessibility And Affordability Of Dental Health Services

	Determinants Of Accessibility And Affordability Of Dental Health Services	NO	YES
Q1	Does culture, belief and attitude affect your opinion about using dental services?	358 (89.5 %)	42 (10.5 %)
Q2	Do oral healthcare professionals give enough information about the dental services to the patients?	44 (11%)	356 (89%)
Q3	Do you think the queue in the waiting room is too long?	35 (8.75 %)	365 (91.2 5%)
Q4	Do you find it difficult to locate a dental institution/hospital?	302 (75.5 %)	98 (24.5 %)
Q5	Do you think the wait to get an appointment at a dental institution/hospital is too long?	77 (19.2 5%)	323 (80.7 5%)
Q6	Do you think the fear of the dentist is high?	128 (32%)	272 (68%)
Q7	Do you think there is lack of choice of dental service providers?	268 (67%)	132 (33 %)
Q8	Do you think dental institution/hospital lack advanced technology and armamentarium?	305 (76.2 5%)	95 (23.7 5%)
Q9	Did you visit the dental institution/hospital on your own for your oral health problems?	128 (32 %)	272 (68%)
Q10	Do you think dental services are expensive?	151 (37.7 5%)	149 (37.2 5%)
Q11	Do you feel travelling to the dental institution/hospital is costly?	193 (48.2 5%)	207 (51.7 5%)
Q12	Do you think health insurance should cover dental insurance?	28 (7%)	372 (93 %)
Q13	Do you think dental service providers pay more attention to expensive treatment procedures?	205 (51.2 5%)	195 (48.7 5%)
Q14	Are you willing to take a day off work to visit a dentist?	243 (60.7 5%)	157 (39.2 5%)

Q15	Do you prefer government hospitals to private hospitals?	193 (48.25%)	207 (51.75%)
Q16	Do you think proper patient-provider communication is important?	3 (0.75%)	397 (99.25%)

Table 3: Relationship Between Age Of The Participants And Their Perception About Accessibility And Affordability Of Dental Health Services

Determinant of accessibility of dental health services		20 – 30 Years		31 – 40 Years		41 – 50 Years		≥51 Years		Chi-square	p-value
		No	Yes	No	Yes	No	Yes	No	Yes		
Q1	Does culture, belief and attitude affect your opinion about using dental services?	87 (21.8%)	2 (0.5%)	166 (41.5%)	10 (2.5%)	83 (20.75%)	10 (2.5%)	22 (5.5%)	20 (5%)	12.191	0.016*

p-value: * significant, Chi-square test used

Table 4: Relationship Between Socioeconomic Status Of The Participants And Their Perception About Accessibility And Affordability Of Dental Health Services

x	Determinants of accessibility and affordability of dental health services	Upper lower class		Lower middle class		Upper middle class		Upper class		Chi-square	p-value
		No	Yes	No	Yes	No	Yes	No	Yes		
Q4	Do you find it difficult to locate a dental institution/hospital?	11 (2.75%)	6 (1.5%)	98 (24.5%)	40 (10%)	160 (40%)	50 (12.5%)	33 (8.25%)	2(0.5%)	9.303	0.026*
Q8	Do you think dental institution/hospital lack advanced technology and armamentarium?	9 (2.25%)	8 (2%)	113 (28.25%)	25 (6.25%)	155 (38.75%)	55 (13.75%)	28 (7%)	7 (1.75%)	8.482	0.037*
Q10	Do you think dental services are expensive?	0 (0%)	17 (4.25%)	31 (7.75%)	107 (26.75%)	94 (23.5%)	116 (29%)	26 (6.5%)	9 (2.25%)	48.307	0.000***
Q11	Do you feel travelling to the dental institution/hospital is costly?	1 (0.25%)	16 (4%)	42 (10.5%)	96 (24%)	122 (30.5%)	88 (22%)	28 (7%)	7 (1.75%)	52.044	0.000***
Q14	Are you willing to take a day off work to visit a dentist?	7 (1.75%)	10 (2.5%)	98 (24.5%)	40 (10%)	122 (30.5%)	88 (22%)	16 (4%)	19 (4.75%)	12.768	0.005**
Q15	Do you prefer government hospitals to private hospitals?	6 (1.5%)	11 (2.75%)	48 (12%)	90 (22.5%)	113 (28.25%)	97 (24.25%)	26 (6.5%)	9 (2.25%)	23.268	0.000***

p-value: * significant, ** highly significant, *** very highly significant, Chi-square test used

DISCUSSION

Dental care utilization can be defined as the percentage of the population who access dental services over a specified period of time. There are reports that dental patients only visit the dentist when in pain and never bother to return for follow-up in most cases. To improve oral health outcomes an adequate knowledge of the way the individuals use health services and the factors predictive of this behavior is essential.[8]

Hence, a survey was conducted to assess patient's perception about accessibility and affordability of oral health services in dental institutions/hospitals in Bangalore city.

In the present study the age of the participants and their perception regarding culture, belief and attitude affecting the opinion about using dental services was found to be statistically significant. Majority of the participants – 41.5% who disagreed were from the age group 31-40 years, whereas, 5% of the participants from the age group 51 years and above agreed that culture, belief and attitude may affect the opinion about using dental services. These findings were consistent with the findings of Kakatkar et al,[9] Bahadori et al,[10] Al-shammari et al[11] who reported a significant association between age and accessibility of dental services. Belief that visiting a dentist is necessary only for pain relief were one of the barriers for accessing dental services.

The socioeconomic status of the participants significantly influenced their perceptions of the difficulty in finding the location of a dental institution or hospital. Most participants from the upper middle class and lower middle class did not have trouble locating a dental institution or hospital, whereas a few participants did encounter difficulties. This was in accordance to the findings of the study conducted by Malhi et al,[3] Bahadori et al.[10] Improving access to healthcare requires the optimal establishment of health care facilities. If service providers do not find the right location, it will increase the patients' costs and the travel time for receiving the needed care.

Socioeconomic status was significantly associated with participants' perceptions of dental institutions or hospitals lacking advanced technology and armamentarium. Majority of the participants from both upper middle class and lower middle class did not perceive that the dental institution/hospital lack advanced technology and armamentarium. This was in accordance to the findings of the study conducted by Bahadori et al,[10] Al-Hussyeen et al.[6]

Socioeconomic status was highly significant in influencing participants' perceptions of dental services being expensive. The majority of participants from both the upper middle class and lower middle class found dental services to be costly. This was in accordance to the findings of the study conducted by Nagarjuna et al,[2] Bahadori et al,[10] Al-Hussyeen et al.[6] Poor economic and social status could lead the patient to visit a dentist when their distress had reached its acute phase.

This finding necessitates the importance of reviewing the cost of dental services in dental institutions/hospitals to make treatment fees more affordable to public. On the contrary, the findings of the study conducted by Obeidat et al[12] and Al-shammari et al[11] stated that finances were not considered by participants to be a barrier to using dental services, because dental care is provided free of charge for Kuwaitis, which is not the case in most countries.

The socioeconomic status of participants was found to be highly significant in shaping their perceptions of the cost of traveling to dental institutions or hospitals. Most participants from the lower middle class considered travel to these facilities to be expensive. This was in accordance to the findings of the study conducted by Nagarjuna et al,[2] Bahadori et al.[10] Far locations of the dental institutions/hospitals was found to be one of the discouraging factor from continuing utilization of the services as the participants were likely to suffer both a perceived and real financial barrier to receiving dental care due to the indirect costs associated with travelling in a large city like Bangalore, given the crowded streets and jammed traffic. On the contrary the findings of the study conducted by Kakatkar et al[9] and Petersen et al[13] found no association between the travel cost and affordability of the dental services.

Socioeconomic status significantly influenced participants' willingness to take a day off work for a dental visit. Most participants from both the upper middle class and lower middle class were reluctant to take a day off for a dental visit. This was in accordance to the findings of the study conducted by Nagarjuna et al,[2] Poudyal et al,[14] Bahadori et al,[10] Curtis et al,[15] Al Shammeri et al,[11] where time constraint was found to be one of the significant barriers towards utilization of dental services.

The socioeconomic status of participants had a significant impact on their preference for government versus private hospitals. Participants from the upper and upper middle classes generally preferred private hospitals, while those from the lower middle and upper lower classes favored government hospitals. This preference was largely driven by the lower cost of dental services at government hospitals for individuals in lower socioeconomic groups. This was contrary to the findings of the study conducted by Al-Hussyeen et al,[6] Matee et al[16] where post-operative complications were found to have a determinant effect on discouraging participants from utilizing services in the government hospitals.

The limitations of the present study are: 1) As the study was conducted in dental institutions of Bangalore city only, hence, the results cannot be generalized to the entire population of India. 2) The cross-sectional nature of the study, which assesses both the cause and effect/outcome at the same time.

Recommendation:

1) The factors that might affect the accessibility and affordability of dental services can be controlled by planning educational and promotional programs to increase people's awareness of the need to use available dental services.

2) It is important to remove the barrier of high cost of health care by conducting free health camps, which have proved to be effective in screening for diseases and for providing preventive care.

3) Nationwide studies should be conducted to generalize the findings of the present study.

4)Further studies should be conducted to study potential factors that might affect the accessibility and affordability of dental services, which includes psychosocial factors, general health status, social factors, assessment of provided dental services and assessment of dental team professionals.

CONCLUSION

Use of dental services and pattern of use can serve as indicators of oral health behaviours and beliefs.

The findings of the present study confirms that costs of dental services, travel costs, time constrains, location of dental institution, culture, belief and attitude of patients, preference of govt hospital over private hospital were statistically significant with accessibility and affordability of dental services.

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