

Barriers to the Utilization of Dental Services in Udaipur, India

G. Kakatkar¹✉, N. Bhat², R. Nagarajappa², V. Prasad³, A. Sharda⁴, K. Asawa⁴, A. Agrawal¹

¹Postgraduate Student, Department of Public Health Dentistry, Pacific Dental College and Hospital, Debari, Udaipur, Rajasthan, India

²Professor, Department of Public Health Dentistry, Pacific Dental College and Hospital, Debari, Udaipur, Rajasthan, India

³Reader, Department of Oral Pathology and Microbiology, Darshan Dental College and Hospital, Loyara, Udaipur, Rajasthan, India

⁴Senior Lecturer, Department of Public Health Dentistry, Pacific Dental College and Hospital, Debari, Udaipur, Rajasthan, India

Abstract:

Objective: Regular home care and yearly dental check-ups are the best means of dental care. In spite of the information on dental care, many people fail to take these precautions. The objective of this study was to determine the barriers in regular dental care and home care and to assess their association with age, sex, education and income.

Materials and Methods: A cross-sectional survey was conducted among 427 randomly selected individuals, 248 males and 179 females. Data were collected by a pre-tested, self-administered 14 question questionnaire. The answer "very much" was scored as one, "to some degree" as two and "not at all" as three. The data was described and analyzed by frequency distribution and chi square test with $P < 0.05$ level of significance. Logistic regression was used to investigate the association between dental visits with age, sex and education. Correlation between income and dental visits was determined by Spearman's correlation coefficient.

Results: The male group had more dental visits ($P > 0.05$), but females experienced higher dental fear ($P < 0.001$). The younger age group had more visits within one year in comparison to the older. Increase in education, decreases the barriers for regular dental care. Income had a significantly negative correlation with dental visit ($P = 0.02$).

Conclusion: Our findings suggest that males believed in having regular dental care. Cost of the treatment also affected the dental visits, but the distance they had to travel to get the dental treatment was not much significant. Above all, felt need had a major impact on the dental visits.

Key Words: Communication barriers; Dental Care; Socioeconomic Factors; Dental Health Services

✉ Corresponding author:
G. Kakatkar, Department of
Public Health Dentistry, Pacific
Dental College and Hospital,
Debari, Udaipur-313024, Raja-
sthan, India.
gaurikaks@yahoo.co.in

Received: 16 February 2011
Accepted: 23 March 2011

Journal of Dentistry, Tehran University of Medical Sciences, Tehran, Iran (2011; Vol. 8, No.2)

INTRODUCTION

Regular home oral care and a yearly dental check-up are the best means for saving one's own teeth, but it appears that in spite of the information on adequate dental care provided by the dental professional and the mass media many people fail to take these precautions.

Although social factors are included in several models explaining the use made of health services or health behavior, individual factors are also emphasized presenting thorough discussion of subjective and environmental constraints regarding the adoption of ideas arising from health education [1].

In order to take care of his teeth in a regular manner, a person has to introduce an “innovation” into his life - a new attitude to dental health. The reasons which prevent the change to the desired dental behavior are viewed as various forms of rejection of the “innovation” [1].

Epidemiological studies have shown high prevalence of dental diseases. Despite the pervasive need for treatment, less than half the adult population visit the dentist in a year [2]. The interest in developing models explaining the utilization of dental services has increased; issues like dental anxiety, price, income, the distance a person had to travel to get care and preference for preservation of teeth are treated as barriers in regular dental care. According to Schuurs et al [3], three factors; namely, dental anxiety, preference for preservation of the teeth and the family dental health problem were found to be associated with regular and irregular dental attendance. Nowjack-Raymer and Gift [4] reports four major groups of fac-

tors influencing the use of dental services which comprises demographic factors, attitude towards dentists and dentistry, access to care and health services. Andersen [5] defines three main concepts explaining the use of health services; namely, predisposing factors, enabling factors and the need for use of services. Predisposing factors are an individual’s characteristics which reflect the propensity to use health services. Andersen’s predisposing factors include three subcategories such as health attitudes, social structure and social demographic factors [2].

India is one of the largest democracies in the world, with a population of one billion. It is a rapidly developing nation and is making great progress in IT, finance and living standard. In spite of these, it is very sad to know that very few people believe in regular dental care. The inverse care law states that about 80 percent of the Indian population resides in the rural areas, most without health care access, while only 20 percent of India’s dentists serve the large pop-

Table 1. Distribution of study subjects regarding sex, age, last dental visit, education and income.

Variables		Numbers	Percent of Samples
Gender	Male	248	58.1
	Female	179	41.9
	Total	427	100
Age	25-35	232	54.3
	36-45	195	45.7
	Total	427	100
Last dental Visit	Within 1 year	17	4.0
	Between 1-2 years	203	47.5
	Over 2 years	207	48.5
	Total	427	100
Education	Basic education	165	38.6
	Further education	262	61.4
	Total	427	100
Income	Non-earning	134	31.4
	I (Low)	164	38.4
	II (Moderate)	212	28.6
	III (High)	7	1.6
	Total	427	100

ulation of rural residents. It is believed that 80 percent of dentists are serving in cities where only 20 percent of the population resides. Although dentist ratio is high in cities or urban areas, people still do not show regular 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 [6].

Data collected over the past few years have shown that about 36% of the general population visit dentists during any one year period. A smaller percentage of them visit twice yearly. It was analyzed that the most important factor influencing dental visits was the cost [7].

In an attempt to ascertain the factors associated with irregular dental care, this study was carried out to determine the barriers that prevent regular dental care or attendance for dental check-ups and to assess their association with age, sex, education, income and dental behavior.

MATERIALS AND METHODS

Study Area

The study was carried out in Debari village situated twenty kilometers from Udaipur city,

Rajasthan. Duration of the study was from September to December 2009.

Study Population and Sampling Procedure

A cross-sectional survey was conducted using a pre-tested questionnaire. The total population of the village was 5545. Simple random sampling was done to obtain a sample size of 427 young and middle aged individuals from Debari. Young and middle aged individuals were preferred in order to obtain a homogeneous population and to minimize the number of patients with full dentures. The age distribution of the participants was as follows: 25-35 years and 26-45 years. Educational background of the individuals was as follows; basic education: primary, middle and higher school education and further educational group included the graduate and postgraduate education. Income was classified on the basis of the Kuppaswamy's socioeconomic status scale [8]. The data were collected by means of a questionnaire usually filled in the presence of the investigators, who gave additional information whenever needed.

Pre-testing of Questionnaire

Prior to the data collection the questions were

Table 2. Frequency distribution of the answers.

Questions	Very Much (%)	Some degree (%)	Not at all (%)
1. I have no knowledge regarding how to take care of my teeth	10.1	78.2	11.7
2. I think my teeth have decayed in spite of brushing	4.7	42.4	52.9
3. I do not have enough time either in the morning or evening to take care of my teeth	27.4	49.2	23.4
4. I do not have any interest in taking care of my teeth	33.5	29.7	36.8
5. Lack of time	14.8	49.4	35.8
6. I have difficulty in arranging an appointment with a particular dentist	23.2	29.7	47.1
7. I have fear of painful dental procedures	30.0	34.4	35.6
8. I feel dental care is expensive	20.4	49.9	29.7
9. The dentist is at a long distance	21.3	30.7	48.0
10. I have restraint because of work	14.3	44.5	41.2
11. I have been lazy	4.0	37.2	58.8
12. I have not had any symptoms in my teeth	10.8	50.1	39.1
13. I do not think dental diseases are very serious	19.4	49.6	19.4
14. I have had earlier unpleasant experiences of dental procedures	11.0	31.9	57.1

pre-tested among a group of 50 individuals revealing no need for any corrections. Kappa value was 0.85 for the questionnaire.

Questionnaire

A structured questionnaire designed in the local language consists of 14 questions among which four were included in reasons preventing daily home care and 10 in reasons preventing yearly dental check-ups. Each respondent was asked a series of questions about his health beliefs, attitude and his last dental visit. The answer "very much" was scored as one, "to some degree" as two, and "not at all" as three.

Data analysis

Data were analyzed using SPSS version 11.5 software (SPSS Inc., Chicago, IL, USA). Descriptive statistics were used to summarize the results. Responses to the questionnaire were analyzed using chi-square test to assess the association between demographic characteristics. A significant relationship was assumed to exist between the groups if the p value was found to be less than 0.05 ($P < 0.05$). Logistic regression was performed using age, sex and education as independent variables and dental visits as dependent variables. The correlation between income and dental visit was determined by Spearman's correlation coefficient.

RESULTS

A total population of 427 comprising of 248 males (58.1%) and 179 females (41.9%) in the age group of 25-45 years with a mean age of 35.25 were included in the study (Table 1). Among the study population, 78.2% of the

study population had average knowledge of dental care, 52.9% agreed on having better oral health after brushing. 34.4% of the population had fear of the painful dental procedures, 49.9% to some extent believed that dental care is expensive. Laziness and unpleasant experiences did not have any association and were not considered as a barrier in regular dental care. But the majority of the study population (50.1%) believed in felt need and was not aware of the prevention (Table 2).

The majority of the study population (38.4%) belonged to the lower income group, 28.6% to middle income group and very few (1.6%) belonged to the higher income group (Table 1). In this study, 50% of the population who had higher education did not find any difficulty in arranging an appointment with the dentist in comparison to those who had basic education (42.42%) with a highly significant p value of less than 0.05. In addition, it was found that the expense of dental care was less restrictive among the higher education group ($P < 0.05$) and the younger age group ($P < 0.05$). The association between the expense of dental care and gender was not statistically significant ($P > 0.05$) (Table 2).

Dental fear was highly significant among females (17.3%) in comparison to males (14.56%), with a P value less than 0.05. 65.32% of the males had unpleasant dental experiences compared to 45.81% of the females with a significant p value ($P < 0.05$).

Among the study population, subjects of 25-35 years age group (13.79%) had significant better knowledge of dental health care in comparison to 9.23% of the 36-45 years age group ($P < 0.05$). It was also seen that laziness was of

Table 3. Distribution of Dental Visits in Different Age Groups.

Dental visit	25-35 years		35-45 years	
	n	%	n	%
Within 1 year	14	6.03	3	1.53
Between 1-2 years	106	45.68	97	86.60
Over 2 years	112	48.27	95	84.82

no much concern among the younger age group (65.94%) in comparison to the other age group (50.25%) with a P value <0.05 (Table 3).

Logistic regression showed that the younger age group had 4.553 times more visits within one year than the other age group with (P<0.05). Besides, males had 0.411 times higher dental visits than females which was not statistically significant (P>0.05). Education had a significant association; higher education group showed 0.088 times higher dental visits than the lower education group (P<0.05) (Table 4).

The higher income group in the study population had better access, affordability for dental procedures compared to the lower income group. But in spite of this, income had a negative correlation with dental visits (Table 5).

DISCUSSION

Social factors are important as shown in various models, but here we concentrated on subjective reasons which act as barriers in regular dental care, because the individual himself is mainly responsible for his regular dental care and dental attendance.

The finding of this study was based on sex, age, education and income in association with the last dental visit. This study showed that the younger age group visited the dentist more regularly in comparison to the older age group (Table 3), which was found to be similar to a study by Syrjala et al [1]. This may be due to the fact that the younger age group had more knowledge and fewer barriers. It was also found that the older age group did not think that oral health was important [1].

Previous studies by Fukai et al [9], Meng et al [10], Liddell and Locker [11], Brukiene et al [12], Heft et al [13] and Skaret et al [14] found that dental fear is related to dental attendance. Meng et al [10] assessed the effect of fear on a number of dental utilization behaviors and oral health outcome in a sample of adult from Floridians. They found that dental fear and fear of dental pain have independent negative effects on dental utilization behaviors and oral health outcome after controlling for other sociodemographic and general health factors. Similar findings were found in a study by Liddell and Locker [11], where the thoughts, feelings and behavior regarding dental treatment was assessed in a group of subjects of metropolitan Toronto. This study demonstrated that attitudes to dental pain and dental control have some gender and age specifications and the most important contributor of dental anxiety for both male and female subjects was fear of dental pain. In the present study, females showed higher dental fear which was also seen in other studies by Fukai et al [9] and Liddell and Locker [11]. This may be one of the reasons of dental visit being lower in females in the present study in comparison with the male population. Unlike other studies by Heloe et al [15] and Pizarro et al [16], where even though dental fear was more common in females, they utilized dental services more frequently than males possibly due to the fact that females have greater tendency to expect good outcome from dental attendance. On the other hand, Brukiene et al [12] and Quteish Taani [17] said that anxiety itself may make an appointment unpleasant. According to Quteish Taani [17], dental anxiety constitutes a major problem for

Table 4. Association of different variables with the last dental visit estimated by odds ratio in a logistic regression model.

Variables	P value	OR	95% Confidence Interval
Age	0.019*	4.553	1.277-16.239
Sex	0.514	1.411	0.502-3.972
Education	0.019*	0.88	0.012-0.673

*With 95% CI, significance less than 0.05.

patients and dental care providers alike. He conducted a study to examine the association between dental anxiety and regularity of dental attendance among young adults. The results showed that only 20.9% were regular dental attendees while the majorities (79.1%) were irregular attendees. The reasons given for irregular attendance were 'lack of time' (36%), 'treatment not needed' (34.1%), 'fear from dentist' (13.3%) and cost (16.6%). The sight and sensation of the injection and sight, sound and sensation of the drill were the most common fear eliciting stimuli. Increased heart rate was the commonest reported physiological response. Females had higher mean ratings, therefore tended to be more anxious than males. Dental anxiety, represented by the mean responses to the items, was found to be higher in irregular dental attendees than regular attendees [14].

There can be no doubt that patient charges affect the use of dental services as found in previous studies by Syrjala et al [1], Reisine [2] and Yule et al [18]. Petersen et al [19] said that dental visits may be influenced by dental health status, expectations about the value of dental care, income and the price of dental care. In the association between cost of dental care and education, it was found that the higher education group found the expense of treatment less restrictive than the lower education group, which was in accordance with previous studies by Syrjala et al [1] and Kegeles [7].

Socio-economic constraints were one of the reasons for irregular dental visits in a study by Kegeles [7] and Muirhead et al [20]. Kegeles [7] made an attempt to understand what motivates people to seek dental care and what keeps people from making dental visits. Inter-

views with the employees of Endicott-Johnson Corporation established that among the motives promoting people to seek preventive dental care is the belief that one is susceptible to dental disease, a belief that dental treatment is beneficial, a belief in natural causality, an esthetic concern for one's teeth, a lack of anxiety about dental treatment, no fear of pain and a positive appraisal of the dentist. According to Kegeles [7] the distance a person had to travel to get dental care was found to influence the visits, but in the present study there was no significant relationship between distance and dental visits which was in accordance with a similar study by Petersen et al [19]. Muirhead et al [20] used the Gelberg-Andersen Behavioral Model for vulnerable populations to identify predictors of dental care utilization among working poor Canadians. This study identified predisposing and enabling vulnerabilities that jeopardize the dental care seeking practices of working poor persons. Dental care utilization was associated with relinquishing spending on other goods and services, which suggests that dental care utilization is a competing financial demand for economically constrained adults.

In this study, income seemed to have a negative and significant correlation with the dental visits (Table 5), which was also found in the study by Petersen et al [19]. On the other hand, in contrast to this finding a positive correlation was found between income and dental visits in a study by Kegeles [7]. This negative correlation may be due to the social and cultural beliefs of the people.

In previous studies by Reisine [2], Afonso-Souza et al [21], Schuurs et al [22], Al-Shammari et al [23], Lopez and Baelum [24], and Poudyal et al [25], patient dental need was found to be the predictor of regular dental vis-

Table 5. Spearman's correlation coefficient of income and dental visit.

Variable	Number	Correlation Coefficient	Sig. (2-tailed)
Income and Dental Visit	427	-0.113*	0.020

* Statistically Significant

its. Afonso-Souza et al [21] investigated the association between routine visits for dental check-up and self-perceived oral health. Data were obtained from 3252 participants. When compared with individuals who reported self-perceived oral health as good, individuals who reported self-perceived oral health as bad were significantly more likely to be older, male, less educated, poorer; they also reported losing teeth more frequently and not visiting the dentist for routine dental 'check-up'. In a study by Al-Shammari et al [23], conducted to assess the prevalence of preventive dental visits and to identify self-reported barriers for this practice among Kuwaiti adults, it was found that the most common reasons for the last dental visits were pain or a dental emergency, need for restorative treatment and an examination/prophylaxis. Besides, older respondents, female gender and those having only high school education or less were less likely to visit a dentist for preventive reasons [23]. Lopez and Baelum [24] demonstrated that socioeconomic and behavioral factors are independently associated with the frequency of and reasons for dental visits in this adolescent population and that self-perceived poor oral health status is strongly associated with infrequent dental visits and symptoms. Poudyal et al [25] conducted a study to assess the factors related to the utilization of dental services in a field practice area in Mangalore. In this study, the reported reason for not visiting the dentist in the past was "I haven't had any problems with my teeth" followed by lack of time and fear of painful dental procedures. Fear was perceived by more females than males. Similarly this study also revealed the patient's perceived need that people visited the dentist only if they had symptoms which may be due to their belief that dental conditions are not serious or life threatening.

Many factors revealed aspects which have been shown to restrict regular dental care. Given recent controversy about the desirability

of six monthly dental check-ups, it could be argued that some reduction in the frequency of dental visits would not be injurious to health [7], but in order to 'promote health and prevent illness', having regular dental visits would be a better response. To improve the regular dental attendance, the barriers have to be controlled by appropriate education and intervention. The results support the idea that in order to motivate people successfully, one not only has to give them information but also has to pay attention to the individual reasons which restrict their behavior.

The limitations of the present study were namely the small sample size and localization of the study to a particular area; therefore, to determine the relative effects of socioeconomic factors and the barriers, further investigation should be conducted. If we want to gain a better understanding of how adults use dental services and why, a more sophisticated indicator of use, is needed to determine who the regular attendees are and what structural and oral health variables are important predictors of attendance.

CONCLUSION

Utilization of oral health care has long been used as an indicator of oral health related behavior. The highly reported reason for not visiting a dentist in this study was "I haven't had any problems in my teeth" indicating the low felt need of the people which calls for improving their awareness and motivating them to use the services available for them so that they lead a socially and economically productive life. Many other factors revealed aspects which have shown to restrict regular dental care such as knowledge about dental care, dental fear, expense of dental care, unpleasant dental experiences and socioeconomic factors.

ACKNOWLEDGMENTS

The author would like to thank the Staff and Postgraduate students of Department of Public

Health Dentistry, Pacific Dental College and Hospital, for their kind help during the entire course of the study. Also would like to thank the study population for their supportive participation.

REFERENCES

- 1-Syrjala AH, Knuutila MLE, Syrjala LK. Reasons preventing regular dental care. *Community Dent Oral Epidemiol* 1992;20:10-4.
- 2-Reisine S. A path analysis of the utilization of dental services. *Community Dent Oral Epidemiol* 1987 Jun;15(3):119-24.
- 3-Schuurs AHB, Duivenvoorden HJ, Thoden van Velzen SK, Verhage F. Differentiating regular from irregular dental attenders of either sex by linear discriminant analysis. *Community Dent Oral Epidemiol* 1983;11:43-9.
- 4-Nowjack-Raymer R, Gift HC. Contributing factors to maternal and child oral health. *J Public Health Dent* 1990;50(6 Spec No):370-8.
- 5-Andersen R. A behavioral model of families use of health services. Research Series no. 25. Chicago: Center of Health Administration, University of Chicago; 1968.
- 6-Gupta JP, Sood AK. Contemporary Public Health: Planning Policy Management. 1st ed. New Delhi: Apothecaries Foundation; 2005. p. 1.10.
- 7-Kegeles SS. Some motives for seeking preventive dental care. *J Am Dent Assoc* 1963 Jul;67:90-8.
- 8-Mishra D, Singh HP. Kuppuswamy's socioeconomic status scale - A revision. *Indian J Pediatr* 2003 Mar;70(3):273-4.
- 9-Fukai K, Takaesu Y, Maki Y. Gender differences in oral health behavior and general health habits in an adult population. *Bull Tokyo Dent Coll* 1999 Nov;40(4):187-93.
- 10-Meng X, Heft MW, Bradley MM, Lang PJ. Effect of fear on dental utilization behaviors and oral health outcome. *Community Dent Oral Epidemiol* 2007 Aug;35(4):292-301.
- 11-Liddell A, Locker D. Gender and age differences in attitudes to dental pain and dental control. *Community Dent Oral Epidemiol* 1997 Aug;25(4):314-8.
- 12-Brukiene V, Aleksejuniene J, Balciuniene I. Is dental treatment experience related to dental anxiety? A cross-sectional study in Lithuanian adolescents. *Stomatologija* 2006;8(4):108-15.
- 13-Heft MW, Meng X, Bradley MM, Lang PJ. Gender differences in reported dental fear and fear of dental pain. *Community Dent Oral Epidemiol* 2007 Dec;35(6):421-8.
- 14-Skaret E, Raadal M, Kvale G, Berg E. Gender-based differences in factors related to non-utilization of dental care in young Norwegians. A longitudinal study. *Eur J Oral Sci* 2003 Oct;111(5):377-82.
- 15-Heloe LA, Aaro LE, Soggard AJ. Dental health practices in Norwegian adults. *Community Dent Oral Epidemiol* 1982 Dec;10(6):308-12.
- 16-Pizarro V, Ferrer M, Domingo-Salvany A, Benach J, Borrell C, Pont A, et al. The utilization of dental care services according to health insurance coverage in Catalonia (Spain). *Community Dent Oral Epidemiol* 2009 Feb;37(1):78-84.
- 17-Quteish Taani DS. Dental anxiety and regularity of dental attendance in younger adults. *J Oral Rehabil* 2002 Jun;29(6):604-8.
- 18-Yule BF, Ryan ME, Parkin DW. Patient charges and the use of dental services: some evidence. *Br Dent J* 1988 Nov 19;165(10):376-9.
- 19-Petersen PE, Pedersen KM. Socioeconomic demand model for dental visits. *Community Dent Oral Epidemiol* 1984 Dec;12(6):361-5.
- 20-Muirhead VE, Quinonez C, Figueiredo R, Locker D. Predictors of dental care utilization among working poor Canadians. *Community Dent Oral Epidemiol* 2009 Jun;37(3):199-208.
- 21-Afonso-Souza G, Nadanovsky P, Chor D, Faerstein E, Werneck GL, Lopes CS. Association between routine visits for dental checkup and self-perceived oral health in an adult population in Rio de Janeiro: the Pro-Saude Study. *Community Dent Oral Epidemiol* 2007 Oct;35(5):393-400.
- 22-Schuurs AHB, Duivenvoorden HJ, Thoden van Velzen SK, Verhage F. Regularity of dental attendance in the Netherlands related to preference for preservation of teeth. *Community Dent Oral*

Epidemiol 1984 Aug;12(4):249-54.

23-Al-Shammari KF, Al-Ansari JM, Al-Khabbaz AK, Honkala S. Barriers to seeking preventive dental care by Kuwaiti adults. Med Princ Pract 2007;16(6):413-9.

24-Lopez R, Baelum V. Factors associated with

dental attendance among adolescents in Santiago, Chile. BMC Oral Health 2007 Apr 10;7:4.

25-Poudyal S, Roa A, Shenoy R, Priya H. Utilization of dental services in field practice area in Mangalore, Karnataka. Indian J Community Med 2010 Jul;35(3):424-5.