

An Evaluation of Dental Prosthetic Status, Prosthetic Needs and Awareness on Reimbursement of Dental Care among Individuals with Different Socioeconomic Status

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ABSTRACT

Background: The quality of life has been found to be reduced in case of missing teeth without prosthetic replacement. An evaluation of prosthetic status and prosthetic need is required for promotion of oral health. Hence, a Survey of prosthetic status and need of people in relation to socioeconomic status living in Gurugram city was done.

Materials and Method: A descriptive cross sectional study was conducted among 810 subjects belonging to age groups- 15-24, 25-34, 35-44, 45-54 and above 55 years in the city of Gurugram, Haryana. WHO Oral Health Assessment form (1997) and a preformed questionnaire were used to collect the required data. Modified Kuppaswamy scale was used for classifying the individuals into different Socio economic status (SES) categories.

Statistical Analysis: Data analysis was done using SPSS Windows version 21. Comparison of the prosthetic status and Needs between different SES categories was done using cross tabs. Chi-square was used for compilation of results.

Results: 6.79% of the subjects in the study had prosthesis of some kind. Prosthesis of some kind was present in 27.45% of the subjects in the upper middle SES category and none of the subjects in the lower SES category had prosthesis. The prevalent cause of loss of teeth in different SES categories was found to be dental caries (67.43%). The prosthetic need in the study population was 48.14%. About 70% of the subjects in the lower SES category needed prosthesis of some kind.

Conclusion: The socio-economic status and prosthetic status has shown a direct relationship whereas indirect relationship was found between socio-economic status and prosthetic need. The provision of oral health care should not include only treatment but also oral health information and education programmes.

Key words: Dental prosthetic status, Prosthetic Need, Socio-economic status (SES), Kuppaswamy scale.

I. INTRODUCTION

A healthy oral cavity is one of the indicators of a healthy human being. The oral health status of a population is highly influenced by complete loss of the teeth (edentulism). The dentists always uphold a great responsibility to manage the partial dentate or edentulous patients.¹

The overall general health of a body and oral health are completely associated with each other and the maintenance of that health depends upon socioeconomic status of an individual. The Complete loss of teeth is the major loss to the oral health. The tooth loss affects the masticatory function badly and the affected stomatognathic system is not only the sign of less awareness among patients but also lack of availability and accessibility of dentists as well as oral health information and education programmes.²

Teeth plays vital role to perform masticatory functions and also require for good aesthetics as well as phonetics. Both deciduous and permanent teeth are important to maintain in oral cavity as long as possible. Otherwise; the oral health related quality of life will be reduced at biological, psychological and social levels on loss of teeth.³

The occurrence of tooth loss is found not only due to presence of oral diseases but also because of some non disease entities. Dental caries and periodontal diseases has been mentioned to be major oral diseases responsible for tooth loss whereas socio-demographic factors, dental attitudes and dental utilization behaviours and awareness on provision of reimbursement of dental care are some non disease factors found to be associated with tooth mortality.⁴

Many studies have been conducted in the past on the influence of socio-economic factors on dental caries, periodontitis and oral cancer in Haryana But, studies in relation to prosthetic status and prosthetic needs are not done in Gurugram district of Haryana.

Therefore, this study was taken up to conduct in Gurugram which according to census 2011 covers 1215 square Km of area of Haryana state with a population of 15,14,085 having urban around 68.82 % compared to 31.18% rural population (2:1)

II. MATERIALS AND METHOD

The study was cross sectional and ethical clearance was obtained from the college ethical committee. And informed consent was obtained from each subject. The present study was conducted among permanent residents of Gurugram of age groups- 15-24, 25-34, 35-44, 45-54, >55 years belonging to urban and rural cluster.

The sample size was estimated as for “a multistage random sample survey”.

For the purpose of estimating the sample size, the prevalence is taken from the National Oral Health Survey Fluoride Mapping⁵ 2002-2003, in which the prevalence of edentulousness came to be 33.1%. The sample size thus calculated by formula was 810. The number of eligible subjects registered from total of 8 urban clusters were 540 and 4 rural clusters were 270. This was divided further in the selected age groups.

The study involved completion of a pre-designed and structured questionnaire which was framed to collect information regarding the demographic profile, educational status, income, occupation etc. The questionnaire also included questions to collect information regarding their dental visits, the reasons for the visits and not visiting to a dentist on a routine basis, awareness towards oral diseases and provision of reimbursement for dental treatment.

The data regarding their oral health status was obtained through direct oral examination of the study subjects using WHO oral health assessment form⁶ (Basic Oral Health Surveys, 1997) by a qualified dentist.

Kuppuswamy socioeconomic status scale⁷ was used for classifying the individuals into one of the five socio-economic categories. The examination was conducted by a single, trained and calibrated examiner. The intra-examiner agreement was found to be 99% for Prosthetic status and prosthetic needs meeting the scientific requirement for validity and reliability.

The areas for conducting examination was chosen with adequate illumination of natural light , using a mouth mirror and a C.P.I. Probe and any disturbance was avoided to make sure proper examination and recording. A daily record of subjects was kept including personal particulars of each subject. Chemical disinfection method of using 2.5% glutaraldehyde for 10 -15 minutes was employed for sterilizing the equipments.

All the data collected was subjected to statistical analysis through SPSS 21.⁸ Data was summarized using frequencies and percentages. The cross-tabs were used to compare the prosthetic status and prosthetic needs in relation to socio-economic factors. The statistical significance was fixed at $p \leq 0.05$; Chi-square test was used for compilation of result in the form of table.

III. RESULTS

A total of 810 subjects divided among 5 age groups 15-24, 25-34, 35-44, 45-54 and more than 55 years belonging to different socioeconomic status (SES) categories. Highest percentage of subjects found in 35-44 yrs (35.06%) whereas among SES categories , Upper Lower category shown highest percentage of subjects (67.40%) and least percentage of subjects (2.46%) shown by Lower Category. (Table 1)

Among the total subjects, Males were found to be 558 (68.8%) and 252 females (31.1 %) were considered for the study. (Table 2)

A total of 390 (48.14%) subjects shows somewhat type of edentulousness or completely edentulous. Among them the most prevalent cause of loss of their teeth was found to be Dental caries (67.43%) followed by periodontal disease (16.66%). Among the Lower Category, 42.85% subjects were unaware of the reason of loss of their teeth showing low level of their awareness towards dental care. (Table 3)

PROSTHETIC STATUS

6.79% of the subjects in the study had prosthesis of some kind. Prosthesis of some kind was present in 27.45% of the subjects in the upper middle SES category and none of the subjects in the lower SES category had prosthesis. The prosthetic status was better in the upper middle and upper SES category compared to other SES categories. The findings were statistically significant ($P < 0.001$). The results were true even when the males and females in different SES categories were compared separately. (Table 4).

PROSTHETIC NEED

The Prosthetic need in the study population was 48.14%. About 70 % of the subjects in the lower SES category needed prosthesis of some kind. The prosthetic need was 55.1% in the upper lower and 6.66% in upper SES category. The prosthetic need increased with decreasing Socio-economic status (SES). The findings were statistically significant ($P < 0.001$) The same was observed even when the comparison was made between different SES categories in both the gender groups separately. (Table 5)

AWARENESS ON THE PROVISION OF REIMBURSEMENT OF DENTAL CARE

Gurugram city has provision for reimbursing for certain dental procedures. 21.97% of the subjects in the study were aware about the provision of reimbursement for dental care. The awareness was found to be higher 95.55% in the Upper SES category whereas in Upper Lower category only 2.74% subjects had awareness and none of the subjects were aware in Lower SES category. There was a direct association between the awareness about the provision of reimbursement for dental care and socio-economic status. The awareness increased with increasing socio-economic status and the findings were statistically significant even when the comparison was made between different SES categories among the two sex groups separately. (Table 6)

Table 1: Age distribution of the study population in different SES categories

SES CATEGORIES	AGE n(%)					TOTAL
	15-24 YRS	25-34 YRS	35-44 YRS	45-54 YRS	>55 YRS	
UPPER	1 (2.22)	14 (31.11)	17 (37.77)	10 (22.22)	3 (6.66)	45 (5.55)
UPPER MIDDLE	6 (5.88)	17 (16.66)	40 (39.21)	25 (24.50)	14 (13.72)	102 (12.59)
LOWER MIDDLE	5 (5.15)	22 (22.68)	30 (30.92)	32 (32.98)	8 (8.24)	97 (11.97)
UPPER LOWER	24 (4.39)	108 (19.78)	191 (34.98)	190 (34.79)	33 (6.04)	546 (67.40)
LOWER	1 (5)	8 (40)	6 (30)	4 (20)	1 (5)	20 (2.46)
TOTAL	37 (4.56)	169 (20.8)	284 (35.06)	261 (32.22)	59 (7.28)	810 (100)

Table 2: Gender distribution of the study population in different SES categories

SES CATEGORIES	GENDER n(%)		
	MALES	FEMALES	TOTAL
UPPER	20 (44.44)	25 (55.5)	45 (5.55)
UPPER MIDDLE	76 (74.5)	26 (25.49)	102 (12.59)
LOWER MIDDLE	81 (83.50)	16 (16.49)	97 (11.97)
UPPER LOWER	371 (67.94)	175 (32.05)	546 (67.40)
LOWER	10 (50)	10 (50)	20 (2.46)
TOTAL	558 (68.8)	252 (31.1)	810 (100)

Table 3: Reasons for loss of teeth in different SES categories

SES CATEGORIES	REASONS n(%)						
	DENTAL CARIES	PDL DISEASE	TRAUMA	ORTHO EXTRACTION	IMPACTION	DO NOT KNOW	TOTAL
UPPER	1 (33.33)	0	1 (33.33)	0	1 (33.33)	0	3 (6.66)
UPPER MIDDLE	16 (66.66)	4 (16.66)	1 (4.16)	2 (8.33)	1 (4.16)	0	24 (23.52)
LOWER MIDDLE	33 (68.75)	8 (16.66)	2 (4.16)	0	0	5 (10.41)	48 (49.4)
UPPER LOWER	208 (69.10)	50 (16.61)	3 (0.99)	0	0	40 (13.28)	301(55.1)
LOWER	5 (35.71)	3 (21.42)	0	0	0	6 (42.85)	14(69.2)
TOTAL	263 (67.43)	65 (16.66)	7 (1.79)	2 (0.51)	2 (0.51)	51 (13.07)	390 (48.14)

Table 4: Prosthetic status among the males and females in different SES categories

SES CATEGORIES	GENDER n(%)		
	MALES	FEMALES	TOTAL
UPPER	8 (40)	4 (16)	12 (26.66)
UPPER MIDDLE	23 (30.2)	5 (19.23)	28 (27.45)
LOWER MIDDLE	5 (6.17)	2 (12.25)	7 (7.21)
UPPER LOWER	4 (1.07)	4 (2.28)	8 (1.46)
LOWER	0	0	0
TOTAL	40 (7.16)	15 (5.95)	55 (6.79)

Table 5: Prosthetic Needs among males and females in different SES categories

SES CATEGORIES	GENDER n(%)		
	MALES	FEMALES	TOTAL
UPPER	1 (5)	2 (8)	3 (6.66)
UPPER MIDDLE	16 (21.09)	8 (30.76)	24 (23.52)
LOWER MIDDLE	40 (49.38)	8 (50)	48 (49.4)
UPPER LOWER	207 (55.79)	94 (53.71)	301 (55.1)
LOWER	6 (60)	8 (80)	14 (70)
TOTAL	270 (48.38)	120 (47.61)	390 (48.14)

Table 6: Awareness on the provision of Reimbursement for Dental Care, among males and females in different SES categories

SES CATEGORIES	GENDER n(%)		
	MALES	FEMALES	TOTAL
UPPER	19(95)	24 (96)	43 (95.55)
UPPER MIDDLE	56 (73.68)	26 (100)	82 (80.39)
LOWER MIDDLE	36 (44.44)	2 (12.5)	38 (39.17)
UPPER LOWER	13 (3.50)	2 (1.14)	15 (2.74)
LOWER	0	0	0
TOTAL	124(22.22)	54 (21.42)	178 (21.97)

IV. DISCUSSION

Teeth are very important be it natural or artificial for maintenance of oral health.⁹ The basic requirement for origination of edentulousness is tooth loss which is a multi factorial terminal event in life of tooth/teeth. Poor oral hygiene, poor nutrition, bad habits, degenerative systemic diseases, unfavourable medication and abnormal oro- dentofacial anatomy, the primary causative factors of caries and periodontal diseases, consequently results into tooth/teeth loss. The lower socioeconomic condition and demographic situation, lack of awareness on importance of dental care may further aggravate the causative factors of tooth loss.¹⁰

Therefore survey conducted and appears from data collected that dentate status of the population of Gurugram seems to be neglected and alarming as only 6.79% population had some kind of prosthesis and 48.14% of the total subjects shows need of prosthesis.

High levels of dental diseases like dental caries and periodontitis, which are thought to be the major causes of edentulousness, were found to be more among the subjects in the upper lower SES categories. (Table3) Findings were similar to study done by Shigli K *et al*¹¹, Lin H.C *et al*¹², Bansal V *et al*¹³ but contrary to that reported by Kumar *et al*.¹⁴

A significantly higher percentage of subjects in upper middle SES (27.45%) and upper SES (26.66%) categories had some kind of prosthesis as compared to upper lower having only 1.46 % whereas in lower SES category not even a single subject having any kind of prosthesis (Table 4) which was in accordance with Nadgere J *et al*.¹⁵

Importance of maintaining the esthetics and function among peers are the driving force that influences the subjects in the upper classes to get their missing teeth replaced. In addition to this, the attitude and awareness towards dental care, the cost of dental treatment might also be the significant factors that determine the prosthetic status in a person. The finding of better prosthetic status among the subjects in the upper classes may be attributed to these factors.

The results of our study were in agreement with the findings of a study by Hanson B S *et al*¹⁶, in which, he found that the percentage of subjects having the fixed bridges was significantly higher in the upper SES group (59.2%), compared to that in the lower SES group (16.7%). Whereas a study done by Khan AU *et al*¹⁷ shown that preferred option of FPD for replacing teeth was least adopted due to poor SES and low education level people present in the study

It has been observed that there was minimum variation between sexes regarding prosthetic status, which was in accordance with Mersel *et al*¹⁸, Shorff *et al*¹⁹, Nadgere J *et al*¹⁵, Bhogisetty C *et al*²⁰

A significantly higher percentage of subjects in the lower SES category (70%) needed prosthesis of some kind compared to those in the upper SES category. (6.66%) (Table 5) The findings were consistent with

the results of a study by Hanson B S et al¹⁶, who found a higher percentage of anterior open tooth spaces among the subjects in the social class III (23.8%) compared to those in social class I (14.1%). They also noticed a significantly less mean number of functioning teeth among the subjects in the social class III (13.5±7.7) compared to those in the social class I (21.5±6.0).

The findings of our study was also find to be similar with the study done by Reddy NS et al²¹ and Bijargi S et al²² in which the level of edentulousness was found to be high in the subjects with low socioeconomic status .

The difference in prosthodontic needs between the sexes was not statistically significant which is in accordance with the observations of Parlani S²³ and Nadgare J et al¹¹

The awareness on the provision of reimbursement for dental care was also better among the subjects in the upper SES category. (Table6) The lack of social pressure and attitude to maintain the teeth in good health may be factors responsible for lack of utilization as well as lack of awareness on the provision of reimbursement for dental care among the subjects in the lower classes.

This highlights the fact that the lower class people may not utilize the services even if the cost barrier is removed.^{24,25}

V. CONCLUSION

The results of the study show a high requirement for prosthetic care among the population surveyed.

The socio-economic factors with both dental prosthetic status as well as dental prosthetic needs are shown to be well interrelated in the study. Direct relationship was found between socioeconomic status and prosthetic status. As the higher the socioeconomic status of a person, he/she is having higher percentage of having some kind of prosthesis or prosthetic status. An indirect relationship found between socioeconomic status and need for prosthesis. As the person's socioeconomic level decreases, his/her need for having prosthesis increases.

To maintain oral health status and afford dental treatment does not define socioeconomic inequality but its cause lies in the centre of attitude and lack of awareness towards importance of dental care especially among the subjects in the lower classes.

Thus, to improve the oral health status, it is necessary to provide oral health education and importance of prosthetic treatment. Centres for free dental treatment should be set up that takes into consideration the promotive, preventive, curative and rehabilitative services for those who need prosthetic treatment but cannot afford the treatment. Importance and Information about Dental Insurance Plans should also be imparted among the population.

CONFLICT OF INTEREST & SOURCE OF FUNDING

The author declares that there is no source of funding and there is no conflict of interest among all authors.

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