# MOTIVATION AND SOCIOECONOMIC STATUS AS A FACTOR FOR NOT RESTORING EXISTING EDENTULOUS SPACES IN PARTIALLY DENTATE PATIENTS REPORTING FOR DENTAL EXTRACTION

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## Abstract

***Objectives:*** *To determine the effect of socioeconomic status and to know the motivation of patient towards prosthodontic treatment in a partially dentate patient.*

***Materials & Methods:*** *A cross-sectional study was conducted on 225 patients at the out-patient department Khyber College of Dentistry, Peshawar started from January 2013 to February 2015 by using consecutive non-probability sampling. Data was collected from patients having prosthetically un-restored partially edentulous areas in mouth for a minimum of one year and reporting for dental extraction. However this study excluded those patients having history of fixed or removable prostheses. For assessment of socioeconomic status, modified Kuppuswamy classification was used and motivation of the patient was addressed as the importance given to the restoration of existing edentulous areas. Data was analyzed using SPSS 20.*

***Results:*** *Out of 225 patients, the mean age recorded was 41.5 ±11.65 (SD). Females (n=137, 60.9%) reported more than males (n=88, 39.1%). The most commonly reported socioeconomic class was class IV (n=88, 39.1%) while the least reported was class I (n=8, 3.6%). Majority of patients (n=160, 71.1%) were interested in restoring existing edentulous spaces.*

***Conclusion:*** *There is a need to minimize the barriers involved in dental and prosthodontic treatment and it will require efforts to be taken at the patient, dentist and government level. Information regarding the consequences of not having the missing teeth replaced and motivating the patient towards dental and prosthodontic treatment are the prime requisites of effective outcome.*

***Key Words:*** *Socio-economic status, Missing teeth, Level of Interest, Partially dentate, Dental extraction.*

## Introduction

Edentulism, whether partial or complete, is an indicator of oral health and might affect the quality of life and well being of a person physically as well as socially, emotionally and psychologically[1,2]. Causes of missing teeth are many including caries, periodontal diseases, traumatic injuries, congenitally missing, orthodontic extractions and prosthodontic indications, neoplastic and cystic lesions etc[3,4].

A number of patient related factors result in non-treatment of missing teeth despite having favorable conditions for replacement. Socioeconomic status being one of the most important factor[5,6]. In addition, the number of missing teeth is also a significant factor[7]. WHO identified the maintenance of a

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natural dentition of not less than 20 teeth throughout life[8]. Tooth loss is said to differ by arch. A study in Karachi by Baqar et al showed that partial edentulism was more common in maxilla than in mandible with posterior teeth often lost earlier than anterior teeth. Some attribute it to the less saliva accumulation and cleansing effect for the upper teeth, so susceptibility to caries and other oral diseases increase [9,10]. Studies by Patel et al in India and Naved et al in Pakistan showed that partial edentulism is said to be more common in the mandibular arch than in the maxillary with the mandibular arch being frequently reported missing teeth in 36.8% of cases[3,11].

Studies by Ozkan et al in Istanbul showed that prosthodontic or restorative care was needed by 90% of the patients which is usually more expensive than general treatment (i.e., fillings and scaling). Similarly other study by the Australian research centre showed that 22.2 % of patients have difficulty paying the dental bill. Different prosthodontic treatments (tooth replacement) have been recommended in order to prevent the adverse consequences of missing teeth. In order to relieve pain, extraction is provided at the lowest possible cost, so people generally seek extraction to solve their dental problems becoming edentulous in response[12,13].

About 30% of the population in Pakistan lives below the poverty line[14]. Edentulism is associated with age, low income, education and occupation. Among the patients who got edentulous 50% of them had low income level, 42% average and only 8% had high income[15]. Low income group had about twice the rate of extractions as compared to those who can afford restorative treatment according to one study[16].

Due to poor educational level of the study population, 96.5% of the subjects didn't restore the teeth prosthodontically[17]. A study by Perera et al in Sri-Lanka showed that of the non-denture wearers, 23% of the subjects had received up to 5 years of education, 81% to 6-12 years and only 4% had received above 12 years of education. 8 Individuals that have attained higher level of education had greater financial opportunities, had better access to dental care and they set a high priority of dental health. The educated ones had less prevalence of missing teeth as compared to lower literacy level which was associated with higher number of missing teeth and/or non-replaced teeth[16,18,19].

There was no association of occupational status with the prosthetic status as reported by Mundt et al in Germany, whereas low education and income level were the determinants for no prosthetic replacement of missing teeth[6]. In contrast, Kiyak et al in Washington reported that occupational status closely related to education was significant[20].

Due to mental acceptance of some patients to tooth loss as a part of natural aging process, a few still undergo extraction and may not feel it necessary in restoring existing/previous edentulous spaces because of a misconception that they have many teeth and losing few will not make any difference. This disinterest of the patient leads to edentulousness regardless of being aware of the consequences of missing teeth[21]. A study by Akinkugbe in US showed that 47.45% of the patients were showing interest and planning to replace the missing teeth[22].

The objective of this study is to assess the motivation and effect of socioeconomic status on partially dentate patients, having existing untreated edentulous areas, reporting for dental extraction. This will facilitate useful information regarding reason for not replacing their missing teeth and will help in motivating the patient regarding the need of prosthodontic treatment and reducing the financial barriers in terms of lowering the cost of prosthodontic treatment.

## Materials and Methods

A cross-sectional study was carried out in dental out-patient department, Khyber College of Dentistry, Peshawar starting from January 2013 to February 2015. Data was collected from two hundred and twenty five patients (225) including both genders with age ranging from 20-60 years, having prosthetically un-restored partially edentulous areas in mouth for a minimum of one year and reporting for dental extraction. However this study excluded those having history of fixed or removable prostheses and patients with cognitive impairment, reduced intelligence and uncooperative behavior.

Using a structured pro-forma, demographics, income, education and occupation score were recorded. For assessment of socioeconomic status, a modified Kuppuswamy classification was used for classifying the individual into one of the five socioeconomic categories. Number, pattern and location of missing

teeth were noted after an intra-oral examination. The patients were asked as to why they were not replacing existing edentulous spaces. The level of interest of the patient was noted by asking the patient as to how important it is personally for him/her to have the missing tooth replaced.

The data was coded, entered and analyzed using SPSS version 20. Descriptive statistics, like mean and median, were calculated for age. Frequencies and percentages were calculated for all the variables. The relationship of socioeconomic status with the number of missing teeth was also noted by chi-square test. All data is presented in tabulated form.

## Results

Out of 225 patients, most of the patients were females (n=137, 60.9%) with mean age of 41.5 ±11.65 years and age ranging from 20-60 years. 1-8 number of teeth were missing in 173 (76.9%) of the patients, 9-16 missing teeth was reported in 30 (13.3%) patients, 16-24 teeth missing in 21 (9.3%) cases and only 1 (0.4%) patient had 25-32 number of missing teeth. Seventy one percent (n=160) of the subjects were motivated and showed interest in replacing the missing tooth/teeth, while 28.9% (65) of the subjects were non-motivated and showed no interest in replacing missing teeth.

Among 225 patients, 56 (24.9%) had teeth missing in all quadrants while maxillary and mandibular were missing in 3 (1.3%) and 1 (0.4%) number of cases respectively.

posterior teeth were missing in 78 (34.7%) cases. Lower posterior teeth were missing in 63 (28%) of the cases as compared to upper posterior teeth which were found to be missing in 14 (6.2%) of the patients. Missing teeth in the combined lower anterior and posterior segment and combined upper anterior and posterior segment were recorded to be 6 (2.7%) and 4 (1.8%) respectively. Upper and lower anteriors

**Table 1: Descriptive statistics for age, gender, socioeconomic status, missing teeth**

| S.No. | Variable | Frequency (N) | Percentage (%) |
|---|---|---|---|
| 1 | Age group (Years) | | |
| | 20-30 | 55 | 24.4% |
| | 31-40 | 62 | 27.6% |
| | 41-50 | 58 | 25.8% |
| | 51-60 | 50 | 22.2% |
| 2 | **Gender** | | |
| | Male | 88 | 39.1% |
| | Female | 137 | 60.9% |
| 3 | **Socioeconomic status** | | |
| | 1-8 | 173 | 76.9% |
| | 9-16 | 30 | 13.3% |
| | 17-24 | 21 | 9.3% |
| | 25-32 | 1 | 0.4% |

**Table 2: Relationship of number of missing teeth with socioeconomic status**

| Number of missing teeth | Socioeconomic Status | | | | |
|---|---|---|---|---|---|
| 1 | I<br>N (%) | II<br>N (%) | III<br>N (%) | IV<br>N (%) | V<br>N (%) |
| 1-8 | 8 (3.5%) | 27 (12%) | 28 (12.4%) | 67 (29.7%) | 43 (19.1%) |
| 9-16 | 0 (0%) | 11 (4.8%) | 3 (1.3%) | 9 (4%) | 7 (3.1%) |
| 17-24 | 0 (0%) | 3 (1.3%) | 1 (0.4%) | 11 (4.8%) | 6 (2.6%) |
| 25-32 | 0 (0%) | 0 (0%) | 0 (0%) | 1 (0.4%) | 0 (0%) |
| Total | **8 (3.5%)** | 41 (18.2%) | 32 (14.2%) | 88 (39.1%) | 56 (24.8%) |
| P- value | 0.01 | | | | |

**Table 3: Level of interest/Motivation**

| INTEREST | FREQUENCY N (%) |
|---|---|
| NO | 65 (28.9%) |
| YES | 160 (71.1%) |

## Discussion

The results of our study showed that there was

no influence of socioeconomic status on the interest (motivation) of the patient in restoring previously untreated edentulous spaces as most of the subjects showed interest in restoration with prosthodontic treatment. However, they were unable to do so because of the socioeconomic status of the patient which definitely affected both the number of missing teeth as well as restoration of missing teeth.

Studies by Mundt et al and Baqar et al have shown that age and tooth loss are directly related and tooth loss increases significantly with age[6,9]. However, conflicting evidence exists regarding the association of gender with tooth loss and it is difficult to predict. Some studies reported that tooth loss was more common amongst males rather than females. Others documented that it was more in females rather than in males. Still others say that gender had no influence on tooth loss[23,24,25]. A study in Pakistan by Baqar et al reported that tooth loss was more common in males than females because of less concern to restorative procedures and extractions were common. 9 This was in contradiction to our study where previous untreated edentulous spaces and dental extractions were more frequently reported in females (60.9%). The results of our study were similar to the findings by Anyanechi in Nigeria who reported that extractions were more commonly reported to be in females 62.3% rather than in males 37.7%[10].

If a tooth is lost and not restored with artificial substitutes then it leads to a number of positional changes of teeth such as drifting and tilting of teeth[26]. Pre-existing un-restored edentulous areas were present in 89.6% of the patients when patient reported for tooth extraction, presenting financial constraint (88.8%) as the main reason for non-treatment of existing spaces[27].

There is a great impact of socioeconomic status on the number of missing teeth and replacing them with artificial substitutes. Tooth loss being in an inverse relationship with SES and correlated with education and income. With increasing levels of education and SES, most of the people afford preventive and conservative treatment and seek dental treatments earlier, so they retain natural teeth for long and need for prosthodontic treatment decreases[28]. In our study, 76.9% of patients had multiple missing teeth (up to 8 teeth missing) and being un-restored for as long as 11-20 years in 28.4% of the cases and for 1-10 years in 57.8% of the cases. In our study the largest numbers of missing teeth were reported in socioeconomic status class IV and the least in SES class I. Our results were much similar to a study by Al-jmoor et al in Sulaimani city where 54.18% of the subjects had less than 10 teeth missing and only 4.2% of the subjects had more than 10 teeth missing in the employed class of socioeconomic status. The author attributes it to high income and education of the subjects as compared to the unemployed class who reportedly had high number of missing teeth[29].

Well educated people have high health concerns and they can be motivated easily towards dental treatment. A study by Nasreen and Haq in Bangladesh reported that 25.5% were illiterate, 30.9% had primary education, 13.6% had secondary education, 15.5% higher secondary education and others were graduate and above. Most socially disadvantaged people report to public sector hospital which has service charges far less than the private sector. Due to lack of knowledge, uneducated patients cannot maintain their oral and general health and ultimately resulting in tooth loss. Individuals in lower levels exhibited higher risk of becoming totally edentulous[16,30].

In our study, 3.6% of the subjects were from socioeconomic status class I showing the attitudes of these patients towards dental health and prosthodontic replacement of missing teeth. Since they can afford dental and prosthodontic treatment at private setups, they report less frequently to government setup. Furthermore, they have a higher literacy rate, are aware about oral health and value the importance of replacing missing teeth.

The eight industrialized nations, organized as G8, experienced considerable differences in prevalence of edentulism from 16.3% in France to 58% in Canada. Among the developing countries this range was even wider, with the lowest prevalence being 1.3% in Nigeria and the highest being 78% in Bosnia-Herzegovina. Growing economy, raising education/literacy and implication of the National oral health program led by WHO being adopted by state governments are raising hope for decreasing the prevalence of edentulism in India[9,18].

Despite the interest and motivation of majority of our subjects (71.1%) to restore their missing teeth, most of our patients have remained unable to replace them because of lack of finance and resources at that

time. This was much higher as compared to a study by Jaleel et al in India where 57.1% of patients who had lost their teeth take interest or have a desire to have their missing teeth replaced[4].

Lack of information concerning dental visits to the private sector in addition to the small sample size and localization of the study to a particular area are the limitations of our study. Therefore further investigation regarding the effects of socioeconomic status and the barriers to prosthodontic and dental care is required.

## Conclusion

Information regarding the consequences of not having the missing teeth replaced should be given prior to dental extraction through the use of verbal communication, video informatics or information leaflets. Preventive strategies for the replacement of missing tooth should be regarded, such as removable partial denture, conventional fixed partial denture and implant supported prostheses.

System change in the form of improving dental and prosthodontic information regarding the importance of replacement of missing teeth and the financial barriers associated with the attainment of dental and prosthodontic treatment must be diminished in order to avoid the negative consequences of tooth loss. Economic analysis of tooth replacement strategies is required for the effective implementation of preventive and prosthodontic strategies.

Initiatives in the form of mobile dental clinics, dental camps and prosthodontic outreach programs are the possible solutions in order to change the attitudes of patient towards treatment, spread awareness and to extend the treatment. In the end, dentists must motivate the patient regarding the need of a denture/ replacement.

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