

Socio-demographic Determinants of Demand for Fixed and Removable Partial Dentures

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ABSTRACT: **Objectives:** To evaluate the socio-demographic determinants associated with fixed/removable partial denture use. **Methods:** A retrospective cohort study of patients who sought fixed partial denture (FPD) and removable partial denture (RPD) treatment over a 2 year period at University of Benin Teaching Hospital. The data of interest were age, gender, marital status, occupation and missing teeth. Data was analysed using SPSS version 17.0. Analysis was done using frequency distribution, descriptive analysis in the form of mean and standard deviation, independent t-test, cross tabulation, logistic regression and chi square with p set at <0.05. **Results:** Majority (77.8%) had anterior teeth missing with most occurring in the maxilla. The most frequently lost teeth were the incisors (Table 2). Less than half (40.3%) received FPD while the others had RPD. There was statistically significant relationship between gender and type of partial denture received. Higher socio-economic class was associated with receiving FPD. Using logistic regression only socio-economic status was a predictor of type of partial denture use whereas gender, marital status and age were not. **Conclusion:** Socio-economic status is a predictor of choice of treatment for partial edentulism.

Key Words: Removable Partial Dentures; Fixed Partial Dentures; Edentulism; Socio-demography.

Introduction

Edentulism (partial or complete) has been described as an irreversible and debilitating condition[1] which can lead to impairment, functional limitation, physical, psychological and social disability[2]. Partial edentulism has been reported to be associated with impaired masticatory efficiency, performance and ability [3] thereby affecting oral as well as general health [1] with substantial impact on quality of life [4-6]

The incidence of tooth loss has been correlated with socioeconomic status [7-10] with some studies reporting that those in lower levels exhibited higher risks[7,8]. In an effort to improve the decline in oral health related quality of life associated with partial edentulism either removable or fixed partial dentures are recommended. The choice of treatment could be influenced by concerns about damaging the neighbouring teeth, pain, post-operative sensitivity, dental phobia, patient's awareness of the different treatment options and cost[11]. High socio-economic status has been found to be significantly associated with the use of removable partial denture (RPD) [10] and fixed partial denture (FPD) [12].

With similar reports on the association between FPD and RPD with high economic status and the different cost implications while providing fixed and removal partial dentures it is pertinent to determine if there are socio-demographic factors affecting the demand for these two dental prostheses especially in a developing economy like Nigeria where cost of treatment has been associated with utilization of oral health services[13]. This study therefore was designed to evaluate the socio-demographic determinants associated with fixed/removable partial denture use.

Materials and Methods

This was a retrospective cohort study of patients who sought fixed partial denture (FPD) and removable partial denture (RPD) treatment over a 2 year period at University of Benin Teaching Hospital. Ethical approval was sought from the research and ethics committee of the Hospital Management Board, Edo State. All patients who sought FPD were included in the study while those who had a choice to have FPD but opted for removable partial denture (RPD) were randomly picked from the prosthodontics clinic register. The case notes so identified were retrieved. The data of interest were age, gender, marital status, occupation and missing teeth.

Due to the unstructured nature of the Nigerian society no consensus has been reached with regards to various socioeconomic classifications. Therefore, for the purpose of analysis the standard International Labour Occupational classification system[14] was modified to classify occupation into five (5) socioeconomic groups: professionals and managerial officers and retirees of this type (e.g Doctors, lawyers), skilled Workers (e.g Civil servants), Semi-skilled Workers (e.g Artisans), Unskilled workers (Traders), Unemployed (Students and other unemployed individuals).

Data were analysed using SPSS version 17.0. Analysis was done using frequency distribution, descriptive analysis in the form of mean and standard deviation, independent t-test, cross tabulation, logistic regression and chi square with p set at <0.05

Results

A total of 72 patients' records were used in this study with a male female ratio of 1:0.7. Most of the patients were students and dependents. Their ages ranged from 17 to 83 years with a mean age of 38.43 ± 16.9 years and a little above half (52.8%) of them were single (Table 1).

Majority (77.8%) had anterior teeth missing with most occurring in the maxilla. The most frequently lost teeth were the incisors (Table 2). Less than half (40.3%) received FPD while the others had RPD. Those who received FPD had 1.59 ± 0.9 mean number of missing teeth whereas those who received RPD had 1.84 ± 1.17 mean number of missing teeth. There was however no statistically significant relationship between the type of partial denture and mean number of missing teeth.

Table 1: Socio-demographic distribution of the patients

| Characteristics | Frequency | Percent |
|-----------------------------------|-----------|---------|
| Gender | | |
| Male | 42 | 58.3 |
| Female | 30 | 41.7 |
| Marital status | | |
| Single | 38 | 52.8 |
| Married | 34 | 47.2 |
| Age (years) | | |
| <20 | 8 | 11.1 |
| 21-30 | 22 | 30.6 |
| 31-40 | 18 | 25.0 |
| 41-50 | 8 | 11.1 |
| 51-60 | 8 | 11.1 |
| >60 | 8 | 11.1 |
| Socio-economic class | | |
| Professionals and skilled workers | 26 | 36.1 |
| Unskilled and unemployed | 46 | 63.9 |
| Total | 72 | 100.0 |

Table 2: Pattern of tooth loss among the patients

| Missing teeth | Frequency | Percent |
|---------------------------------|-----------|---------|
| Teeth group | | |
| Anterior | 56 | 77.8 |
| Posterior | 13 | 18.1 |
| Both anterior and posterior | 3 | 4.2 |
| Teeth type | | |
| Incisors | 56 | 77.8 |
| Canines | 0 | 0.0 |
| Premolars | 4 | 5.6 |
| Molars | 10 | 13.9 |
| Combination of any of the above | 2 | 2.8 |
| Arch | | |
| Maxilla | 53 | 73.6 |
| Mandible | 16 | 22.2 |
| Both jaws | 3 | 4.2 |
| Total | 72 | 100.0 |

Table 3: Relationship between socio-demographic characteristics with type of partial denture received

| Characteristics | Partial denture | | Total n (%) |
|-----------------------------------|--------------------------------|------------------------------------|----------------|
| | Fixed partial denture n (%) | Removable partial denture n (%) | |
| Gender | | | |
| Male | 21 (50.0) | 21 (50.0) | 42 (100.0) |
| Female | 8 (26.7) | 22 (73.3) | 30 (100.0) |
| Socioeconomic class | | | |
| Professionals and skilled workers | 19 (73.1) | 7 (26.9) | 26 (100.0) |
| Unskilled and unemployed | 10 (21.7) | 36 (78.3) | 46 (100.0) |
| Marital status | | | |
| Single | 16 (94.2) | 22 (57.9) | 38 (100.0) |
| Married | 13 (38.2) | 21 (61.8) | 34 (100.0) |
| Age group (years) | | | |
| <20 | 2 (25.0) | 6 (75.0) | 8 (100.0) |
| 21-30 | 8 (36.4) | 14 (63.6) | 22 (100.0) |
| 31-40 | 8 (44.4) | 10 (55.6) | 18 (100.0) |
| 41-50 | 4 (50.0) | 4 (50.0) | 8 (100.0) |
| 51-60 | 4 (50.0) | 4 (50.0) | 8 (100.0) |
| >60 | 3 (37.5) | 5 (62.5) | 8 (100.0) |
| Total | 29 (40.3) | 43 (59.7) | 72 (100.0) |

There was statistically significant relationship between gender and type of partial denture received with more females tending to receive RPD. Higher socio-economic class was associated with receiving FPD and this was statistically significant (Table 3). With logistic regression only socio-economic status was a predictor of type of partial denture use whereas gender, marital status and age were not (Table 4).

Table 4: Logistic regression predicting the use of fixed and removable partial denture from socio-demographic factors

| Predictors | B | Wald chi square | P value | Odds ratio | Confidence interval |
|----------------------|-------|-----------------|---------|------------|---------------------|
| Age | -0.43 | 0.21 | 0.65 | 0.65 | 0.10-4.05 |
| Gender | 0.68 | 0.96 | 0.33 | 1.97 | 0.51-7.66 |
| Socio-economic class | 3.57 | 10.87 | 0.001 | 35.48 | 4.25-296.11 |
| Marital status | 2.23 | 3.49 | 0.06 | 9.27 | 0.90-95.78 |

Discussion

Tooth loss has been claimed to be more of a reflection of possible lack of dental awareness and access to dental services in developing counties [15] with replacement of missing teeth with a prosthesis being infrequent [16]. Varying options are available for replacing missing teeth such as implant-supported prosthesis, fixed partial denture and removable partial denture. [17].

Females perceive that oral health has a greater positive impact on their quality of life causing them to exhibit better health seeking behavior [18] and have been reported to have more frequent dental attendance patterns [19]. However prevalence of edentulism has been reported to be higher in males [20,21] and this was upheld in this study reflecting the prevalence of tooth loss among the male population. It also lends credence to the report that females demonstrate a statistically higher percentage of restorations compared to males [22]. The age distribution in this study was similar to a previous study[23] with higher frequency in those less than 50years and this corresponds with the age that experiences high tooth loss due to dental caries[24,25].

There are varying reports regarding tooth loss by arch [26]. Mandible was reported in some studies [21,23,27], while others reported that it is more common in the maxilla [28] and anterior tooth loss more than posterior [29] and this was upheld in this study.

In this study those in the lower economic class tended to have more RPD which is regarded as a versatile, cost effective and reversible treatment option for partially edentulous patients at any age [30]. Those in the high socioeconomic class mainly received FPD this probably is due its cost implication.

Those who received FPD had 1.59 ± 0.9 mean number of missing teeth whereas those who received RPD had 1.84 ± 1.17 mean number of missing teeth. There was however no statistically significant relationship between the type of partial denture and mean number of missing teeth. This is attributable to the fact that the patients in this study had the option of receiving FPD but opted for RPD.

Males are mainly bread winners and tend to have more financial freedom compared to women. They don't necessarily have to seek permission from anyone before using their resources. This maybe reflected by the statistically significant relationship between gender and type of partial denture received with more female tending to receive RPD. Higher socio-economic class was statistically significantly associated with receiving FPD and also was a predictor of its use. This buttresses the fact that FPD is an expensive option for replacing missing teeth.

Conclusion

The findings of this study show that socio-economic status is a predictor of choice of treatment for partial edentulism. In order to improve access of those in low socio economic class to the best treatment option for partial edentulism it is important that such treatment be incorporated into the Health Insurance scheme.

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