

# Sociodemographic determinants of usage of complete dentures in a Nigerian teaching hospital: A pilot study

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## ABSTRACT

**Objective:** To determine the sociodemographic factors that affects the usage of complete dentures. **Material and Methods:** A structured questionnaire was administered to edentulous patients seen in a prosthetic outpatient department of the Lagos University Teaching Hospital, Lagos, Nigeria. Complete dentures were fabricated, assessed, and fitted, and the patients were followed up for six months. Information sought included demographics of the subjects, their socioeconomic status, reason for demand for complete dentures, and important considerations for its use. Data were analyzed using the Statistical Package for Social Sciences version 16.0 (SPSS 16). The level of statistical significance was set at  $P < 0.05$ . **Results:** Thirty patients participated in the study. The mean age of patients seen was  $63.30 \pm 17.67$  years. Grouping of subjects into socioeconomic levels by occupation showed that one-third (33.3%) was classified as dependent. Twenty-one patients (70%) requested for both upper and lower dentures, six patients (20%) wanted upper dentures only, and three patients (10%) requested for lower dentures only. The commonest reason for demand for complete dentures was mastication (100%), followed by aesthetics (63%). The reasons for the use of dentures were basically aesthetics and mastication. **Conclusion:** Demand for complete dentures was greater among those 60 years and above. Age, gender, and socioeconomic status of patients had no statistically significant effect on the reason for demand for and usage of dentures.

**KEYWORDS:** Complete dentures, sociodemographic factors, usage

## Introduction

All over the world, a demographic revolution is ongoing. The proportion of older people is growing faster than that of any other age group.<sup>[1]</sup> It is estimated that 688 million people are aged 60 years and over, and it is projected that this will grow to almost 2 billion by 2050.<sup>[1]</sup> Of these 2 billion people, 80% will be living in developing countries,<sup>[2]</sup> of which Nigeria is one. Globally, an increase in edentulism is expected by the end of this century.<sup>[3]</sup>

Petersen and Yamamoto,<sup>[4]</sup> in their study, stated that the Oral Health Programme [World Health Organization (WHO)] of 2005 revealed that the present oral health of elderly people is far from optimal and that a large proportion of the

elderly are edentulous with small proportions having few remaining teeth. A prevalence of edentulism has been noted in developing countries, whereas the reverse is the case in developed countries.<sup>[5]</sup>

Locally, conventional complete dentures are a more cost-effective treatment option for edentulous patients. It is also a treatment option in edentulous patients who are not able to pay for treatment with implant-supported prosthesis.<sup>[6]</sup> Implants and fixed prosthesis have been reported to be excellent options, but are expensive and not simple options.<sup>[7]</sup>

Narby<sup>[8]</sup> stated that the perceived need does not always lead to a demand for treatment, depending on a variety of factors. These clinical factors include number and location of absent teeth, age, gender, impaired function, discomfort, and dissatisfaction with appearance. Sociodemographic, cultural, and financial determinants are also known as important ingredients of perceived needs for treatment. Therefore, they are essential aspects of clinical decision-making.<sup>[9]</sup>

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Another issue that influences the demand for prosthodontic treatment is the time between loss of teeth and the time when treatment is sought. It was hypothesized that self-perceived need and desire expressed for replacement are greater at the time of loss of teeth.<sup>[10]</sup> In a study done by Astrom and Kida,<sup>[11]</sup> it was noted that although the growth of the proportion of the elderly is high in developing countries, few studies have investigated how sociodemographic, clinical, and sociobehavioral characteristics contribute to the understanding of the perceived need for dental care among older age groups of the sub-Saharan African population.

It is therefore necessary in our environment to ascertain the various factors that affect the demand for and usage of complete dentures and this study seeks to determine those factors that affect demand for and usage of complete dentures.

## Materials and Methods

The study was carried out in the prosthetic outpatient clinic, Lagos University Teaching Hospital, Surulere, Lagos State, Nigeria. Approval was obtained from the Research and Ethics Committee to carry out the study. Informed consent was obtained from the patients before commencement of the study. Edentulous patients seen in the prosthetic clinic within the study period of six months were consecutively selected. Demographic information of the subjects was obtained. All information collected was recorded on a structured survey form. Information collected included demographic and social data such as gender, age, educational level, and occupation. The patients were categorized into socioeconomic levels based on their occupation. The modified version of the standard occupation classification designed by the Office of Population Censuses and Surveys, London 1991, was used. This modification was done by Esan *et al.*<sup>[12]</sup> The modification was necessitated because of the unstructured nature of our society. The subjects were classified into three socioeconomic statuses:<sup>[12]</sup>

- Class 1: Skilled workers, for example, professionals and managerial officers and retirees of this cadre
- Class 2: Unskilled workers, for example, artisans and traders
- Class 3: Dependents, for example, retirees of class 2, those not on pensions, housewives of class 2 cadre, and students whose parents are unskilled workers.

Information on medical history, dietary history, reason for demand for dentures, and social history was also gathered.

Complete dentures made in heat-cured acrylic resin were fabricated, assessed, and fitted satisfactorily for the patients. Postinsertion instructions such as wearing for 72 hours for adaptation and thereafter removing at night before sleeping,

keeping in water when not in use, not incising with the dentures, and not using dentures to eat sticky food or for tearing hard fibrous food were explained. Cleaning and maintenance regimen of the new prosthesis was also taught. The quality of dentures was assessed by two experienced prosthodontists and a consensus was reached on the quality of fit, aesthetics, extension, vertical relation, and occlusion.<sup>[13]</sup> These parameters were rated either 1 or 0 individually, such that the expected total sum for quality of the dentures was 5. A total score of 5, 4, 3, 2, and 1 corresponded to excellent, very good, good, fair, and poor, respectively.<sup>[13]</sup> The subjects were followed up and their recall visits were 24 hours, 1 week, 3 months, and 6 months, and information on usage was sought from the patients. The information included the use of the complete dentures, most important considerations for use, and reasons for continuous or discontinuous usage. The dental prosthesis was immersed in a plaque-disclosing solution (erythrosine solution). Evaluation of the dental prosthesis was done by direct examination carried out by an examiner on the recall visit to assess if the dentures were worn. The questionnaire was pretested on 10 patients and was found to be acceptable according to Cronbach's alpha coefficient (0.70).

Data collected were analyzed with the Statistical Package for Social Sciences (SPSS) version 16.0. The *P* value and chi square were determined. The statistical significance of outcomes was evaluated at 95% confidence level and the level of significance was set at 0.05.

## Results

A total of 30 edentulous patients requested complete dentures within the period of the study. Of the 30 patients, 20 were males and 10 were females. Thirteen (43.3%) patients had their education up to the tertiary level and most of the patients were skilled workers (36.7%) [Table 1]. A total of 21 patients (70%) requested both upper and lower dentures, six patients (20%) wanted upper dentures only, whereas three patients (10%) requested lower dentures only. The quality of all the dentures provided was rated very good (score 4) by the two experienced prosthodontists.

Fifteen (50%) of the patients seen had no history of previous systemic disease. Hypertension ( $n = 8$ , 26.7%) was the most common disease, whereas other disease conditions reported were arthritis ( $n = 3$ , 10%), asthma ( $n = 2$ , 6.7%), diabetes ( $n = 1$ , 3.3%), and ectodermal dysplasia ( $n = 1$ , 3.3%).

**Table 1: Socioeconomic status of patients demanding dentures**

Occupation	Frequency	Percentage
Skilled	11	36.7
Unskilled	9	30.0
Dependents	10	33.3
Total	30	100.0

The reason for the demand for dentures by the majority of the subjects (100%) was mastication, followed by aesthetics (63%), and some of the subjects chose more than one reason for demanding complete dentures [Table 2].

Six patients were lost during the first and second recall visits. The remaining 24 patients claimed to use their dentures constantly. The reason for use was basically mastication and appearance/aesthetics. A total of 54.5% of the subjects studied could only have a softer diet compared to their previous diet before loss of teeth, 28.4% did not have any change in their diet, and 17.1% did not use dentures to eat. None of the subjects in this study stated speech as a motivational factor for use [Table 2].

Half (50%) of the patients who wanted dentures to improve aesthetics were skilled workers [Table 3]. Only two patients had complete denture treatment to please relatives and as per advice of the doctor. There was no statistically significant difference between the various socioeconomic levels grouped by occupation and reasons for demand for dentures ( $P = 0.332$ ).

Table 4 also shows no statistically significant difference between male and female patients and their reason for demand ( $P = 0.093$ ) and use ( $P = 0.188$ ) of dentures, respectively. However, there was an increase in aesthetics as a reason for use than demand in the females, whereas there was a decrease in the males. There was an increase in mastication as a reason for use than a reason for demand in the males, whereas in females there was a decrease.

Table 5 shows mastication as the major reason for demand for dentures in the older patients. Age did not significantly dictate the reasons for demand and usage of dentures, respectively ( $P = 0.353$ ,  $P = 0.560$ ).

## Discussion

In this study, a total of 30 ( $n = 30$ ) patients were provided with complete dentures. There was a limitation of the small size of the sample. The demand for complete dentures was greater among patients of age 41-70 years. Narby *et al.*,<sup>[8]</sup> in their study, mentioned age as one of the important clinical factors determining demand, but failed to mention the age at which demand was higher. However, the finding in this study conforms with studies like that of Charlene *et al.*<sup>[14]</sup> which stated an increase in demand for complete dentures from age 60 and above.

In this study, more males were seen than females. In an earlier study done by Norheim and Valderhaug,<sup>[15]</sup> the demand for dentures was reported to be higher in males. It might be suggested that male patients lose their teeth more than females,<sup>[15]</sup> although the result might be as a result of the small size of the population studied. It is reported

**Table 2: Reasons for demand for and use of dentures**

Reasons for demand for dentures	Frequency	Percentage
Mastication	24	100
Aesthetics	19	63
Pleasing relatives	2	6.7
Doctor's advice	2	6.7
Reasons for use of denture		
Mastication	19	63
Aesthetics	19	63

\*Some patients had more than one reason for demand for and use of complete dentures

**Table 3: Relationship between socioeconomic level and reasons for demand for and use of complete dentures**

Occupation	n (%)	Aesthetics (%)	Mastication (%)
Reasons for demand			
Skilled	11 (36.7)	9 (50)	11 (36.7)
Unskilled	9 (30)	6 (33.3)	9 (30)
Dependent	10 (33.3)	5 (27.7)	10 (33.3)
Total	30 (100)	18 (100)	30 (100)
		$X^2 = 2.21$	$P = 1.000$
Reason for use			
Skilled	11 (45.8)	10 (52.6)	10 (52.6)
Unskilled	9 (37.5)	6 (31.6)	6 (31.6)
Dependent	4 (16.7)	3 (15.8)	3 (15.8)
Total	24 (100)	19 (100)	19 (100)
		$X^2 = 0.0001$	$P = 0.332$

**Table 4: Reasons for demand for and use of complete dentures among male and female patients**

Sex: N (%)	Reason for demand (%)		Reason for use (%)	
	Aesthetics	Mastication	Aesthetics	Mastication
Male: 20 (66.7)	12 (63.2)	20 (66.7)	9 (47.4)	13 (68.4)
Female: 10 (33.3)	7 (36.8)	10 (33.3)	10 (52.6)	6 (31.6)
Total: 30 (100)	19 (100)	30 (100)	19 (100)	19 (100)
		$X^2 = 0.042$	$X^2 = 1.73$	$P = 0.188$
		$P = 0.093$		

**Table 5: Reasons for demand for and use of complete dentures within age groups**

Age	Reasons for demand		Reason for use	
	Aesthetics	Mastication	Aesthetics	Mastication
11-40	4	4	5	3
41-70	10	12	8	6
71-90	5	14	6	10
Total	19	30	19	19
	$X^2 = 2.08$		$X^2 = 1.16$	
	$P = 0.353$		$P = 0.560$	

that females are more likely to diet and attach importance to healthy eating;<sup>[16]</sup> this might be reflected in their lower demand for dentures.

The demand for complete dentures was slightly greater in patients of socioeconomic class 1 whose occupation classified them as skilled workers; however, there was no significant difference between these groups and other socioeconomic groups. In earlier studies,<sup>[14,17,18]</sup> the greatest demand was reported from low socioeconomic and education groups.

In the study by Al-Dwairi,<sup>[19]</sup> he stated that socioeconomic status plays a vital role in the demand for complete dentures. Braine,<sup>[20]</sup> in his study, stated a social inequality in dentate status, even in countries with advanced public dental health programs. The socioeconomic finding in this study conforms with an earlier study<sup>[12]</sup> conducted in a hospital. The reason for our findings might be due to the location of the hospital. The hospital is located within Lagos which is a developed city that is likely to have a high population of educated people. Therefore, more educated patients were more likely to attend the hospital than uneducated ones. Financial constraints may also have prevented people of low socioeconomic status from seeking treatment.<sup>[21]</sup> However, the size of the sample is a limitation.

In this study, the major reason for demand for complete dentures was mastication (100%) and aesthetics (75%). This finding conforms with observations in the study by Majon and Mac Entee.<sup>[22]</sup> In their study, they stated the major reason for demand for complete dentures as mastication, aesthetics, and speech. However, pleasing the relatives and advice of doctor were not stated as reasons for demand. The stated reasons of pleasing relatives and advice of doctor reflect a lack of awareness of the patient that missing teeth could be replaced by complete dentures and attitude of the patient of accepting the edentulous state as part of aging.

The reason for demand for dentures by majority of the patients who were skilled workers was aesthetics; this may suggest that education might be a determinant of aesthetics being a reason for demand.

In this study, all the patients claimed to use their dentures (100% usage). This is a slight contrast to studies done earlier.<sup>[23,24]</sup> Hillerup<sup>[23]</sup> and Berg *et al.*<sup>[24]</sup> both stated the usage of complete dentures as 70 and 73%, respectively. The reason for this contrast is unknown. The main reason for usage in this study was aesthetics and mastication. Aesthetics frequently motivates the patients to wear a denture and might be more important than mastication for many people.<sup>[25]</sup> Aesthetics also determines the psychological acceptance of the dentures by the patients.<sup>[25]</sup> In contrast to the finding in this study, Mersel *et al.*<sup>[26]</sup> stated factors determining use as mainly chewing. Likewise, Astrom and Kida<sup>[11]</sup> in their study in Tanzania noted that chewing was the main reason for usage of dentures. Chewing as a main reason for usage of dentures in Tanzania was observed to be higher than a comparable age group in Norway, Great Britain, and Greece.<sup>[11]</sup> The reason for the finding in this study might be that our social environment supports good appearance and relates good appearance to good human interaction. Therefore, a patient will always want to improve his/her appearance. This could also explain why the majority of those using their dentures for aesthetics were females and skilled workers. Females have been suggested to be more conscious of their appearance than their male counterparts.

Skilled workers are also more likely to interact with people of high educational level and good appearance is needed.

In relating the relationship between demand and use, all subjects who demanded for complete dentures used the dentures, but the reason for usage varied compared to that of demand. The major reason for demand was mastication; however, mastication was not the main reason for use of the dentures provided. Aesthetics remained constant as the reason for demand and motivation for use. The same number of subjects that demanded dentures for appearance (75%) used it for appearance (75%). Aesthetics being one of the reasons for demand and use exhibited a constant association between demand and use. The finding in this study is similar to many other studies<sup>[11,26]</sup> done earlier. All the subjects (100%) studied wanted the dentures for mastication but 75% of this population used the dentures for mastication. There was a decline from demand to use. This was due to difficulty in chewing experienced by the subjects. Those that experienced difficulty in chewing had no score for occlusion in their rating of the denture. This could explain the difficulty and influence the use of dentures. In this study, age, gender, and socioeconomic status did not dictate the reason for demand and usage of complete dentures significantly. Turker and Sebhun<sup>[27]</sup> stated in their study that there were no statistically significant association, except for the ability in cleaning dentures, between education and number of dentures used before. The relationship between demand for and use of complete dentures therefore is not dependent on the individual factors/reasons for demand and use. There was no difference in the use of complete dentures in patients who had both upper and lower complete dentures and those who had either upper or lower.

## Conclusion

Within the limitations of this study, there was a higher demand in the higher socioeconomic class and age above 60 years. It was also established that the major reason for demand was mastication, whereas aesthetics was the main reason or motivation for use. Aesthetics was a constant reason for both demand for and use of complete dentures. Socioeconomic status, age, and gender did not significantly dictate the reasons for demand for and usage of complete dentures. It is essential that proper management of the patient with complete dentures be emphasized and fabrications of complete dentures done skilfully bearing in mind the restoration of function and aesthetics.

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