These organisms cause damage to oral tissue directly or indirectly through metabolic by-products and exotoxins in the deposits.4,5 Denture plaques can also become calcified if not removed thoroughly and regularly to form calculus which can readily be stained by tobacco, tea, coffee and certain medications.6 This causes aesthetic compromise and offensive odour from the denture.6

To ensure dentures free of plaque and calculus, patients are usually instructed on denture hygiene practice during insertion of new dentures and this is often reinforced during other denture maintenance appointments. Major approaches that are recommended for the removal of debris from dentures include mechanical, chemicals, or a combination of these methods. Mechanical method involves the use of denture brush, toothbrush or shoe-brush with soft or toilet soap for the cleaning of the denture at least twice daily. Patients are advised to perform this sort of cleaning over a bowl of water to prevent fracture of a dropped denture.7

Studies among complete denture wearers showed that most denture wearers have poor denture cleaning habits and poor oral hygiene.8,9 Takamiya et al., reported that once daily brushing and use of toothbrush and paste was the most common method for denture hygiene. This, the

INTRODUCTION

The goal of conservative Dentistry is to preserve natural teeth as much as possible and this is achieved by various procedures such as amalgam filling, composite restoration, root canal therapy (RCT) and periodontal treatment. Despite several efforts by dentists aimed at conservation of teeth, a considerable number of patients still lose their teeth to caries, periodontal diseases, tooth wear lesions, trauma and tumours of the jaws.1 Therefore many patients still require teeth replacement services for their missing teeth. The most common teeth replacement service in Nigeria is removable partial denture (RPD)2,3 and it requires appropriate denture hygiene practice as an important component. Failure to comply with healthy denture hygiene practice can lead to formation of plaque on dentures which provide a thriving environment for pathogenic organisms.
authors observed was ineffective as majority of the subjects in their study had poor oral and denture hygiene.

Another important aspect of denture care is avoidance of wearing dentures at night. Several studies on overnight wearing habit of denture wearers show contrasting results. Marchini et al. and Barbosa et al. observed that most of their subjects sleep with prostheses in their mouth while Takamiya et al. reported that more than half (55%) of their patients removed their dentures at night.

Denture wearers are also expected to keep a regular appointment with their dentist for adjustment and replacement of unfit dentures. This is to prevent damage to oral tissue by ill-fitting denture.

Despite the fact that removable partial denture is the most common method of replacing missing teeth in Nigeria, there appears to be limited literature on denture care practice by denture wearers. The aim of this study was to evaluate the cleaning, overnight wearing and dental visit habits amongst prosthetic patients attending a teaching hospital dental centre in Nigeria.

MATERIALS AND METHODS

The study was a cross-sectional study in which consecutive denture wearers that presented at the prosthetic clinic of a Nigerian teaching Hospital during a study period of 18 months were recruited. Inclusion criteria included patients that had been using denture for at least 6 months, willing to participate and in good physical and mental condition. An interviewer administered questionnaire developed by the investigators was used to assess the knowledge and attitude of denture wearers toward denture hygiene. The questionnaire was pretested among 10 denture wearers that were not part of the study. The questionnaire assessed patients’ demographic data, the methods, techniques and device used for cleaning the denture. It also assessed how the dentures were kept when not in the mouth and whether the patients sleep with the denture at night or not. The dentures were examined for plaque accumulation, and according to the quantity of plaque on the denture base, patients were divided into three groups by using Budtz-Jorgensen’s index of denture cleanliness. Dentures cleanliness was scored good when none or only few spots of plaque were present, fair when more extended plaque less than half of the denture base was covered by plaque and poor when more than half of the denture base was covered by plaque.

Ethical clearance was obtained from University of Ibadan/ University College Hospital Ethical review Committee. Consent was obtained from each patient and confidentiality was maintained by asking the participant not to write their names in the questionnaire. Data collected was imputed into a personal computer and analyzed using SPSS version 16. Chi-square was used to test association between categorical variables. The level of significance was set at $P < 0.05$.

RESULTS

There were 100 (50.5%) male and 98 (49.5%) female participants. Their age range was 15-90 years with a mean of 52.58 years (17.84 S.D), and majority 77, (38.9%) were middle age (40-60 years old).

Seventy four (37.4%) of the respondents had used their dentures for between 1-5 years while 18 (9.1%) had used their denture for more than twenty years. One hundred and twenty four respondents (63.4%) had used one or more dentures before while 74 (37.4%) had their current dentures as the first denture. Almost 90% of the respondents claimed to have been previously instructed on denture care [Table 1].

Table 2 shows that majority 110 (55.6) of the respondents cleaned their denture once daily while 3 (1.5%) do not clean their denture every day. The commonest method of cleaning denture was the use of toothbrush 105 (53%) and paste, followed by toothbrush and soap 75 (37.9%). One hundred and eighty one (91.4%) of the patients removed their dentures from their mouth to clean; however, less than 40% cleaned it over a bowl of water.

More than 70% of the respondents removed their denture at night before going to bed. Majority, 103 (52%) removed it every night, 16.2% sometimes removed it while 40 (20.2%) never removed their denture at night. Majority of the respondent, 133 (67.2%) usually keep their denture inside a container with water anytime it is not in the mouth, while 39 (19.7%) usually keep it in a container without water [Table 3].

| Table 1: Distribution of respondents according to past denture experience |
|---------------------------------------------------------------|
| **How long have you used this denture?** | Frequency | Percentage |
| Less than 1 year | 20 | 10.1 |
| 1-5 yrs ago | 74 | 37.4 |
| 5-10 yrs ago | 49 | 24.7 |
| 10-15 years | 23 | 11.6 |
| 15-20 yrs ago | 14 | 7.1 |
| > 20 years | 18 | 9.1 |
| **Is this your first denture?** | | |
| Yes=74 | 37.4 |
| No=124 | 62.6 |
| **How many previous dentures have you had?** | | |
| Nil previous denture | 74 | 37.4 |
| one denture | 55 | 27.8 |
| two dentures | 43 | 21.7 |
| more than two dentures | 26 | 13.1 |
| **Were you given post insertion instructions?** | | |
| Yes=178 | 89.9 |
| No=20 | 10.1 |
| **Total** | 198 | 100.0 |
Table 4 reveals that 12 (6.1%) patients visited dentists every 6 months, 20 (10.1%) annually, while majority 166 (83.8%) visited dentists when they needed treatments. Ninety eight (49.5%) were in the clinic to get a new denture while 76 (38.4%) came for adjustment of their dentures.

Majority of the respondents 156 (78.7%) had good denture cleanliness, 31 (15.7%) fair and 11 (5.6%) had poor denture cleanliness.

Chi-square test reveals no statistical significant relationship between overnight wearing or method of cleaning denture and denture cleanliness \((P > 0.05)\). However there was a statistical significant relationship between frequency or technique of cleaning denture and denture cleanliness \((P < 0.05)\) [Table 5].

**DISCUSSION**

Appropriate denture care practice is important among RPD wearers to prevent the negative impact of poorly kept denture on oral health. Our study shows that majority (90.9%) of the respondents adopted the mechanical method of toothbrush and paste or soap for the cleaning of their dentures in keeping with report of study by Marchini et al., Kular Ozkan et al., and Takamaiya et al., where majority: 98.7%, 57.1%, 46% respectively used mechanical method to achieve denture hygiene. The reason for the common use of mechanical method could be attributed to the fact that many people employed toothbrush and paste for dental hygiene and could easily adopt this for care of their dentures as they transit from dentate to edentulous state. Although combination of mechanical and chemical cleaning techniques has been reported as the best method to achieve denture cleanliness, mechanical method was found to be more effective than chemical method. On frequency of cleaning denture, 43% of the respondents clean their denture twice or more daily. This is similar to the finding of Kular-Ozkan et al., who reported that 45.7% of denture wearers clean their denture more than once daily. This may also be attributed to habit of cleaning teeth once daily by people in our environment.

In this study, more than 70% of removable partial denture wearers removed their denture at night before going to bed. This is similar to Johnson finding in which only 9.2% slept with their denture at night, but contrary to report by Barbosa et al., and Peracini et al., in which 64% and 58% respectively slept with their dentures. The disparity in the findings could be attributed to difference in level of importance attached to oral hygiene instructions by the dentists or the denture wearers. In this study about 90% of the respondents attested to having been given oral hygiene instructions while Peracini et al. reported that 58% of his subjects claimed to have been given oral hygiene instructions.

Regular visit to dentist is an important component of successive denture treatment; this study shows inappropriate practice of routine visit to the dentist by the respondents. Very few patients reported visiting dentist every six month, while majority of the respondent visited...
dentists when they needed treatment. This is similar to Machini et al.,
finding that many denture wearers do not comply with periodic
dental visit. The reason for the poor clinic attendance for routine
cleanup can be the relatively high cost of dental services.8

Although the patients evaluated in this study have been
using their denture for average period of 6.14 years,
majority had good denture cleanliness. This is contrary
to report by previous studies8,9,10 in which majority of
their subjects’ dentures were poorly kept. The difference
in findings could be as a result of different in the groups
studied. Majority of their subjects were elderly and
were using complete denture while this study assessed
partial denture wearers with predominant middle age
participants that are more likely to have better dexterity
needed for cleaning dentures.

This result surprisingly did not support a relationship
between overnight wearing of denture and denture
cleanliness contrary to previous report that wearing
complete dentures at night was associated with the
prevalence of denture-related stomatitis.11,12,13 However,
there was a statistically significant relationship between
cleaning the denture with the rest of the teeth and
denture cleanliness. Cleaning the denture with rest of
the teeth will deny the cleaning agent (toothbrush and
soap) access to the fitting surface and periphery of the
denture. This will enhance plaque accumulation. Also
there was a significant relationship between frequency
of cleaning denture and denture hygiene. This supports
the study by Takamiya et al.,14 in which majority of their
subjects clean their denture once daily and showed poor
denture hygiene.

CONCLUSION

This study shows that once daily cleaning of dentures and
cleaning with rest of teeth are ineffective in prevention of
plaque accumulation. Dentists should emphasize removal
of denture from mouth to clean and at least twice daily

**Table 5: Relationship between denture cleaning
 technique, overnight wearing and denture cleanliness**

| Denture care habit          | Denture cleanliness | P value |
|-----------------------------|---------------------|---------|
|                             | Good/Fair/Poor      |         |
| Overnight wearing           |                     |         |
| Yes                         | 109                 | 32      | 0.853   |
| No                          | 45                  | 12      |         |
| Frequency of cleaning denture|                     |         |
| ≤ once daily                | 80                  | 33      | 0.047*  |
| ≥ twice daily               | 74                  | 11      |         |
| Method of cleaning          |                     |         |
| Tooth brush and paste       | 142                 | 38      | 0.241   |
| Cotton wool/water           | 12                  | 6       |         |
| Technique of cleaning       |                     |         |
| Clean with rest of teeth    | 8                   | 9       | 0.004*  |
| Take it out for cleaning    | 146                 | 35      |         |

*Significant P < 0.05

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