

**A report on oral health delivery to rural underserved communities oyo state using the mobile dental clinic.****Balogun A.O<sup>1</sup>, Taiwo J.O<sup>1</sup>, Ipeaiyeda O.J<sup>1</sup>, Lawal FB<sup>2</sup>, Ibiyemi O<sup>2</sup>.**<sup>1</sup>Family dentistry department, University College Hospital, Ibadan<sup>2</sup>Community Dentistry Department, University College Hospital, Ibadan**ABSTRACT**

**Objective:** In Nigeria, the distribution of health care facilities particularly oral health facilities is urban based. Consequently, the rural people have no access or minimal access to oral health care. Various studies have called attention to the increasing trend of oral diseases in Nigeria, especially in the rural areas. Mobile dental clinic transcends all barriers to oral health care including physical and cultural barriers through community outreach, to rural underserved areas. Therefore, this project set out to determine the oral health needs of poor underserved rural communities in Ibadan and to deliver oral health care at their doorsteps.

**Methods:** Using the services of a mobile dental clinic, inhabitants in selected rural communities namely; Akufo, Olosun, Aremo and Ilaju were given oral health talk and treatment after their needs were determined using dental mirror, natural light, CPITN probe, caries probe.

**Result:** One hundred and thirty one people were examined and treated. Majority were from Yoruba tribe. More females (58.0%) participated in the study. Mean age of the participants was 42.4years (+10.4). Many (61.8%) of the participants had periodontal disease, tooth wear 24.4%, dental caries 16.0%. Majority of the participants had scaling and polishing (61.8%) as treatment, while 3.1% had atraumatic restorative treatment. Extraction was done for 6.8% of participants, while 27.5% were referred.

**Conclusion:** Oral diseases, especially periodontal disease, tooth wear and caries are quite prevalent in underserved rural communities.

**Key words:** oral health, rural, mobile, barriers, underserved.

**INTRODUCTION:**

Oral health is an integral part of general health and associations between oral health and general health has been established in several studies.<sup>(1),(2)</sup> Oral diseases have been shown to adversely affect diet, nutrition, quality of life<sup>(3)</sup>. The prevalence of common dental diseases in Nigeria include Periodontal disease (58 %4 in adults and 94.8% in the elderly<sup>(5)</sup>), Caries-36%<sup>(4)</sup>, Oral cancer and risk behaviors are on the increase<sup>4</sup>. Moreover, contemporary studies have implicated many oral diseases in the etiology of some non-communicable chronic medical diseases (NCDs) such as diabetes mellitus, cardiovascular diseases, respiratory diseases and others<sup>(2),(6)</sup>. Thus prevention and treatment of oral diseases have

become ever important<sup>2</sup>.

Oral diseases are quite prevalent in many developing countries including Nigeria where people from deprived communities and of ethnic minorities are not adequately covered by oral health care<sup>(7)</sup>.

In developing Countries like Nigeria, distribution of health care facilities particularly oral health care facilities is urban based. Consequently, rural people have no access or have minimal access to oral health care<sup>(6)</sup>

Nigeria is the most populous nation in Africa with a population of 140,431,790 people and a rural population of 95,153,000<sup>(9)</sup>. This implies that more than 95,153,000 people have no access or minimal access to oral health care<sup>(3)</sup>. The dentist to population ratio in Nigeria is 1:100,000<sup>(6)</sup>.

Various studies have called attention to the increasing prevalence of oral diseases in Nigeria, especially in the rural areas<sup>(10),(11)</sup>.

Outreach dental services through mobile or fixed rural clinics are important to tackle the burden of poor oral health of these underserved people with

**Correspondence: Balogun A.O**

Family dentistry department,  
UCH, Ibadan

[E-mail:josbalo510@gmail.com](mailto:josbalo510@gmail.com)

Tel: 234 8007066785708

Received: 12/2/17

Accepted: 03/04/2018

limited resources and lack of access to regular oral health care.<sup>(6)</sup>

Oral health care delivery to the rural areas is hampered by various factors which include lack of funds, poor infrastructure, inadequate dental facilities, inadequate dental man-power and fear for dental treatment<sup>(12)</sup>. The mobile dental clinic provides an innovative solution to the provision of dental care for medically underserved population in poor and remote rural communities<sup>(8)</sup>. The units provide the flexibility that stationary sites do not, thus addressing temporal, geographic and cultural barriers to health care utilization. The units can travel to locations that are remote making health care services accessible to them<sup>(8)</sup>

Therefore, the easiest and cheapest way to reach out to these underserved communities is through the mobile dental clinic<sup>(8)</sup>. This comes in the form portable dental clinics using portable equipment, or mobile dental clinics (van or truck). Mobile dental clinics provide an excellent solution to dental care provision in the remote communities. Unlike stationary dental clinics, mobile clinics provide greater physical access to dental care in poor and remote rural communities at lower or no cost to the user<sup>(8)</sup>.

A mobile dental clinic can serve many communities at a time. It can move from one community to another delivering oral health care to them<sup>(8)</sup>.

It was therefore the objective of this study to determine the oral health needs of poor underserved rural communities in Oyo state as well as deliver oral health care at their doorsteps.

## METHODS

This is a cross sectional study carried out in selected rural and semi-rural communities in Oyo state: Akufo, Olosun, Ilaju and Aremo over a period of 1 week. Akufo, Olosun and Aremo are rural communities located about 90 km, 120 km and 25 km respectively from Ibadan, the state capital where the nearest dental clinics are located. The inhabitants are predominantly peasant farmers. The existing health care facility in these communities is primary healthcare and this does not incorporate oral healthcare. This is a pilot study which was conducted during an outreach service to the communities in collaboration with an NGO (Funmi Adewole Foundation) from the United States of America (USA).

The Funmi Adewole Foundation comes to Nigeria once every year to deliver medical and dental services

to underserved communities in Oyo state. All individuals in the above communities, (both children and adults) willing to participate in the study were invited after taking permission from the community leaders. Participants were seated on rented plastic chairs under a tent. In this study, a mobile portable dental clinic was used. This is adequate for oral health delivery in these underserved communities because it can move from one community to another delivering oral health care to them

A total of 1500 people who participated in the study received oral health education. Oral health education was given on oral hygiene practices, dietary counseling and common oral diseases and their presentation. Participants were interviewed by the investigator and recording was done by a trained assistant using the WHO oral health assessment form 54. For the purpose of this study, a periodontal disease patient was defined as an individual having one or more teeth with probing depth of 3.5mm<sup>(13)</sup>

Examination was done using a caries probe, CPITN (community periodontal index of treatment needs) probe, wooden spatula and natural light. One hundred and thirty-one participants were treated for various dental problems while the other participants went for other medical treatments such as ophthalmology, ENT and general surgery.

All individuals received oral health education whilst only individuals with oral diseases received treatment.

## DATA ANALYSIS

The data was verified, collated, and analyzed using SPSS Inc. version 22. The frequency distribution and percentage frequency of variables were generated. These were expressed in bar charts, pie charts and tables. Chi square test was used to compare variables with level of significance set at  $p \leq 0.05$ .

## RESULTS

A total of 1500 people received oral health education. Only 131 participants (which represent the population of people with dental diseases) were treated because the other participants went for other medical treatments such as ophthalmology, ENT, etc.

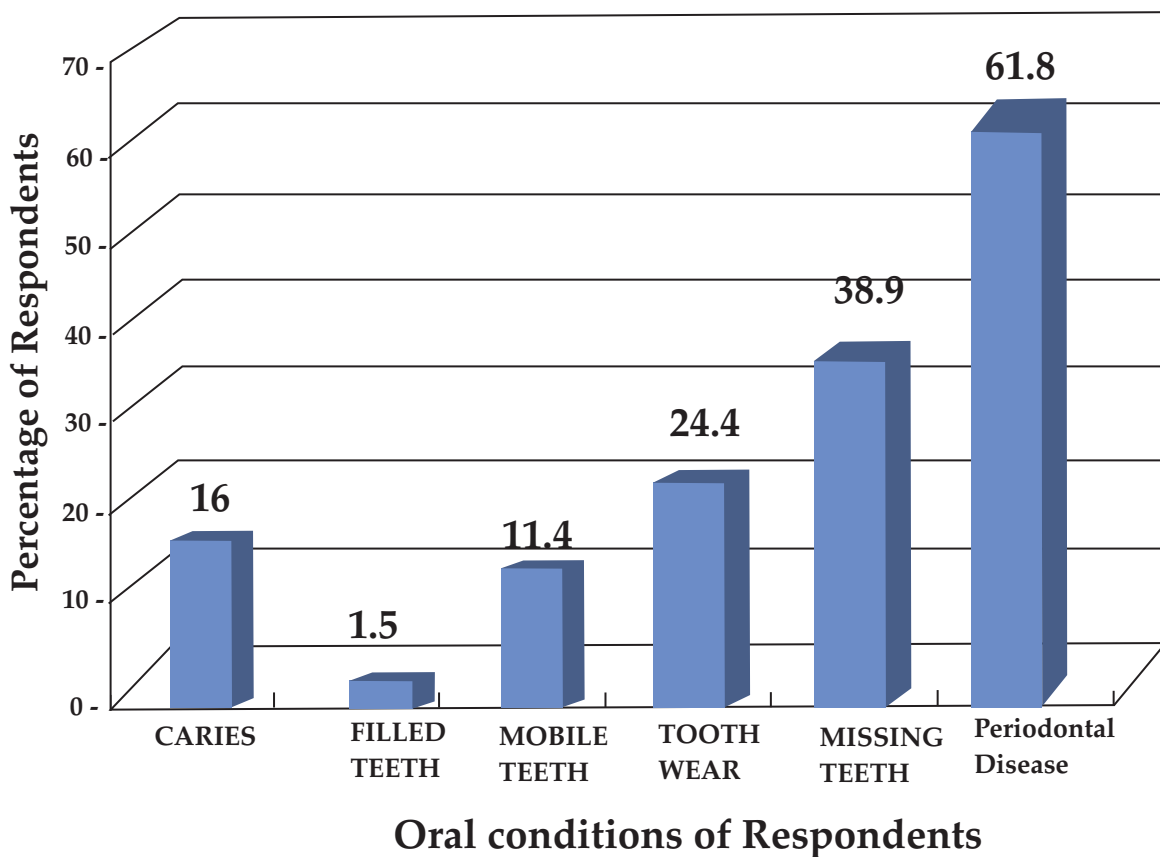
The results below represent the information on the participants who received treatment:

Majority of the people seen were within the age range 3 years to 65 years. Mean age of the participants was 42.4 years ( $\pm 10.4$ ). About one-quarter of the respondents were above 60 years (25.2%). There were

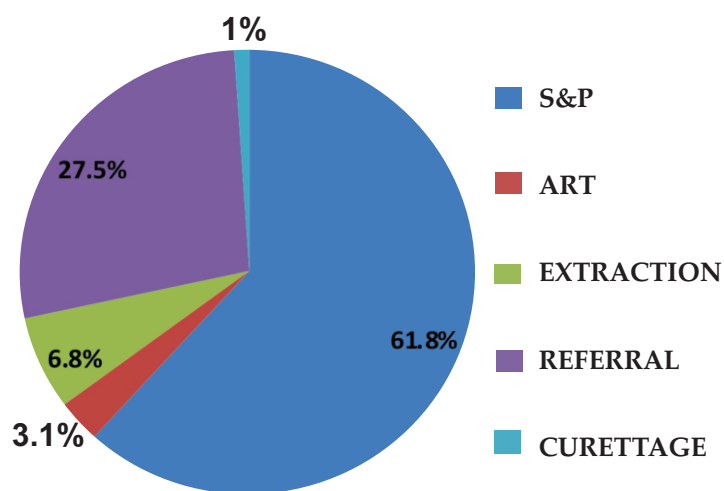
**Table 1: Sociodemographic characteristics of respondents****Distribution of respondents by age, gender, level of education, marital status, and religion**

<b>Age of respondents</b>	<b>Frequency (F)</b>	<b>Percentage (%)</b>
Less than 20 years	21	16.0
20-29 years	18	13.7
30-39 years	14	10.7
40-49 years	24	18.3
50-59years	21	16.0
60years and above	33	25.2
<b>Gender of respondents</b>		
Female	76	58.0
Male	55	42.0
<b>Level of Education</b>		
Primary School	27	20.6
SSCE	19	14.5
Tertiary	41	31.3
Nil	44	33.6
<b>Marital Status</b>		
Single	29	22.1
Married	95	72.5
Widow	5	3.8

**Fig 1: Frequency distribution of oral conditions of the respondents**



**Fig 2 Frequency distribution of treatments administered**



more female participants (58%). Majority were illiterates (33.6%). Many (61.8%) were farmers and majority was married. (Table1).

Periodontal disease was the most prevalent oral disease among the participants while mechanical non-surgical periodontal therapy (scaling and polishing) was the predominant treatment given (61.8%), (Fig.1& 2).

Majority of the participants (61%) had poor oral hygiene. There was a statistically significant association between age and oral hygiene ( $p=0.001$ ). Caries experience was low (16%) with a mean DMFT of  $0.17 \pm 0.64$ . There was no statistically significant association between caries and age ( $p=0.67$ ).

### TREATMENTS ADMINISTERED

Treatments given to the participants included scaling and polishing (61.8%), extraction (6.8%), atraumatic restorative treatment (ART) (3.1%) and deep curettage (1%). Common analgesics and antibiotics were administered as adjuncts to some dental procedures. Quite a percentage that needed tooth replacement, treatment of tooth wear and root canal treatment were all referred to the secondary/tertiary health care facilities. (fig2). Scaling and polishing was done using both manual and portable ultrasonic scalers. The ultrasonic scalers used water from the water bottles hung on the iron poles of the tent. Electric power was generated from the mobile generator.

### DISCUSSION

The oral disease burden in Nigerian rural areas is regarded as high with limited dental services<sup>(4)</sup>. The options available for the delivery of services to these underserved communities are traditional stationary clinics, portable equipment or mobile dental clinics (van or truck)<sup>(8)</sup>. Mobile dental clinics and vans represent the first form of exposure to educate the rural and semi-urban underserved people and alleviate them of their oral health care needs<sup>(8)</sup>.

In this study, 1500 people benefitted from oral health education confirming the above statement. Also, 131 people benefitted from treatment through the mobile dental clinic. Mobile dental clinics provide greater physical access to dental care for these underserved communities<sup>(8)</sup>. This program was the first time many of them (95.5%) came in contact with dental personnel. Many of the participants were above 60 years. This mobile dental clinic brought health care to their doorsteps transcending all forms of barriers in terms

of mobility, transport, escorts and cost. This proves that the elderly finds the mobile dental clinic more accessible and more convenient. It was the only opportunity for them to receive oral health care. The higher distribution of the elderly among the patients that presented is in contrast to previous studies in a government owned dental healthcare setting in Nigeria where the predominant participants were young adults<sup>(11)</sup>. More females than males participated in the study. This is in agreement with a similar study on oral health seeking behavior in southern Nigeria<sup>(14)</sup>. According to Taiwo et al 2014, this can be attributed to better health-seeking behaviour of females or because of frequent contacts with health facility for antenatal care and family planning services<sup>(15)</sup>. Majority of the participants benefitted from oral health education. Periodontal treatment was the greatest oral health need. Reports from Maiduguri<sup>(16)</sup> and Ile-Ife<sup>(17)</sup> suggest that dental caries, its sequelae and to a lesser extent, periodontal disease were the most frequent reasons for receiving dental treatment<sup>14, 15</sup>. Scaling and polishing and to a lesser extent, extraction was the predominant treatment given to the participants. This could be due to poor oral health awareness among this population. In this study, only 1.5% of the participants had filled teeth which also show poor level of oral health awareness and dental service utilization (fig.1).

Participants who had oral health problems received treatment to alleviate them of their oral health problems. This program contributed to the oral health care of these communities.

### CONCLUSION

The rural underserved communities have enormous oral health needs. Periodontal disease and to a lesser extent tooth wear and dental caries were the predominant oral diseases in these communities.

### RECOMMENDATION

There was inadequate water supply in the villages which made the dental team to source for sachet water for washing instruments, sterilisation (done with Perasafe solution) and hand-washing. Also oral health assessment had to be carried out under the tent due to lack of adequate space at the provided venues. There was no proper dental chair which made patient positioning for treatment difficult. This caused back pain for some of the dentists.

## REFERENCES

1. Adeniyi, AA Sofola OO, Kallicharan R. An appraisal of the oral health care system in Nigeria. *Int Dent J.* 2012;6:292300.
2. Preshaw PM, Alba AL, Herrera D et al. Periodontitis and diabetes: A two-way relationship. *Diabetologia.* 2012;55:2131.
3. Llewellyn CD WS. The impact of stomatological disease on oral health-related quality of life. *Eur J Oral Sci.* 2003;111:297304.
4. Akpata E. Oral health in Nigeria. *Int Dent J.* 2004;54:3616.
5. Taiwo, J.O , Oke G. Periodontal health of the elderly. 1st ed. india: research signpost publishers; 2012.
6. Kim J AS. Periodontal disease and systemic conditions: A bidirectional relationship. *Odontology.* 2006;94:1021.
7. Petersen PE. World Health Organization global policy for improvement of oral health-World Health Assembly 2007. *Int Dent J.* 2008;58:11521.
8. Vaibhav, Vashishtha, Sunder, Kote, Patthi Basavaraj, Ashish, Singla, Venisha, Pandita, Ravneet KM. Reach the Unreached A Systematic Review on Mobile Dental Units. *J Clin Diagn Res.* 2014;8:ZE05ZE08.
9. Census-Nigeria Data Portal [Internet]. Available from: <http://nigeria.opendataforafrica.org/xspplpb/nigeria-census>
10. Lawal FB, Taiwo JO OG. Oral health practices of adult inhabitants of a traditional community in Ibadan, Nigeria. *Niger J Med.* 2013;22:2127.
11. J.O Taiwo, Jeboda SO, Motayo TO OA. Periodontal health of the elderly people in South East Local Government Area in Ibadan, Nigeria. *Afr J Med Sci.* 2004;33:28591.
12. Ajayi, D.M, Arigbede AO. Barriers to Oral Health Care Utilization in Ibadan, South West Nigeria. (*Afr Heal Sci*). 2012;12:50713.
13. Report: C. AAP consensus report: Chronic Periodontitis. 1999 International workshop for a classification of periodontal diseases and conditions. *Ann Periodontol* 1999;438. 1999;
14. Ogbemor, Osaremen Gabriel . Azodo CC. Reasons for seeking Dental healthcare services in a Nigerian missionary hospital. *Sahel Med J.* 2016;19:3843.
15. Taiwo OA, Soyele OO, Nduibuizu. Pattern of utilization of dental services at the federal medical centre, Katsina, Northwest Nigeria. *Sahel Med J.* 2014;17:10811.
16. Olaleye, Suleiman IK, Solomon S. Pattern of Dental treatment in patients attending the Dental centre University of Maiduguri Teaching hospital, Maiduguri Nigeria. January-June 2013. *BOMJ.* 2013;10:129.
17. Oginni A. Dental care needs and demands in patients attending the dental hospital of the Obafemi Awolowo University Teaching Hospitals complex Ile-Ife, Nigeria.