

Oral Health Inequalities Among Rural and Urban Population: A Third World Example

Balogun A.O., Ipeaiyeda O.J., Olagba S.O. and Taiwo J.O.

Department of Family Dentistry, University College Hospital, Ibadan. Nigeria.

*Correspondence:

Dr. Abimbola O. Balogun, Department of Family Dentistry, University College Hospital, Ibadan. Nigeria, Tel: 07066785708.

Received: 08 March 2020; Accepted: 04 April 2020

Citation: Balogun A.O., Ipeaiyeda O.J., Olagba S.O., et al. Oral Health Inequalities Among Rural and Urban Population: A Third World Example. Oral Health Dental Sci. 2020; 4(2); 1-5.

ABSTRACT

Background: There are wide disparities in health status of different population groups due to factors including social, education, employment status, income level, gender and settlement (urban or rural). The rural population is underserved in terms of health delivery including oral health delivery.

Aim: To describe inequalities in oral health in a selected state of a third world Country (Nigeria).

Design: A comparative study involving rural and urban areas in Oyo state. Three rural areas (Egbeda, Akinyele, and Akufo) and 3 urban areas (Mokola, Akobo and Oluyole) were randomly selected from a list of rural and urban communities in Oyo state. Oral health survey was conducted and examination carried out with a dental mirror and CPITN probe under natural light. Data was analysed using SPSS version 22. Level of significance set at $P \leq 0.005$.

Results: A total of 1227 patients aged (1-89) years participated in the study. Mean age was 39.9 ± 19.65 . Majority were adults, about half (53%) were females, 65% were seen in the urban areas. Many (67.4%) of the urban dwellers had asymptomatic presentation, while 58.1% of the rural dwellers had dental pain. There is association between the OHI-S index and the type of settlement: Rural had poorer oral hygiene than urban settlement ($p=0.001$). Also, CAL was associated with the type of settlement: periodontal disease was more prevalent in the rural than urban settlement ($p=0.001$). Caries experience of both settlements was similar ($p=0.69$).

Conclusion: Poor oral hygiene and periodontal disease were more prevalent in the rural areas.

Keywords

World populations, Urban, Rural, Nigeria.

Introduction

There are extensive disparities in health among different world populations including low, middle- and high-income countries. This could be due to social factors including education, employment status, income level, gender and settlement (urban or rural) [1,2].

Health inequalities can be defined as differences in health status or in the distribution of health determinants between different population groups [3].

In most third world countries including Nigeria, the distribution of

health care facilities particularly oral health care facilities is urban based [4]. Therefore, rural people have no access or have minimal access to oral health care [5]. The rural population has been described as underserved in terms of health delivery including oral health delivery [6,7]. Rural communities are often deprived of basic amenities such as good roads, pipe-borne water and constant power supply [6]. Oral health has been demonstrated to be an integral component of general health, with a serious impact on the quality of life and overall well-being [8]. Therefore, various studies have called attention to the increasing prevalence of oral diseases in Nigeria, especially in the rural areas [9]. The prevalence of common dental diseases, including Periodontal disease: 58 % and 94.8 % in the elderly, Caries: 36 % [10,11]. Oral cancer and risk behaviours are on the increase [12].

Contemporary studies have implicated many oral diseases in the etiology of some non-communicable chronic diseases (NCDs) such as diabetes mellitus, cardiovascular diseases, respiratory diseases and others [13]. Thus prevention and treatment of oral diseases have become ever important. Various studies on oral health have led to substantial improvements in the prevention and treatment of oral diseases but irregularities still remain with a marked social gradient in oral health which is similar to what is seen in general health [13]. These health inequalities are due to the decline in the standard of oral health of the rural population [14]. An immediate action is necessary to tackle these oral health irregularities.

These inequalities have significant social and economic effects on both the individual and the society [15]. Negative effects of oral diseases include low self-esteem, social isolation and poor academic performance in children [16]. The wider the oral health inequality status, the higher their risk of poor health [17].

Aim

This study set out to describe the oral health inequalities existing among rural and urban population in a selected state of a third world country (Oyo State, Nigeria).

Design

This is a comparative descriptive study involving 3 rural and 3 urban areas. The study was conducted over a period of 10 months. The sampling technique employed was a multistage sampling technique in which, three rural areas (namely Egbeda, Akinyele, and Akufo) and 3 urban areas (namely Mokola, Akobo and Oluyole Estate) were randomly selected from a list of rural areas in Oyo state using table of random numbers.

These lists were retrieved from the Ministry of Local Governments and Chieftaincy Titles in Oyo state. In the final stage, participants were recruited from the different communities by ballot. All participants that fulfilled the inclusion criteria (age range 1-90 years with at least 20 set of teeth in their dentition) were included in the study after obtaining their verbal consent. Oral health survey was conducted with the use of WHO oral health assessment form. The participants were interviewed by the principal investigator and 4 trained assistants. Their normative oral health needs were assessed and participants with various oral diseases were also treated.

Examination was carried out using a caries probe, dental mirror and CPITN probe under natural light with the participants seated under a tent. Caries experience was measured using DMFT while periodontal status was measured using oral hygiene index and CPITN index.

Data management

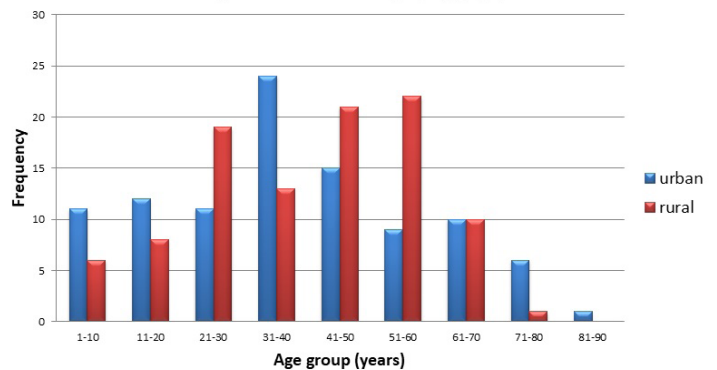
The data was verified, collated, and analyzed using SPSS Inc. version 22. The frequency distribution and percentage frequency of variables were generated. These were expressed using histogram and tables. Chi square test was used to compare variables with level of significance set at $p \leq 0.05$.

Results

A total of 1227 patients aged (1-89) years participated in the study. Mean age was 39.9±19.65. Majority were adults within the age group 31-40 years (urban) while the rural participants were mainly young elderly (51-60 years), (Figure 1). More females (53%) participated in the study (Figure 1). A great number of the rural population (90%) were seeing a dental practitioner for the first time (Figure 3). Oral hygiene and periodontal status were worse in the rural areas ($p=0.001$).

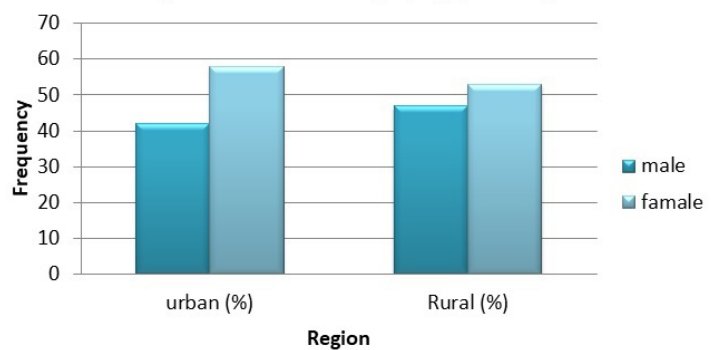
The predominant age-group in the rural population was (51-60) years while that of the urban was (31-40) years.

Figure 1: Socio-Demography (Age).



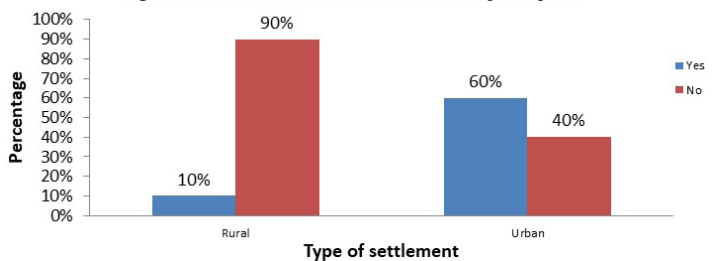
More females than males participated in the study among both settlements.

Figure 2: Socio-Demography (Gender).



Majority of the urban population had fair oral hygiene. Poor oral hygiene was seen more among the rural population. There was a strong association between oral hygiene and settlement ($p=0.001$).

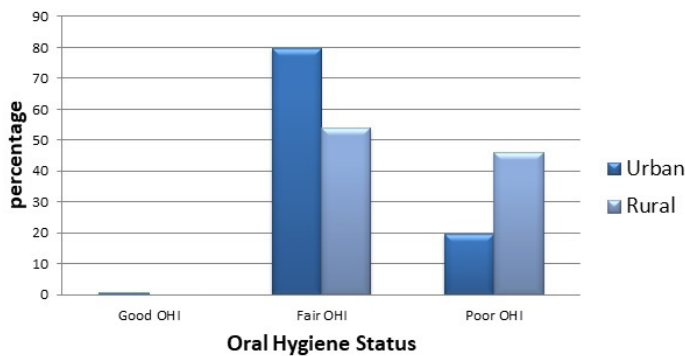
Figure 3: Previous dental visit of urban and rural participants



Mild to moderate periodontitis was observed among the urban population while the rural population had moderate periodontitis.

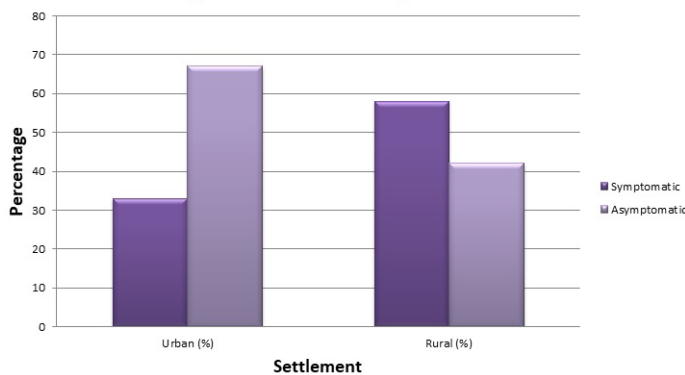
The urban population had better periodontal health and this was statistically significant ($P=0.001$).

Figure 4: Oral Hygiene Status of Urban and Rural Population.



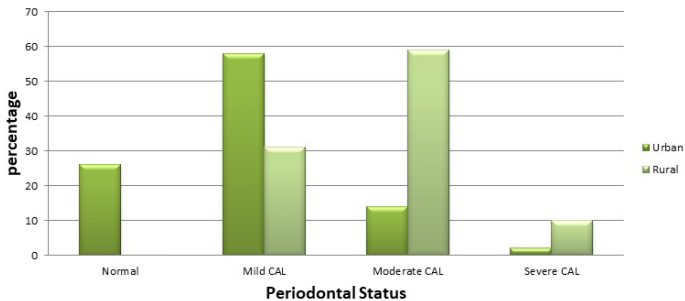
Majority of participants in the urban settlement presented for asymptomatic reasons.

Figure 5: Reasons for Seeking Dental Care.



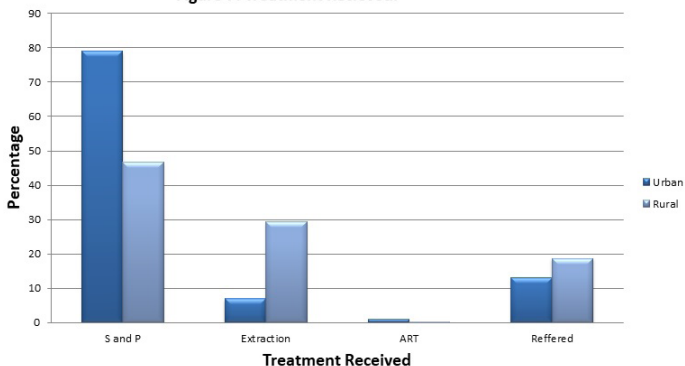
The predominant treatment received was scaling and polishing (S&P).

Figure 6: Periodontal Status of Urban and Rural Communities.



Scaling and polishing was the predominant treatment received.

Figure 7: Treatment Received.



Settlement	N	Mean	SD	Df	T	Sig
Urban	149	.17	.641	224	1.14	0.069
Rural	77	.27	.681			

Table 1: Dental Caries Experience of Urban and Rural Communities.

The caries experience was similar in both communities and there was no statistically significant association between caries experience and settlement ($p=0.069$).

Discussion

The rural population has been described as under-served in terms of health delivery including oral health delivery [18]. This is reflected in this study where majority of the rural population (90%) were coming in contact with a dental practitioner for the first time (Figure 3). This can be attributed to various factors, such as economic, cultural, or linguistic barriers to health care [[19-21].

The social determinants of health are the conditions in which people are born, grow, live, work and age. These circumstances are shaped by the distribution of money, power and resources at global, national and local levels. The social determinants of health are mostly responsible for health inequities - the unfair and avoidable differences in health status seen among different populations [3,22].

Health equity and social determinants are acknowledged as a critical component of the post-2015 sustainable development global agenda and of the push towards progressive achievement of universal health coverage (UHC) [23].

Social determinants of health are factors that underlie preventable disparities in health status and disease outcomes. Poor health outcomes are often the result of the interaction between individual's social and physical environment [24,25]. Policies that result in changes to the social and physical environment can affect entire populations over extended periods of time, while simultaneously helping people to change individual-level behavior [26].

Improving the conditions in which people are born, live, work, and age will ensure a healthier population, thereby improving national productivity, security, and prosperity through a healthier workforce [27].

Majority of the participants had periodontal disease and this was worse in the rural communities ($p=0.001$) (Figure 6). This could be due to poor access to oral care in these communities. This study is contrary to reports from Maiduguri (Olaleye et al) and Ile-Ife (Oginni et al) which suggest that dental caries, its sequelae and to a lesser extent, periodontal disease were the most frequent reasons for receiving dental treatment [28,29].

Ajayi et al. (2012), demonstrated in a study that lack of funds, poor infrastructure, inadequate dental facilities, inadequate dental man-power and fear for dental treatment are the common barriers to health care in the Nigerian population [30].

In this study, many of the urban and rural populations who participated in this study were females (Figure 2) which underscores the findings from previous studies showing that the females have a better health seeking behavior than males [27]. Majority of the urban populations presented for asymptomatic reasons while the rural population presented mainly on account of presence of symptoms (Figure 5). This affirms the belief that the urban population has better oral health knowledge and emphasizes the importance of prevention in maintaining oral health. Also, oral hygiene was poorer in the rural communities while many of the urban population had fair oral hygiene (Figure 4). Little wonder why the periodontal status among the rural community was poorer as evidenced by the moderate to severe clinical attachment loss measured among them. The predominant treatment received in the study was scaling and polishing (Figure7).

The caries experience of the two communities was similar (Table 1). This could be due to the fact that the rural communities are also gradually adopting the intake of refined carbohydrates. According to Richard Watts 2016, oral health determinants based on the biomedical model include oral hygiene, sugars consumption, smoking and alcohol, exposure to fluoride and use of dental services [31].

Oral health has been shown to be an integral part of general health and many systemic diseases such as heart disease, diabetes mellitus, osteoporosis has been associated with oral diseases. Therefore, maintaining adequate oral health has become very imperative. Although considerable progress has been undoubtedly made in combating the isolation and compartmentalization of oral health, it is important to note that tackling of oral health inequalities requires a reorientation of oral health policy away from merely changing oral health behaviours to embarking on actions aimed at targeting the common social determinants of oral health inequalities.

Conclusion

Poor oral hygiene and periodontal disease were worse in the rural areas. The urban population exhibited better health seeking behaviours since many of them presented for routine check-up rather than pain as which was predominant among the rural population.

Recommendation

Oral health education should be encouraged among the rural population with emphasis on prevention of oral diseases.

References

1. Di Cesare M, Khang Y-H, Asaria P, et al. Inequalities in non-communicable diseases and effective responses. *The Lancet*. 2013; 381: 585-597.
2. Reading CL, Wien F. Health inequalities and the social determinants of Aboriginal peoples' health. National Collaborating Centre for Aboriginal Health. 2009.
3. Braveman P, Gruskin S. Defining equity in health. *Journal of Epidemiology & Community Health*. 2003; 57: 254-258.
4. Greenberg BJ, Kumar JV, Stevenson H. Dental case management: increasing access to oral health care for families and children with low incomes. *The Journal of the American Dental Association*. 2008; 139: 1114-1121.
5. Skillman SM, Doescher MP, Mouradian WE, et al. The challenge to delivering oral health services in rural America. *Journal of Public Health Dentistry*. 2010; 70: S49-S57.
6. Glassman P, Helgeson M, Kattlove J. Using telehealth technologies to improve oral health for vulnerable and underserved populations. *J Calif Dent Assoc*. 2012; 40: 579-585.
7. Kruger E, Jacobs A, Tennant M. Sustaining oral health services in remote and indigenous communities: a review of 10 years experience in Western Australia. *International dental journal*. 2010; 60: 129-134.
8. Sischo L, Broder H. Oral health-related quality of life: what, why, how, and future implications. *Journal of dental research*. 2011; 90: 1264-1270.
9. Olusile A. Improving low awareness and inadequate access to oral health care in Nigeria: the role of dentists, the government & non-governmental agencies. *Nigerian Medical Journal*. 2010; 51: 134-136.
10. Akpata E. Oral health in Nigeria. *International Dental Journal*. 2004; 54: 361-366.
11. Taiwo J, Jeboda S, Motayo T, et al. Periodontal health of the elderly people in South East local government area in Ibadan, Nigeria. *African journal of medicine and medical sciences*. 2004; 33: 285-291.
12. Petersen PE. The World Oral Health Report 2003: continuous improvement of oral health in the 21st century—the approach of the WHO Global Oral Health Programme. *Community Dentistry and oral epidemiology*. 2003; 31: 3-24.
13. Petersen PE, Ogawa H. Strengthening the prevention of periodontal disease: the WHO approach. *Journal of periodontology*. 2005; 76: 2187-2193.
14. Whitehead M. The concepts and principles of equity and health. *Health promotion international*. 1991; 6: 217-228.
15. Thorbecke E, Charumilind C. Economic inequality and its socioeconomic impact. *World Development*. 2002; 30: 1477-1495.
16. Thernstrom S. *Poverty and progress: Social mobility in a nineteenth century city*. Harvard University Press. 2009.
17. Tsakos G, Demakakos P, Breeze E, et al. Social gradients in oral health in older adults: findings from the English longitudinal survey of aging. *American journal of public health*. 2011; 101: 1892-1899.
18. Perednia DA, Allen A. Telemedicine technology and clinical applications. *Jama*. 1995; 273: 483-488.
19. Kruger E, Tennant M. Oral health workforce in rural and remote Western Australia: practice perceptions. *Australian Journal of Rural Health*. 2005; 13: 321-326.
20. Balogun A, Taiwo J, Ipeaiyeda O, et al. A report on oral health delivery to rural underserved communities oyo state using the mobile dental clinic. *African Journal of Oral Health*. 2018; 7: 5-10.
21. Phelan JC, Link BG, Tehranifar P. Social conditions as fundamental causes of health inequalities: theory, evidence,

-
- and policy implications. *Journal of health and social behavior*. 2010; 51: S28-S40.
22. Marmot M, Friel S, Bell R, et al. Closing the gap in a generation: health equity through action on the social determinants of health. *The lancet*. 2008; 372: 1661-1669.
 23. Tracking universal health coverage: first global monitoring report. World Health Organization. 2015.
 24. Cohen S. Social relationships and health. *American psychologist*. 2004; 59: 676.
 25. Macintyre S, Ellaway A, Cummins S. Place effects on health: how can we conceptualise, operationalise and measure them. *Social science & medicine*. 2002; 55: 125-139.
 26. Kluegel JR, Smith ER. Beliefs about inequality: Americans' views of what is and what ought to be. Routledge. 2017.
 27. Health Do. Healthy lives, healthy people: our strategy for public health in England. The Stationery Office. 2010.
 28. Olaleye A, Suleiman I, Solomon S. Pattern of dental treatment in patients attending the Dental Centre University of Maiduguri Teaching Hospital, Maiduguri, Nigeria. *BOMJ*. 2013; 10: 12-19.
 29. Oginni A. Dental care needs and demands in patients attending the dental hospital of the Obafemi Awolowo University Teaching Hospital's Complex Ile-Ife, Nigeria. *Nigerian journal of medicine: journal of the National Association of Resident Doctors of Nigeria*. 2004; 13: 339-344
 30. Ajayi DM, Arigbede . Barriers to oral health care utilization in Ibadan, South West Nigeria. *African Health Sciences*. 2012; 12: 507-513
 31. Watt G W. Social determinants of oral health inequalities: implications for action.