

Original article



Oral hygiene status of adolescents in Nigeria rural areas

Obehi .O OSADOLOR

University of Nigeria Teaching Hospital, Enugu State, Nigeria.

ABSTRACT

Background. Community based oral hygiene education and promotion activities through schools can improve knowledge, attitude and behaviour related to oral hygiene and oral health among school children and through them, families and community members. **Objective.** To determine the oral hygiene status of adolescents in south eastern Nigerian rural communities. **Methodology.** A secondary data analysis was done. The primary data was obtained from a cross-sectional study that recruited 296 children from a rural public technical college and three public secondary schools selected in Nkanu–West and Udi local Government Area of Enugu State respectively.. Socio-demographic data (age, sex, socio-economic status) was obtained using semi-structured questionnaire. Oral hygiene examination was done by a single examiner using simplified oral hygiene index. Data were analyzed using SPSS Version 25 .P values < 0.05 were accepted as being statistically significant. Frequency distribution, mean scores and standard deviation were calculated. **Results.** One hundred and forty (47.3%) males, 156 (52.7%) females participated in the study. The mean age of the children was 13.56 ± 1.1 years. Seventy-eight children (26.4%) had good oral hygiene status, 207(69.9%) had fair oral hygiene status while 11(3.7%) had poor oral hygiene status . Good and fair oral hygiene status was seen more in females than males while poor oral hygiene status was seen more in males than females. **Conclusion.** Most of the adolescents in this study had fair oral hygiene status. A visit to dental clinic for preventive oral health services like scaling and polishing (oral prophylaxis) is recommended.

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CORRESPONDING AUTHOR

Obehi .O OSADOLOR

osadolorobehi@yahoo.com

1. INTRODUCTION

Good oral hygiene is the practice of keeping the teeth clean and healthy [1] by use of oral hygiene methods such as tooth brushing of teeth and flossing of interdental areas. Poor oral hygiene status and practice can lead to accumulation of dental plaque and calculus on the teeth, which can cause dental caries, halitosis (bad breath), gingivitis and periodontitis[1-2]. Chewing sticks, toothbrushes with fluoride containing toothpaste, dental floss, interspace brush [3] or interproximal brush play a role in promoting good oral hygiene and oral health.

In Nepal, among 12-year-old children in rural areas ,42.5% [4] had good oral hygiene status. In Nigeria, 34.8% [5] of 7–17-year-old children and 33.3% [6] of 8–14-year-old children in rural areas

had good oral hygiene status. Epidemiological studies on oral hygiene status of Nigerian children in rural areas will serve as a baseline for planning oral health education and oral health-based intervention programs in rural or underserved areas. It will also add to the existing literature. The aim of this study is to determine the oral hygiene status of adolescents in south eastern Nigerian rural communities.

2. MATERIALS AND METHODS

This was a secondary data analysis. The primary data recruited 296 children in 2024, to determine the prevalence of molar hypomineralisation among school children attending public technical college and public secondary school in rural

communities in south-east Nigeria. The Local Government Areas and schools were selected by convenient sampling. Informed consent was obtained from the parents of the school children and assent was obtained from the school children. The school children were randomly (simple random sampling) selected in each school.

The sample size for this study was calculated using the formula : $N = Z^2pq [7] / d^2$ (N = sample size, p = prevalence , q= 1.0-p) The sample size was calculated using the following values: Prevalence of good oral hygiene was 2.5 % from a previous study [8] in Nigeria ; confidence interval 95% (z = 1.96), d= Margin of Error tolerated, 5% (0.05), p= 0.025, q= 1.0-p = 0.975 z = 1.96, d= 0.05,

$N = (1.96 \times 1.96 \times 0.025 \times 0.975) / 0.0025 = 37.4$
37 approximately

10% of non- responders = 3

$37 + 3 = 40$; forty children were selected per local government area.

The total sample size for the two local government areas was = $40 \times 2 = 80$ but the data of 296 school children were available.

Socio-demographic data (age, sex, socio-economic status) was obtained using semi-structured questionnaire. Socio-economic status was determined by a criteria used in previous study [9] and socio-economic status designation combines father's occupation with the mother's level of education . Oral hygiene examination was done by a single examiner (A trained Dentist) and the children were examined while seated in their classroom chair using natural daylight. The inclusion criteria was children aged 12–15 years old, attending public technical college and public secondary school in selected rural communities and whose parents had given consent to participate in the study while the exclusion criteria was children who refused to participate in the study or were absent from the school at the time of study/data collection. Oral hygiene status was determined using simplified oral hygiene index (OHI-S) by Greene and Vermillion [10]. The simplified oral hygiene index has debris index and the calculus index. Each of the components was based on values representing the amount of debris or calculus found on the surface of index teeth 11, 16, 26, 31, 36, 46 (FDI) in the permanent dentition . The calculus index and debris index values ranged from 0 to 3; the simplified oral hygiene index value was the sum of debris index and the calculus index. Scoring was done using the simplified oral hygiene index scoring method where score 0.1 - 1.2 was assessed as good , 1.3 - 3.0 was fair and 3.1 - 6.0 was poor. Data were analysed using Statistical Package for Social Sciences (SPSS) Version 25 (SPSS Inc., Chicago, Ill., USA).P values < 0.05 were accepted as being statistically significant. Frequency distribution, mean scores and standard deviation were calculated. Test of association between gender, age and socio-economic status with oral hygiene status were conducted using Chi-square test. Ethical

considerations of this study was in accordance with Helsinki declaration.

3. RESULTS

A total of one hundred and fifty-six (52.7%) females, 140 (47.3%) males participated in the study, 78 school children (26.4%) had good oral hygiene status, 207 (69.9%) had fair oral hygiene status while 11 (3.7%) had poor oral hygiene status. The age range of the study participants was 12 to 15 years with a mean age of 13.56 ± 1.1 years. Good and fair oral hygiene status was seen more in females , while poor oral hygiene status was seen more in males. The total mean simplified oral hygiene index (OHI-S) score was 1.77 ± 0.50 , the mean simplified oral hygiene index (OHI-S) score was 1.41 ± 0.46 for males and 1.34 ± 0.28 for females respectively. The association between age (p=0.43), gender (p=0.16), socio-economic status (p=0.76) and oral hygiene status was not statistically significant.

Table 1. Profile of the study participants N=296.

Variables	Frequency n(%)
Age	
12	68(22.9)
13	73(24.7)
14	76(25.7)
15	79(26.7)
Sex	
Male	140(47.3)
Female	156(52.7)
Socio-economic status	
Low	255(86.1)
Middle	41(13.9)
Oral hygiene status	
Good	78(26.4)
Fair	207(69.9)
Poor	11(3.7)
Total	296(100.0)

4. DISCUSSION

Community based oral hygiene intervention programmes and oral health promotion activities [6] through schools can improve knowledge, attitude and behaviour related to oral health among school children and through them, families and community members. The daily frequency and duration of tooth brushing, the toothbrush design [11-12], the tooth brushing technique used and the individual's manual dexterity can affect and reduce microbial plaque biofilm and calculus accumulation on the teeth. This study provides information on the oral hygiene status in a representative sample of 12 to 15 years old in selected rural communities in Enugu, in the South-Eastern part of Nigeria.

In this study, the finding of 26.4% of adolescents in rural communities having good oral hygiene status was less than previous Nigerian studies of 33.3% [6] and 34.8%[5] of the study participants in rural areas having good oral hygiene status. This variation in study findings could be as a result of cultural and family associated factors[2], perceived/felt needs for good oral hygiene, individual beliefs and level of awareness of good oral hygiene practices. It could also be influenced by level of utilization of preventive oral health services like scaling and polishing (oral prophylaxis), personal values and good oral hygiene practices. Good oral hygiene status was seen more in females than males and the finding was similar to previous studies [2,5-6,8]. Oral health education and promotion activities are considered a priority for adolescents because good oral health habits are acquired early in adolescence [13]. The adoption of preventive strategies for oral diseases [3], both at the individual and population level will improve oral health related quality of life.

This study was a public-school based study in selected rural communities within the selected Local Government Areas. The findings of oral hygiene status in this study might not represent adolescents attending private schools in the communities, adolescents not present at school during the days of data collection and out of school children (adolescents not attending any school) in the communities. There could be marked or slight variation in the proportion of adolescents with good oral hygiene status when participants are selected from both public and private schools or examined during a household survey in the rural communities.

5. CONCLUSION

The oral hygiene status of most of the adolescents in this study was fair. A visit to dental clinic for preventive oral health services like scaling and polishing (oral prophylaxis) is recommended

Competing interests: The authors declare that they have no competing interest.

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