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Research Article

An Assessment of Oral Health among Senior Secondary Students in Gwagwalada Area Council Abuja, Nigeria: An Urban-Rural Comparative Analytical Cross-Sectional Study

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Abstract: Introduction: Oral health is essential to general health and quality of life and means more than good teeth; it is integral to general health and essential for wellbeing. It is therefore important that oral health is taken as a serious public health issue as knowledge of what constitutes good oral care is pertinent to ensuring that the populace maintain good oral health habits. This study assessed the knowledge, attitude and practice of oral health among secondary students: an urban rural comparison. **Methodology:** This is a comparative cross sectional analytical study among senior secondary school students in Gwagwalada Area Council, Abuja. Data was collected from 307 respondents using a semi structured self-administered questionnaire. A cluster sampling technique was used to select the schools. Data was analysed using SPSS software version 21 at 5% significance level. We used chi square test to assess associations between variables and t-test to compare two means. Other associations were ascertained using cross tabulation of the relevant variables of interest.
Results: A statistically significant difference was found between urban (67.2%) and rural (51.3%) students in knowledge (X^2=4.103, p= 0.04). Assessment of attitude using Likert scale showed generally no significant difference between urban and rural population of students (p=0.69). However about 60.7% and 66.3% of urban vs. rural students respectively reported that they would rather use herbal medications without regular visits to the dentist. Good practice of oral health was found to significantly differ between urban (59.9%) and rural (51.9%) school students (p = 0.03). As high as 50.3% and 46.8% of urban and rural students respectively brushed just once or less than once a day. Overall, female students brush more frequently than male student and this was a statistically significant difference, (p =0.001).
Conclusion: Secondary school students in this setting generally had good knowledge, attitude and practise of oral health, however these findings were better among students in the urban schools and female students. We recommend improved health promotion and education efforts targeted at students in rural secondary schools and male students.
Keywords: Oral Health, Knowledge, Attitude, Practice, Urban, Rural, Students.

Introduction

The World Health Organisation (WHO) defines oral health as a state of being free from mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal (gum) disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual's capacity in biting, chewing, smiling, speaking, and psychosocial wellbeing [1]. Oral health is essential to general health and

quality of life and means more than good teeth; it is integral to general health and essential for wellbeing [1]. The craniofacial complex allows us to speak, smile, kiss, touch, smell, taste, chew, swallow, and to cry out in pain. It provides protection against microbial infections and environmental threats [1]. Oral health can serve as a window into our health status and can reveal signs of nutritional deficiencies or general body infections [2]. Therefore, systemic diseases may first become apparent because of mouth lesions or other oral problems [2].

Oral diseases restrict activities in school, at work and at home causing millions of school and work hours to be lost each year the world over [2]. It is therefore important that oral health is taken as a serious public health issue as knowledge of what constitutes good oral care is pertinent to ensuring that the populace maintains good oral health habits [2].

Daily preventive care, including proper brushing and flossing, will help stop problems and halt their progression [2]. In between regular visits to the dentist, there are simple steps that we can take to greatly decrease the risk of developing tooth decay, gum disease and other dental problems [2]. These include brushing thoroughly twice a day and flossing daily, eating a balanced diet and limiting snacks between meals; using dental products that contain fluoride, including toothpaste and making sure that children under 12 years of age drink fluoridated water or take a fluoride supplement if they live in a non-fluoridated area. Good oral health practices should be encouraged from young age to ensure positive long term dental health and hygiene. Disregarding this will give rise to negative health and social consequences [3-5]. Oral health status is often determined by the amount of deposits on the surfaces of teeth and poor oral hygiene is a predisposing factor to periodontal diseases and associated with cardiovascular diseases [4-6].

In developing countries, dental hygiene is poor with inadequate and improper brushing of teeth, no washing of mouth after intake of sweets, wide-spread substance abuse and addiction, hyperacidity, increased consumption of refined sugar and sweetened foods [7]. Use of toothbrush in rural areas is grossly limited and toothpick is traditionally u for dental cleaning [7]. Regular brushing of teeth after principal meals is not practiced universally [8]. Yazdani and colleagues in 2009 in Iran, showed that all of 417 students studied had dental plaque, and 93% had gingival bleeding on at least one index tooth [9]. Over the past two decades, increasing levels of tooth decay in children and adolescents has been observed in developing countries compared with developed countries [10]. Little is known about oral health attitudes and practice of children in developing countries, although some studies showed that the educational intervention based on knowledge–attitude–practice (KAP) model significantly improved oral health practice [10- 13].

A positive association between poor knowledge and presence of dental caries was seen even though the practice of oral health cannot be predicted simply on the KAP model alone. Aziz Kamran used health belief model as a theoretical framework to assessing the participants' attitudes. This model suggests that whether or not individuals take action to protect their health depends on whether they believe that they are susceptible to an ill health condition and that the occurrence of that condition would have serious consequences including various costs that could be avoided [14]. There only few researches that assessed the knowledge, attitude and practise of oral health among school children in our setting, thus justifying this study [15, 16].

Methodology

Study area

The study was conducted in Gwagwalada Area Council of the Federal Capital Territory (FCT), Abuja Nigeria. Abuja was established by a military decree in 1976 and has 6 area councils of which Gwagwalada is one with an area of 1069.589km^2 and a population of 158,618 as at the 2006 census. There are approximately 65,792 youths in Gwagwalada Area Council constituting 41% of the population [17].

Study population

There are about 24 Secondary Schools in Gwagwalada Area Council Abuja, including public and private schools. There are however more youths in the urban areas of the area council. Majority of the secondary school students we studied were aged between 13 and 19 years and constitute about 22% of the population [17].

Study design

A cross-sectional study design was employed to determine the knowledge, attitude and practice of oral health among the study population.

Sample size

The sample size was calculated using the formula for the comparison of two independent proportions, with 45% prevalence and 20% desired level of difference and 20% non-response rate [18]. The formula for calculating sample size for the comparison of two independent proportions used is: $n/group = \underline{2 (Z \alpha + Z \beta)^2 \pi (1-\pi)} /d^2$

Sampling technique

Cluster sampling technique was employed. Step 1 involved the identification of the senior secondary schools located in both urban and rural areas based on existing records from the education resources centre Abuja. We then used simple random sampling method to select two schools each from the list of urban and rural secondary schools. Respondents were then selected using simple random sampling method based on the school lists of students as a sampling frame. Selected students were then interviewed until the sample size was achieved.

Data collection instrument

A semi-structured self-administered questionnaire developed by the researchers was used for data collection. Data was collected by the researchers with the help of two trained research assistants. The authorities of the selected schools were contacted for their permission and cooperation towards the success of the research. Data was collected over a period of 21 days.

Data analysis plan

The data was analysed using the SPSS software. Socio-demographic data such as age, school, sex, parents' level of education, were analysed and summarised in appropriate tables. For the analysis of knowledge of oral health, a point was allotted for each correctly answered question by respondents. Knowledge score was generated by summation of the points and mean for urban and rural schools were calculated and the mean scores compared using the t-test. Findings were considered statistically significant at p-values less than 0.05. Respondents that had scores greater than or equal to the mean knowledge score of 50% from this study were grouped as having good knowledge while those with scores below the mean knowledge score were grouped as having poor knowledge. Analysis of attitude was done using the Likert scale where scores from 5, 4, 3, 2, 1 were assigned to strongly agree, agree, indifferent, disagree and strongly disagree. Strongly agree and agree were classified as positive attitude while the rest were grouped as negative attitude. Practice scores were generated by allotting 1 point to every correct practice. Respondents with scores greater than or equal to the mean practice score of 50% were considered as having good practise while those below the mean were considered as having poor practice. For assessment of any association between sex and oral health practice, we used cross tabulations where p-values less than or equal to 0.05 were considered statistically significant.

Ethical consideration

Ethical approval was obtained from the health research ethics committee of the University of Abuja Teaching Hospital. The purpose of the research was explained to the participants and written consents were obtained from their parents and guardians. Participation in the research was voluntary and respondents were assured of confidentiality of data collected as well as anonymity.

Results

Socio-demographic characteristics of respondents

Table 1 below displays the socio-demographic data from the survey. About 49.8% and 50.2% of respondents were from urban and rural senior secondary schools respectively. Male respondents were 45.8% vs. 53.9% for urban and rural schools respectively while females were 54.2% vs. 46.1% for urban and rural schools respectively. Mean age in years of respondents were: urban, 15.8 and rural, 15.5 (p = 0.109). From Table 1, it can be seen that parents with tertiary level of education were 66.7% and 38.1% in urban and rural schools respectively while majority of the respondents' parents from rural schools had secondary level of education (46.8%) to urban (28.4%) and this was shown to be statistically significant (p=0.0001). Distribution of parents' occupation shows that 61.7% vs. 42.0% from urban and rural schools respectively were civil servants.

Table 1. Socio-demographic characteristics of urban and rural secondary school students in Gwagwalada

Characteristics	Urban n (%)	Rural n (%)	x^2	p-values
Sex				
Male	70 (45.8)	83 (53.9)	2.036	0.154
Female	83 (54.2)	71 (46.1)		
Education of parents				
Primary	4 (2.7)	10 (7.2)	23.934	0.001*
Secondary	42 (28.4)	65 (46.8)		
Tertiary	98 (66.2)	53 (38.1)		
No formal education	4 (2.7)	11 (7.9)		
Occupation of parents				
Civil servant	87 (61.7)	58 (42.0)	15.506	0.001*
Private sector	30 (21.3)	29 (21.0)		
Others	24 (17.0)	51 (37.0)		
Religion				
Christianity	120 (79.5)	89 (61.8)	12.792	0.002*
Islam	30 (19.9)	55 (38.2)		
Others	1 (0.7)	0 (0.0)		
Tribe				
Hausa	26 (17.6)	10 (7.1)	14.257	0.003*
Igbo	31 (20.9)	28 (19.7)		
Yoruba	43(29.1)	31 (21.8)		
Others	48 (32.4)	73 (51.4)		
Total	**153 (49.8)**	**154 (50.2)**		
*Statistically significant				

Knowledge of oral health among urban and rural secondary school students in Gwagwalada

Using the mean of the knowledge score of 50%, students were grouped into those that have good knowledge and those with poor knowledge (Table 2). Approximately 62.7% and 51.3% of students from urban and rural schools respectively, had good knowledge (p = 0.04).

Table 2. Knowledge distribution

	Urban n (%)	Rural n (%)	x^2	p-values
Good Knowledge	96 (62.7)	79 (51.3)	4.103	0.04
Poor knowledge	57 (37.3)	75 (48.7)		

Figure 1 below shows that students in urban schools had a better knowledge of the fact that poor oral health can lead to poor general health than rural students (72.2% vs. 65.1%); (x^2 = 1.723, p-value 0.189).

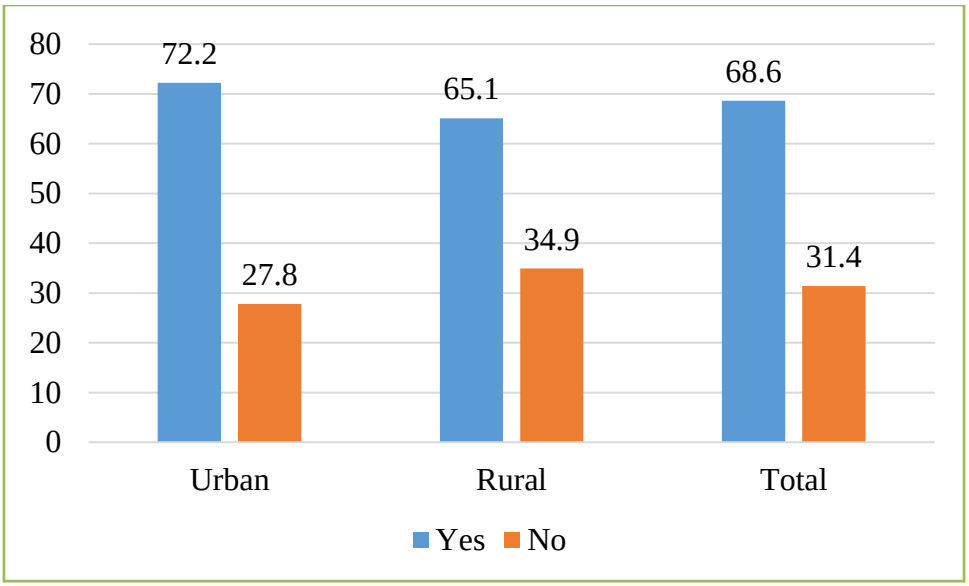

Figure 1. Knowledge of the relationship between oral health and general health among students

Attitude to oral health among urban and rural secondary school students in Gwagwalada

Figure 2 below shows the percentages (%) of students with good or poor attitude to oral health. Approximately, 66% of respondents from urban schools have good attitude while 61% from rural school have good attitude, p = 0.37.

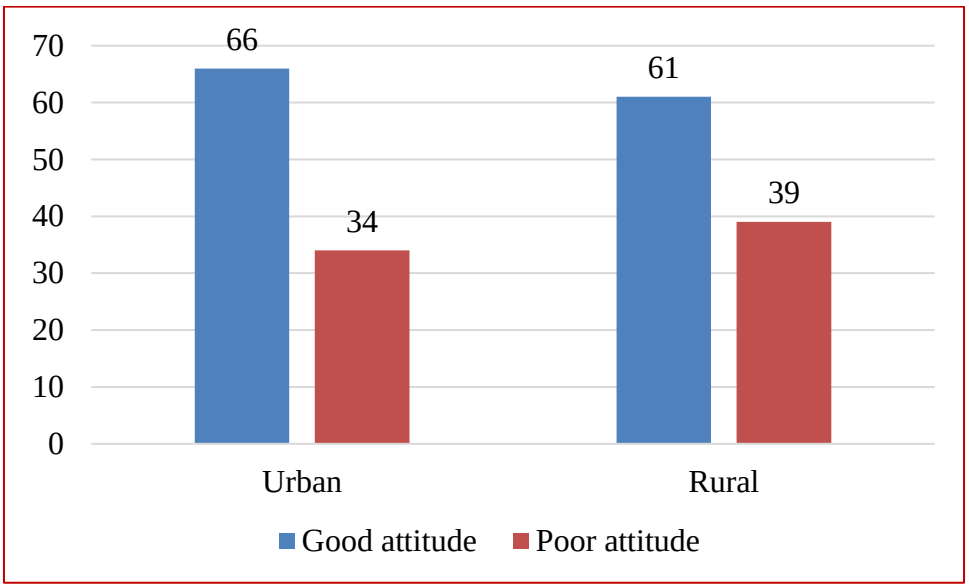

Figure 2. Attitude of students to oral health, (x^2 = 0.819, p = 0.37)

Practice of oral health among urban and rural secondary school students in Gwagwalada

Table 3 below showed that 59.5% of urban students had good oral health practice while only 51.9% in rural schools had good practice. Approximately 40.5% and 48.1% of urban and rural school students had poor oral health practices and these differences are statistically significant, (p= 0.03).

Table 3. Practice of oral health among urban and rural secondary school students in Gwagwalada

Characteristics	Urban n (%)	Rural n (%)	x^2	p-values
Good Practice	59.5%	51.9%	1.763	0.182
Poor practice	40.5%	48.1%		

Figure 3 below shows the frequency of teeth brushing, in percentages (%) per day among the students, p = 0.531.

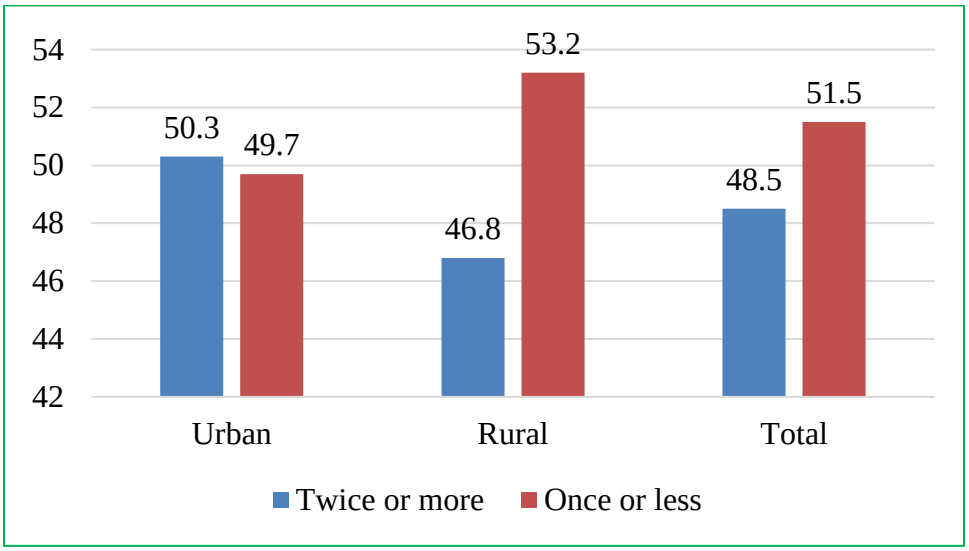

Figure 3. Frequency of teeth brushing, in percentages (%) per day among urban and rural secondary school students in Gwagwalada

Table 4 below shows that the most frequently used primary mouth cleaning agent among the students were tooth brush and paste: 96.8% among urban students and 92.8% among rural students (p = 0.47).

Table 4. Primary mouth cleaning agents among urban and rural schools, gwagwalada

Agent	Urban n (%)	Rural n (%)	Total n (%)	x^2	p-values
Brush and paste	149(96.8)	141(92.8)	290(94.8)	3.541	0.47
Dental floss	4(2.6)	2(1.3)	6(2.0)		
Mouthwash	4(2.6)	2(1.3)	6(2.0)		
Chewing stick	2(1.3)	0(0.0)	2(0.6)		
Tooth pick	1(0.7)	1(0.6)	2(0.6)		

Figure 4 shows that overall, most students (66.2 %) brush in the morning and at night before bedtime; (p-value 0.001).

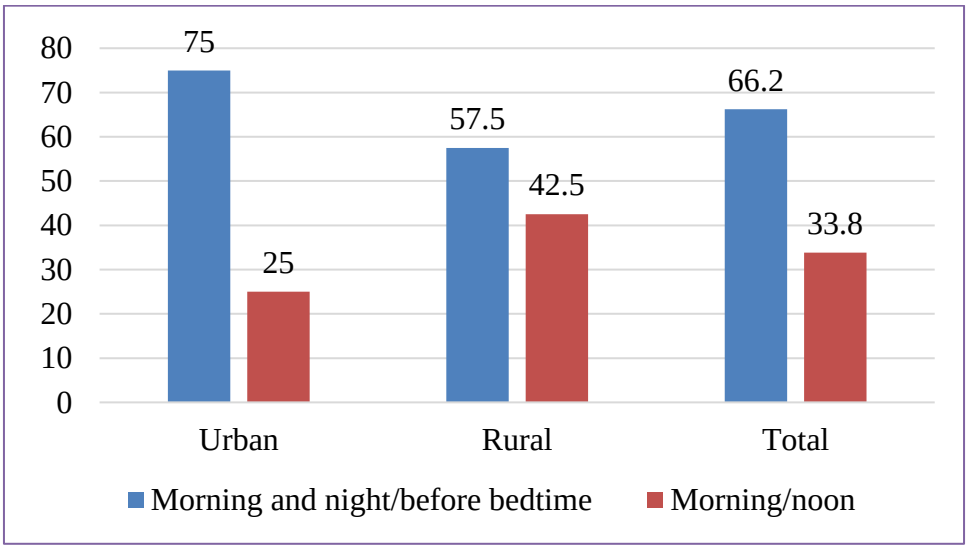

Figure 4. Brushing time/pattern among urban and rural secondary school students in Gwagwalada

Figure 5 displays the percentages (%) of students who used correct or incorrect brushing techniques. Overall, (62.5%) most students used the correct techniques of brushing. (p = 0.11).

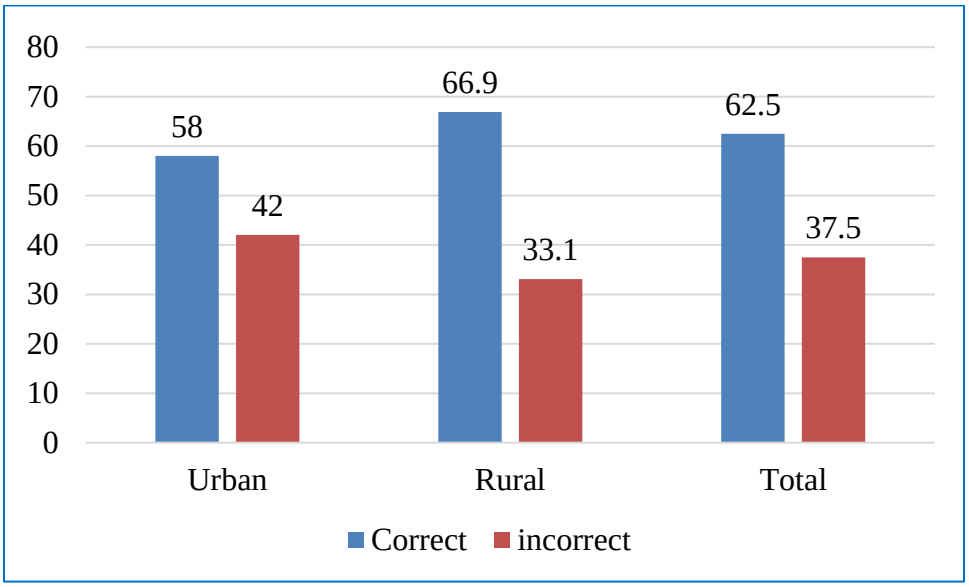

Figure 5. Brushing techniques among urban and rural secondary school students in Gwagwalada

Comparison of oral health practice by gender among urban and rural secondary school students in Gwagwalada

Table 5 below revealed that females generally have better oral health practices than males in both urban and rural schools: 60.2% vs, 58.6% and 62.0% vs.43.4%) respectively (p = 0.82).

Table 5.Comparison of oral health practice by gender

Sex	Practice	Urban Frequency (%)	Rural Frequency (%)	x^2	p-values
Male	Good practice	41 (58.6)	36 (43.4)	0.048	0.82
Female	Good practice	50 (60.2)	44 (62.0)		

Discussion

The number of males and females in the study was fairly equal. Average age of the respondents from urban schools was 15.8 years, while that of rural schools was 15.5 years, (p=0.109). Other researches were carried out on oral health among similar age groups [19-21].

Our study showed that the urban school students have a better knowledge of oral health than students of rural schools (p=0.02). Several reports have shown that adolescents in rural settings have poor oral health knowledge, while other researchers have reported good knowledge for same age group in both urban or rural settings [22, 23]. Our study also revealed that overall, the students have good knowledge of oral health. Approximately, 50.0% of urban and 54.5% of rural students agreed that soft drinks can affect the teeth negatively and this has also been reported by researchers in Oyo state, Nigeria [24]. A very large proportion of the students we studied in Abuja reported that general health has a relationship with oral health and this was also reported by Omale among secondary school children in Enugu, Nigeria [25].

Our study revealed a positive attitude to oral health among both urban and rural secondary school students and this is in contrast to a report of poor oral health attitude in rural Nepal and also in China where significant difference exist in attitude of urban and rural adolescents to oral health [26]. It will also be seen that even though there is significant difference in attitude between the urban and rural students, both groups have good attitude towards oral health and this is also in line with other reports

that secondary school students have positive attitudes towards oral health [24]. Approximately 60.7% of students both urban and rural do not visit the dentist because they use herbal medication for dental problems and this is in agreement with a research that reported self-medication with herbal remedies for treatment of dental diseases [27].

Our study showed that most urban students had good oral health practice while only 51.9% of rural students had good practice (p= 0.03) and these findings are consistent with other works that reported that urban secondary school students had good oral health practice [24, 25]. On the contrary, other reports stated that rural secondary school students generally had poor oral health practices [22, 26]. In our study 49.7% urban and 53.2% rural respondents brush once or less per day (p=0.53) and this is similar to the findings of Omale and others who reported that 27.2% of respondents brushed less than once per day [22, 25, 26, 28]. In contrast, other works had reported that majority of the respondents brushed twice or more per day [23, 25]. The primary mouth cleaning agents did not vary significantly among the urban and rural students (p= 0.47) and this has been reported by other researchers [25]. Some researchers have reported that females had better oral health practices as we also reported [17, 25].

Conclusion

This study revealed that overall, the students had good knowledge of oral health however, the urban secondary school students had better knowledge than the rural secondary school students. Majority of the students from both groups reported that oral health had a relationship with general health. Furthermore, majority of the students from both urban and rural schools had positive attitude towards oral health however, the practice of oral health was found to the better among the urban secondary school students and among female students.

Recommendations

There is need for improved practice of oral health especially among the students in rural settings and male students through health promotion and education and the school health programme. In addition, the practice of brushing the teeth at least twice in the morning after breakfast and at night just before bedtime should be encouraged among the students.

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Conflicts of interest

There is no conflict of interest of any kind.

References

1. Petersen PE. Continuous improvement of oral health in the 21st century-the approach of the WHO Global Oral Health Programme. WHO/NMH/NPH/ORH/03.2 World Oral Health Report 2003**.**
2. American Dental Association http://www.mouthhealthy.org/en/az-topics/o/oral-health assessed 28th July 2015.
3. Zhu L, Petersen PE, Wang HY, Bian JY, Zhang BX. Oral health knowledge, attitudes and behaviour of children and adolescents in China. Int Dent J. 2003;53(5):289-98.
4. Szöke J, Petersen PE. Evidence for dental caries decline among children in an East European country (Hungary). Community Dent Oral Epidemiol. 2000;28(2):155-60.

5. Petersen PE, Hoerup N, Poomviset N, Prommajan J, Watanapa A. Oral health status and oral health behaviour of urban and rural schoolchildren in Southern Thailand. Int Dent J. 2001;51(2):95-102.
6. Albandar JM, Brown LJ, Loe H. Clinical features of early-onset periodontitis. J Am Dent Assoc. 1997;128(10):1393-9.
7. Tomar SL, Asma S. Smoking-attributable periodontitis in the United States: findings from NHANES III. J Periodont. 2000;71(5):743-51.
8. Andreasen JO, Andreasen FM. Dental trauma. In: Pine C (ed). Community Oral Health. London: Elsevier Science Limited, 2002. p. 94-9.
9. Yazdani R, Vehkalahti MM, Nouri M, Murtomaa H. School-based education to improve oral cleanliness and gingival health in adolescents in Tehran, Iran. Int J Pediat Dentist. 2009;19(4):274-81.
10. Friel S, Hope A, Kelleher C, Comer S, Sadlier D. Impact evaluation of an oral health intervention amongst primary school children in Ireland. Health Promot Int. 2002;17(2):119-26.
11. Loesche WJ. Association of the oral flora with important medical diseases. Curr Opinon Periodont. 1997;4:21-8.
12. Ojahanon PI, Akionbare O, Umoh AO. The oral hygiene status of institution dwelling orphans in Benin City, Nigeria. Nig J Clin Pract. 2013;16(1):41-4.
13. Gajewski BJ, Coffland V, Boyle DK, Bott M, Price LR, Leopold J, Dunton N. Assessing content validity through correlation and relevance tools. Methodol. 2012;8:81-96.
14. Kamran A, Bakhteyar K, Heydari H, Lotfi A, Heydari Z. Survey of oral hygiene behaviors, knowledge and attitude among school children: a cross-sectional study from Iran. Int J Health Sci. 2014;2(2):83-95.
15. Mistry KM. Factors related to the promotion of oral health in developing countries. J Indian Dent Assoc. 1992;63(1):59-63.
16. Orenuga OO, Sofola OO. A survey of the knowledge, attitude and practices of antenatal mothers in Lagos, Nigeria about the primary teeth. Afr J Med Med Sci. 2005;34(3):285-91.
17. Federal Capital territory Authority website, assessed March 10th 2020, 8:30pm. http://www.abuja.ng.com/federal.capital.territory.html/Gwagwalada
18. Al-Omiri MK, Al-Wahadni AM, Saeed KN. Oral health attitudes, knowledge, and behavior among school children in North Jordan. J Dent Edu. 2006;70(2):179-87.
19. Gupta T, Sequeira P, Acharya S. Oral health knowledge, attitude and practices of 15-year-old adolescent population in Southern India and their social determinants. Oral Health Prevent Dent. 2012;10(4):345-54.
20. Al-Darwish MS. Oral health knowledge, behaviour and practices among school children in Qatar. Dent Res J. 2016;13(4):342-53.
21. Kolawole KA, Oziegbe EO, Bamise CT. Oral hygiene measures and the periodontal status of school children. Int J Dent Hyg. 2011;9(2):143-8.
22. D'Cruz AM, Aradhya S. Impact of oral health education on oral hygiene knowledge, practices, plaque control and gingival health of 13-to 15-year-old school children in Bangalore city. Int J Dent Hyg. 2013;11(2):126-33.
23. Lian CW, Phing TS, Chat CS, Shin BC, Baharuddin LH, Jalil ZB. Oral health knowledge, attitude and practice among secondary school students in Kuching, Sarawak. Arch Orofac Sci. 2010;5(1):9-16.

24. Ogundele BO, Ogunsile SE. Dental health knowledge, attitude and practice on the occurrence of dental caries among adolescents in a Local Government Area (LGA) of Oyo State, Nigeria. Niger J Epodem. 2008;1(2):64-71.

25. Omale NJ. Oral health knowledge, attitudes, and practices among secondary school students in Nigeria. http://scholarworks.waldenu.edu/dissertations 2014.

26. Humagain M. Evaluation of knowledge, attitude and practice (KAP) about oral health among secondary level students of rural Nepal-a questionnaire study. Webmed Cent Dent. 2011;2(3);WMC001805.

27. Olusile AO. Improving low awareness and inadequate access to oral health care in Nigeria: The role of dentists, the government & non-governmental agencies. Niger Med J. 2010;51(3):134-36.

28. Bashiru BO, Anthony IN. Oral self-care practices among university students in Port Harcourt, Rivers State. Niger Med J. 2014;55(6):486-89.

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