

EFFECTIVENESS OF ORAL HEALTH EDUCATION PROGRAMME ON KNOWLEDGE, ATTITUDE AND PRACTICE OF ORAL HYGIENE AMONG SENIOR SECONDARY SCHOOL STUDENTS IN BICHI LOCAL GOVERNMENT AREA, KANO STATE NIGERIA

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Abstract

The study assessed Effectiveness of Oral Health Education Programme on Knowledge, Attitude and Practices of Oral Hygiene among Public Senior Secondary Schools Students in Bichi Local Government Area, Kano State, Nigeria. Survey Design was used for the study. The population of the study consist of (16,898) students out of which 375 respondents according to Krejcie and Morgan (1970) table were selected using simple random sampling. The instrument used for data collection was validated self-developed Questionnaire named "Assessment of Knowledge Attitude and Practice Questionnaire" (AKAPQ). The data was analyzed using (SPSS version twenty 20). Frequency and percentages were used to analyze the demographic variables of the respondents. Mean and standard deviation were used to answer the research questions. The hypotheses one, two and three were tested using Independent t-test at 0.05 significance level. The findings revealed that, the level of Knowledge, Attitude and Practice of Oral Hygiene was very low. Furthermore, the result of the findings shows that there is a significant effects of oral health education programme in the Knowledge, Attitudes and Practice of Oral Hygiene between Males and Female among Public Senior Secondary Schools Students in Bichi Local Government Area, Kano state, Nigeria. Therefore, It was recommended that, Government and Non-Governmental Organizations should organized regular enlightenment programmes and public awareness through radio and online on good oral hygiene practices.

Keywords: Oral Health Education Programme, Knowledge, Attitude, Practices, Oral Hygiene

Introduction

Oral Health education programmes have been shown to be significantly effective in addressing poor oral hygiene by in improve students' knowledge, attitudes and practices regarding various health-related issues. In many developing regions, including parts of Nigeria, especially rural areas like Bichi Local Government Area (LGA) in Kano State, oral health is often neglected. Factors contributing to poor oral hygiene include: Lack of awareness or misinformation about oral care, Cultural beliefs and practices, Low prioritization of dental health, Poor access to dental services, Financial constraints. Jibo and Mubarak (2017).

In Nigeria, based on a previously conducted national oral health survey, the prevalence rates of dental caries and periodontal diseases stand at 30% to 80% of dental caries in Nigeria shows a pattern of deterioration which is closely linked to poverty and the poor economic growth in the country figures may be a gross under-estimation of the oral condition burden in Nigeria since the rural areas rarely have functional oral health facilities, with poor accessibility to the facilities and services (WHO,2019). In Nigeria, the burden of oral diseases remains high, especially in rural and semi-urban areas like Bichi Local Government Area in Kano State, due to limited access to oral healthcare services, cultural

beliefs, and high sugar consumption. Nine out of ten Nigerians suffer from untreated dental issues, ranging from cavities to gum disease, plaque, bleeding on probing of the gingiva, and caries increment. The country has developed an oral health policy, but more needs to be done to address the growing burden of oral diseases, and low prioritization of oral health (Oginni et al., 2017).

The study "Effectiveness of Oral Health Education Programs: A Systematic review in India" by Nacre and Harikiran (2013) concludes that oral health education is effective in improving knowledge, attitude, and practice regarding oral health and in reducing plaque, bleeding on probing of the gingiva, and caries increment. The most successful programs are labor-intensive, involve significant others, and have received funding and additional support.

A study in Sokoto, North West Nigeria, found that health education intervention had a significant impact on knowledge, attitude, and practice of personal hygiene among secondary school students. According to the World Health Organization (2022), oral health problems are a major public health concern, affecting over 90% of the world's population. In Nigeria, the prevalence of oral health problems is high, with studies showing that over 70% of Nigerian children and adolescents suffer from tooth decay and gum disease (Adegbemigun et al., 2023; Yodeled et al., 2024).

Kano State, where Bichi Local Government Area is located, faces various health challenges, including oral health problems, such as tooth decay, gum disease, and tooth loss, are also prevalent worldwide, affecting individuals of all ages. Malaria, worm infestations, and access to health services and other diseases that can impact students' learning performance, health education is crucial in addressing these issues (Kassebaum et al., 2023). It is essential to assess the effectiveness of oral health education programs among senior secondary school students in Bichi Local Government Area, Kano State.

Statement of the Problem

In many developing regions, including parts of Nigeria, especially rural areas like Bichi Local Government Area (LGA) in Kano State. Jibo and Mubarak (2017). Oral health is often neglected. Factors contributing to poor oral hygiene include: Lack of awareness or misinformation about oral care, Cultural beliefs and practices, Low prioritization of dental health, Poor access to dental services, Financial constraints. Petersen (2003).

Even though oral health education programs are designed to address these issues, their actual impact on improving knowledge, changing attitudes, and encouraging healthier practices in such communities has not been adequately assessed or documented. In Bichi Local Government Area, there is a noticeable trend of poor oral hygiene among residents, reflected in high rates of dental caries, gum diseases, and infrequent dental visits. Furthermore, According to a study carry out by Ubale, Ajiya and Mustapha, reveals that there is low level of knowledge, attitude and practices of oral hygiene among public senior secondary school students in Bichi LGA Kano State, the study also recommend that there is for urgent intervention studies on oral health.

Despite some oral health education initiatives introduced by public health authorities or non-governmental organizations, there is insufficient evidence on how effective these programs have been in influencing the knowledge, attitudes, and practices (KAP) of the people in this area. Without this information, it is difficult to determine whether existing interventions are meeting their objectives or if new strategies are needed. The purpose of this study is to assess the effectiveness of health education programs on knowledge, attitude, and practice among senior secondary school students in Bichi Local Government Area, Kano State. The study will provide insights into the impact of health education programs on students' knowledge, attitudes, and practices.

Objectives of the Study

The objectives of the study are:

1. To determine the knowledge of oral hygiene among public senior secondary school students in Bichi Local Government Area, Kano State.
2. To determine the attitude of public senior secondary school students towards oral hygiene in Bichi Local Government Area, Kano State
3. To determine the practice of oral hygiene among public senior secondary school students in Bichi Local Government Area, Kano State.
4. To determine the gender difference of the influence of health education programme on knowledge of oral hygiene among public senior secondary school students in Bichi Local Government Area, Kano State
5. To determine the gender difference of the influence of health education programme on oral hygiene among public senior secondary school students in Bichi Local Government Area, Kano State
6. To determine the gender difference of the influence of health education programme on practice of oral hygiene among public senior secondary school students in Bichi Local Government Area, Kano State.

Research Questions

The study sought to answer the following questions:

1. Do public senior secondary school students have adequate knowledge of oral hygiene in Bichi Local Government Area, Kano State?
2. What is the attitude of public senior secondary school students towards oral hygiene in Bichi Local Government Area, Kano State?
3. Do public senior secondary school students practices oral hygiene in Bichi Local Government Area, Kano State?

Hypotheses

Based on the research questions, the following hypotheses were formulated:

H01 There is no significant gender difference of the influence of Health Education on the Knowledge of Oral Hygiene among public secondary school students I Bichi Local Government area of Kano state

H02 There is no significant gender difference of the influence of Health Education on the attitude of Oral Hygiene among public secondary school students I Bichi Local Government area of Kano state

H03 There is no significant gender difference of the influence of Health Education on the practice of Oral Hygiene among public secondary school students I Bichi Local Government area of Kano state

Methodology

This study adopted a survey research design. The population of this study consist of all public senior secondary schools students in Bichi Local Government Area, Kano State. Simple random sampling was used to select the sample senior secondary schools from fifteen (15) public senior secondary schools in Bichi. According to Kano Senior secondary school management board) Bichi Zonal Office. To determine the number of public senior secondary schools for each stratum, Ejifugha (1998), opined that forty percent (40%) of the schools population was selected. thus, Six (6) public senior secondary schools were selected out of fifteen (15) senior secondary schools in Bichi. from the study population of sixteen thousand eight hundred and ninety eight (16,898) students out of which three hundred and seventy five (375) respondents was determined appropriate for a population ranging from fifteen thousand to twenty thousands (15,000 – 20,000) as suggested by Krejcie and Morgan table in Azrul et'al., (2020).

The responses of respondents were subjected to Cronbach's Alpha test the result of the analyses shows that the reliability index obtained was 0.61 hence the instrument is reliable. A total number of three hundred and seventy five (375) questionnaire distributed among students in their various schools. Descriptive Statistics of frequency and percentages was used to analyze the demographic characteristics of the respondents using (SPSS version 20). The research questions were also answered using descriptive statistics of means and standard deviations, while hypotheses were tested using inferential statistics of independent t-test. All hypotheses tested at 0.05 level of significance.

Results

Answering Research Questions

The research questions answered using descriptive statistics of mean and standard deviation from the responses of the students.

Research Question One: Do public senior secondary school students have adequate knowledge of oral hygiene in Bichi Local Government Area, Kano State?

Table 1: Mean and standard deviation of students' knowledge of oral hygiene.

S/N	Statement	N	Sum	Mean	S.D
1.	I believe not using tooth brush and tooth paste can cause tooth decay.	375	1270	3.39	1.007
2.	I know that is good to brush my teeth in the morning and while going to bed	375	1298	3.46	.826
3.	I am aware that consuming sugary foods and beverages, such as soft drinks and sweet chewing gum, does not harm teeth.	375	1016	2.71	1.212
4.	I believe that is good to visits dentist every six months to care for our teeth.	375	1156	3.08	1.073
5.	I have known that vitamin C in take is not good for the health of your gums.	375	1042	2.78	1.152
6.	I am not aware that is possible to prevent dental plague by cleaning mouth every day.	375	1145	3.05	1.041
7.	I believe that is necessary to rinse our mouth with water after each meal to remove food debris trapped between teeth.	375	1217	3.25	1.096
8.	I am not aware that poor oral hygiene causes swollen and bleeding of gum.	375	1119	2.98	1.168
9.	I have known that smoking of cigarette can cause oral cancer.	375	1197	3.19	1.131
10.	I know that consumption of alcohol cannot discolored my teeth.	375	1090	2.91	1.172
Aggregate mean score		375	1,155	3.08	1.0878

Table 1 shows that the good knowledge of oral hygiene based on the response of the students, (Mean= 3.08, S.D=1.0878). This implies that the public secondary school students have adequate knowledge of oral hygiene in Bichi Local Government Area Kano State.

Research Question Two: What is the attitude of public senior secondary school students towards oral hygiene in Bichi Local Government Area, Kano State?

Table 2: Mean and standard deviation of students' attitude towards oral hygiene.

S/N	Statement	N	Sum	Mean	S.D
1.	I believe taking care of mouth is as important as taking care of other parts of the body.	375	1312	3.51	910
2.	I believe is not good to go for dental checkup because of fear for pains.	375	983	2.62	1.200
3.	I feel is good to rinse mouth after taking sweets and sugary substances.	375	1268	3.36	1.022
4.	I feels that after waking up in the morning, it's good to clean up my mouth.	375	1238	3.30	1.022
5.	I believe not good to share my tooth brush with another person.	375	10.57	2.82	1.206
6.	I believe it is good to rinse my mouth after eating food	375	1202	3.31	1.110
7.	I feels it is not good clean my teeth in the morning after my breakfast and before sleeping.	375	976	2.60	1.312
8.	I have never visits dentist for medical checkup because of fear of pain.	375	952	2.54	1.223
9.	I am eating Sugary foods every day.	375	1060	2.83	1.174
10.	I feel it is not good to clean my mouth every day.	375	2.41	2.41	1.309
Aggregate mean score		375	900.4	2.93	92.06

Table 2 shows that the negative attitudes of students towards oral hygiene based on the response of the students, (Mean=2.93, S.D 92.06). This implies that the public secondary school students have negative attitude towards oral hygiene in Bichi Local Government Area of Kano State.

Research Question Three: Do public senior secondary school students practice oral hygiene in Bichi Local Government Area, Kano State?

Table 3: Mean and standard deviation of students' practice towards oral hygiene.

S/N	Statement	N	Sum	Mean	SD
1.	I am not brushing my teeth twice daily to avoid teeth problems.	375	1096	2.92	1.120
2.	I prefer to use chewing stick than to use tooth paste such as Maclean or close-up.	375	1105	2.95	1.148
3.	In my school, health teachers do inspects our teeth once a week on Monday Morning.	375	1111	2.96	1.149
4.	I am not visiting dental clinic once a year.	375	970	2.59	1.198
5.	I am brushing my teeth in and upward and downward strokes.	375	1227	3.27	1.095
6.	I am not washing my mouth after every meal	375	1053	2.81	1.138
7.	I am flossing to clean food debris in between my teeth.	375	1213	3.23	1.138
8.	I am drinking water thoroughly to remove food debris in my mouth.	375	1164	3.10	1.083
9.	I am not spending two 2 minutes while brushing our teeth.	375	969	2.58	1.223
10.	I am drinking very cold water.	375	1068	2.85	1.211
Aggregate Mean Score		375	1,097	2.92	1.1503

Table 3 shows that the students practice poor oral hygiene (Mean= 2.92, S.D= 1.1503). This implies that the public secondary school students did not practices oral hygiene in Bichi Local Government Area.

Hypotheses Testing

The hypotheses one, two and three were tested using independent t-test presented below:

H01: There is no significant gender difference of the influence of Health Education on the Knowledge of Oral Hygiene among public secondary school students I Bichi Local Government area of kano state.

Table 4. Independent t-test of gender difference of influence of oral health Education programme on students knowledge of oral hygiene

Gender	N	Mean	St. Dev.	df	t-value	P-value	Remark
Male	155	32.1097	4.62990	373	4.553	0.000	Significant
Female	220	29.7273	5.22797				
Total	375						

*Significant (P<0.05)

Table 4 show that the there is significant effects of oral health education program on knowledge of oral hygiene that exist between male and female students, (t=4.555; P> 0.05). Thus, the hypothesis one was rejected. This indicated that male students significantly have better knowledge of oral hygiene than their female counterparts in Bichi Local Government Area of Kano State.

H02: There is no significant gender difference of the influence of Health Education on the attitude of Oral Hygiene among public secondary school students I Bichi Local Government area of kano state

Table 5: Independent t-test of gender difference of influence of oral health Education programme on students attitude towards oral hygiene

Gender	N	Mean	St. Dev.	Df	t-value	P-value	Remark
Male	155	27.9871	4.53842	373	-4.287	0.000	Significant
Female	220	30.1136	4.86069				
Total	375						

*Significance (P-0.000<0.05)

Table 5 show that the there is significant oral health education program in the attitude of students towards oral hygiene that exist between male and female students, (t=-4.287, P>0.05). Thus the hypothesis two was rejected. This indicated that public senior secondary school female students significantly have better positive attitude towards oral hygiene than their male counterparts in Bichi Local Government Area of Kano State.

H03: There is no significant gender difference of the influence of Health Education on the practice of Oral Hygiene among public secondary school students I Bichi Local Government area of kano state

Table 6. Independent t-test of gender difference of influence of oral health Education programme on students practice towards oral hygiene

Gender	N	Mean	St. Dev.	Df	t-value	P-value	Remark
Male	155	27.4387	4.18576				
				373	6.203	0.000	Significant
Female	220	30.4000	4.7938				
Total	375						

*Significance (P <0.05)

Table .6 show that the there is significant difference in the practice of oral hygiene that exist between male and female students, (t= 6.203, P>0.05). Thus the hypothesis three was rejected. This indicated that female students significantly practice oral hygiene better than their male counterparts in Bichi Local Government Area of Kano State.

Discussion of the Findings

Table 1 showed that public secondary school students have knowledge of oral hygiene in Bichi Local Government Area Kano State. At same time the findings is in contrast with the finding of Antonija ,et,al., (2022) on oral hygiene practices and knowledge among students in Split, Croatia showed good oral health knowledge among tested university students. However, it is important to emphasize that students who showed better knowledge more often used additional aids to maintain oral hygiene, therefore, the study concluded that there is poor oral health knowledge amongst adult Nigerians and they utilize oral health practices that do not engender good oral health. In a similar study carried out by Lorna, et' al, (2017) which revealed that most of the students(88.4%) had adequate level of knowledge on the causes, prevention and signs of dental caries, (91.3%) of students used sugary foods,(72.4%) brush twice daily and (39.9%) visited dentist for checkup.

Table 2 showed that the public secondary school students have negative attitude towards oral hygiene in Bichi Local Government Area. The finding is in position of the study of Hayet et al, (2017) on knowledge on oral hygiene and oral health status among secondary school students in Rampur, Bangladesh, it was showed that the levels of oral health attitudes were low. Similarly the study of Adekoya, et, al. (2016) reported that school children who had never visited the dentist had significantly higher caries prevalence than other children, and teenagers can be help to develop a better attitude towards dental health care by a careful instruction of ways of maintaining dental health care either by the classroom teachers, school nurses and parents. The finding is in contrast with the study of Farsi et, al. (2020) on oral health knowledge, attitudes, and behaviors among university students in Jeddah, Saudi Arabia indicated in general, the mean oral health knowledge score of females (8.1 ± 1.8) was significantly higher than that of males (7.2 ± 2.1) out of 13. Relative to males, females reported a greater frequency of teeth cleaning and of using a toothbrush with proper technique ($p < 0.001$) Females were also more likely to have ever visited a dentist than males (95% and 86%, respectively).

Table 3 shows that the public secondary school students did not practices oral hygiene in Bichi Local Government Area. The results is in line with the study on assessment of oral hygiene knowledge and practice among secondary school students in Owerri Municipal Area, Imo State, Nigeria by Samuel et' al., (2020) the findings of the study reveals that the respondents have low level of practices towards oral hygiene in the majority of the statements.

Conclusion

Based on the findings of this study, the following conclusion were made:

1. Public senior secondary school students have knowledge of oral hygiene in Bichi Local Government Area, Kano State.
2. The attitudes of public senior secondary schools students towards oral hygiene is negative in Bichi Local Government Area Kano State.
3. Public senior secondary school students did not practice oral hygiene in Bichi Local Government Area, Kano State.
4. There is a significant gender difference of the influence of Health Education on the knowledge of students towards Oral Hygiene among public secondary school students Bichi Local Government area of Kano state male students significantly have better knowledge of oral hygiene than their female counterparts .
5. There is also significant gender difference of the influence of Health Education on the attitude of students towards Oral Hygiene among public secondary school students Bichi Local Government area of Kano state. The female students also significantly have better positive attitude towards oral hygiene than their male counterparts.
6. There is significant gender difference of the influence of Health Education on the practice of students Oral Hygiene among public secondary school students Bichi Local Government area of Kano state. The female students significantly practice oral hygiene better than their male counterparts.

Recommendations

Based on the conclusions of the study, the following recommendations were made:

1. Government and non-governmental organizations should organized regular enlightenment programmes through mass media, radio or online programme in order to improve knowledge of oral hygiene.
2. The students, parents, government and school teachers should embrace the idea that oral diseases can be prevented by individual action of daily brushing, flossing and to change the attitude of students towards oral hygiene.
3. Policy makers should include oral health education curriculum in public senior secondary schools that will keep the students with up to date knowledge of good oral health practices.
4. The school authorities should provide resources of good oral health attitude such as portable drinking water in the school for the students to clean their mouth after every meal so as to address the menace of poor oral hygiene.

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