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Research Article

Knowledge, Practice, and Barriers to Oral Hygiene in Community Primary School, Uwuowa, Orlu Imo State

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Abstract

Students at Community Primary School Umuowa, OrluL.G.A. Imo State, participated in this study to determine their oral hygiene knowledge, practices, and obstacles. Three research questions and three hypotheses served as the study's compass. For the investigation, a descriptive survey design was chosen. Stratified random sampling was used to pick 220 primary school students from a total population of 400 students. Data was gathered using a questionnaire that the researcher had created. The test-retest approach yielded a reliability coefficient of 0.7 for the instrument. Frequency counts and percentages were utilised to answer the research questions, and the hypotheses were tested at the 0.05 level of significance using the chi-square and independent samples t-tests. The main conclusions are as follows: 179 (81.4%) of the students have good knowledge of oral hygiene, while 41 (18.63%) have poor knowledge; 130 (59.10%) have good oral hygiene practices, while 90 (40.90%) have poor oral hygiene practices; among the students who did not practise oral hygiene, the main obstacles were: lack of a toothbrush (71.4%), the cost of toothpaste (58.60%), lack of toothpaste (44.30%), and lack of parental reminders to brush (31.40%); there was no significant correlation be Among other things, the researcher suggests that parents and guardians be made aware of the value of keeping an eye on their kids and reminding them to clean their teeth on a regular basis.

Keywords: *knowledge, practice, barriers, oral hygiene, Uwuowa.*

Introduction

A vital aspect of general health is maintaining good oral hygiene. The practice of keeping the mouth, teeth, gums, and tongue healthy and clean is its definition. In order to prevent dental issues and promote general health, it places a strong emphasis on normal care practices including brushing and flossing [1]. In order to maintain oral and systemic health, oral hygiene refers to a collection of actions and habits, such as brushing, flossing, and using mouthwashes with antimicrobials, that are intended to eliminate dental plaque and stop the growth of oral pathogens. Maintaining good oral hygiene is crucial for avoiding common oral illnesses that can lower a person's quality of life, such as dental caries, periodontal disorders, and oral infections [2].

Through unhealthy gums, oral bacteria can enter the bloodstream and cause systemic inflammation, which raises the risk of heart disease and stroke [3]. For example, children who don't practise good oral hygiene are more likely to develop plaque, which causes gum inflammation and the early beginning of periodontal disorders. To properly eliminate plaque and prevent gum disease and tooth decay, the World Health Organisation advises brushing teeth at least twice a day with fluoride toothpaste. Additionally, the organisation recommends consuming fewer free sugars, which are a significant risk factor for dental caries, particularly in children and teenagers [4].

WHO also emphasises the value of a healthy, balanced diet full of fruits and vegetables as well as drinking enough water to enhance dental health. WHO recommendations also stress the importance of routine dental checkups for preventative care and early diagnosis of oral health issues. To encourage proper dental hygiene habits from a young age, the

organisation supports the adoption of community-based activities, such as public awareness campaigns and school oral health projects [5].

Children in Nigeria are often thought to have poor oral hygiene practices; numerous studies have shown that both children and their carers have minimal understanding of oral health issues. In many instances, oral hygiene is conducted irregularly or insufficiently, and many Nigerian youngsters do not follow the recommended frequency of brushing their teeth with fluoride toothpaste at least twice a day. There is widespread disregard for prescribed oral hygiene practices, as evidenced by a study conducted in Lagos that found that only 31.2% of children aged 6 to 12 brushed their teeth twice a day, with the remainder brushing once a day or infrequently [6]. According to another study, a sizable portion of schoolchildren—roughly 61.8%—only brushed once a day and instead used unbranded toothpastes or chewing sticks, which frequently lack fluoride and compromise the effectiveness of plaque control and caries prevention. Routine dental care is not often performed or prioritised, as evidenced by the study's findings that only 17.4% of children had ever visited a dentist, and the majority of these appointments were brought on by discomfort or crises rather than routine examinations [7].

Low parental education levels are one of the main causes of poor oral hygiene practices, as research indicates that children of more educated parents in Lagos exhibit better oral hygiene practices. This is because parents with less formal education may not know enough about oral health and the value of teaching their kids good hygiene habits. Poor socioeconomic circumstances make matters worse because low-income families frequently put basic necessities ahead of dental health, which leads to less use of dental care products like fluoride toothpaste or toothbrushes and less use of professional dental services. This was highlighted by [8], who found a strong correlation between low-income households and a higher prevalence of dental caries among Nigerian children. According to [9], oral hygiene practices are influenced by demographic factors like age, gender, and geographic location. Younger children are frequently more reliant on carers for brushing, girls may exhibit marginally better oral hygiene habits because of early grooming expectations, and rural residents typically practise worse oral hygiene than their urban counterparts because they have less access to oral health campaigns and resources. A cycle of neglect and misinformation that is difficult to break without focused interventions is created in households whose carers themselves were not exposed to oral health education throughout their youth. This raises the likelihood that bad behaviours will be passed down to the next generation.

The absence of government-led dental outreach services and school-based oral health programs in many areas exacerbates these obstacles. Furthermore, oral hygiene is not given the same priority in Nigeria's healthcare system as other disorders due to the lack of extensive and regular public health activities. In addition to better access to reasonably priced dental care, especially in rural and low-income communities, comprehensive and culturally aware health promotion initiatives are required to overcome these obstacles [10].

In Nigeria, poor oral hygiene is still a major public health issue for school-age children, especially in underprivileged areas like Orlu in Imo State, where students' health and wellbeing are still impacted by preventable oral infections. Many children in rural and semi-urban Nigerian communities have poor oral hygiene habits, despite the increased focus on oral health education and preventive treatment around the world [11]. A targeted epidemiological study conducted in Imo State specifically found that the prevalence of dental caries in Orlu was disproportionately high at 41.3%, far higher than in nearby areas like Okigwe (36.3%) and Owerri (34.9%). The highest caries burden was found in children and adolescents aged 0–15 years (50%) in Orlu. [12]

According to studies, children in community primary schools, who might not have regular access to oral health education or professional dental services, frequently lack the knowledge that proper oral hygiene practices are essential for lowering the risk of dental caries, gum disease, and other oral infections. Socioeconomic considerations are also important since families with lower incomes might not be able to afford professional dental care services or dental hygiene products like toothbrushes and fluoride toothpaste. The issue is made worse by the dietary habits of local schoolchildren, since a high intake of sugary snacks and drinks—which are frequently promoted by inadequate nutritional education and unregulated school food environments—directly leads to a higher prevalence of dental cavities and worse oral health outcomes [13].

Since parents are the main decision-makers and role models for their children's health habits, parental factors are also strongly linked to students' oral hygiene practices. Children are therefore less likely to get supervision and assistance when it comes to maintaining proper oral hygiene at home.

There is little information explicitly addressing the knowledge, behaviours, and obstacles to oral hygiene among students in community primary schools in Orlu, Imo State, despite a growing body of research on oral health behaviour among children worldwide and in other regions of Nigeria. Previous research has tended to concentrate on metropolitan areas or

larger populations rather than focussing on the particular difficulties encountered in semi-urban or rural school settings. As a result, there is a substantial knowledge vacuum on the particular context of dental hygiene practices in this area.

Materials and Methods

Research Design

The study adopted a descriptive cross-sectional survey design to assess the knowledge, practices, and barriers to oral hygiene among pupils in Community Primary School, Umuowa, Orlu Local Government Area, Imo State. This design was appropriate because it allowed for the collection of data at a single point in time, providing a snapshot of the pupils' knowledge, attitudes, and practices regarding oral hygiene, as well as the challenges they encountered in maintaining proper oral hygiene.

Setting of the Study

The study was conducted in Community Primary School, Umuowa, located in Orlu Local Government Area of Imo State, Nigeria. Umuowa is a semi-urban community with a population engaged primarily in trading, farming, and small-scale businesses. The school was selected because it provides formal education to a large number of pupils from the community and its immediate surroundings, making it an appropriate site for assessing oral hygiene knowledge, practices, and barriers among school-aged children.

Community Primary School, Umuowa, comprised pupils from Primary One to Primary Six, with each class divided into two to three arms to accommodate the total student population. The school had a total pupil population of approximately 400 children, with both male and female pupils represented across all classes and arms. This diversity allowed the study to capture variations in oral hygiene knowledge and practices across different age groups and educational levels.

Ethical Consideration

The study adhered strictly to ethical principles to ensure the protection of the rights, dignity, and welfare of all participants. Ethical approval was obtained from the Research Ethics Committee of Federal Teaching Hospital, Owerri before the commencement of data collection.

Target Population

The population of the study consisted of all 538 pupils enrolled in Community Primary School, Umuowa, spanning Primary One to Primary Six. Each class had two or three arms, with an average of approximately 33 to 34 pupils per arm, ensuring a manageable and representative distribution across the school. The study used pupils from Primary Three to Primary Six ranged in age from 9 to 15 years, covering both early and late primary school stages. Both male and female pupils were included, reflecting the gender composition of the school and allowing the study to capture any gender-related differences in oral hygiene knowledge, practices, and barriers.

The total population of 400 pupils (Primary Three to Primary Six) served as the study population, from which a sample was drawn for the survey using an appropriate sampling technique. The population provided a comprehensive representation of primary school pupils in Umuowa and offered sufficient variability in age, gender, and class level to ensure the study findings were valid and generalizable to the school context.

Sample Size and sampling technique

The study drew a sample from Primary Three to Primary Six pupils in Community Primary School, Umuowa. Out of the total school population of 538 pupils, only pupils (400) from these four classes were considered, representing the cognitively mature group capable of providing reliable responses to questions on oral hygiene knowledge, practices, and barriers. The combined population of Primary Three to Six was approximately 400 pupils, based on class enrolment records.

Table 3.1: Population and Sample size of the Pupils

Class	Population	Sample size
Primary 3	113	62
Primary 4	102	56
Primary 5	106	58
Primary 6	79	44
Total	400	220

Instrument for Data Collection

The only instrument used by the researcher was the questionnaire which was constructed by the researcher, so as to ascertain Knowledge, Practice and barriers to dental hygiene among pupils in community primary school, Umuowa in

Orlu L.G.A.. Multiple choice responses were provided and the respondents were allowed to choose the ones applicable to the questions as the case may be. The responses provided were mutually exclusive.

Validity of the Instrument

Validity is the extent to which an instrument measures what it is supposed to measure and performs as it is designed to perform. If an instrument is not reliable over time, it cannot be valid, as results can vary depending upon when it is administered. However, for this study, face and content validity of the instrument was done by a supervisor reading through the questionnaire and corrections deemed necessary, before the final copy was produced.

Reliability of the Instrument

Reliability determines how consistently a measurement of skill or knowledge yields similar results under varying conditions. If a measure has a high reliability, it yields consistent results. In order to ascertain reliability of the instrument used for this study, a pilot test was carried out using the test/re-test technique. The researcher achieved this by carrying out a pilot study using test-retest method with the administration of questionnaire to fifteen (15) pupils schooling at community primary school Orlu Local Government Area, Imo State, which are randomly picked from each class (primary 3, 4,5, and 6). The respondents filled and returned their questionnaire ten days later fresh but same question was given to same people. The responses were collected and analyzed.

On analysis, the researcher found out that their responses remained consistent and the reliability coefficient index was 0.7, thus, showing high reliability of the measuring instrument.

Method For Data Collection

A total of 220 copies of questionnaire were shared to all the students who met the criteria to participate in the study by the researcher and enough time was given to fill it. The researcher used face to face methods of data collection. A Research assistance was co-opted; she was instructed on what to do. Copies of the questionnaire were administered to the respondents after the researcher introduced herself to them. Explanations were made where necessary. Filled questioned were collected after filling. All activities were assisted by the research assistant.

Statistical analysis

Data collected were collated, tallied and analyzed using frequency and percentages and were presented using tables. The hypotheses were tested using the chi square test of independence. The data was analyzed using the SPSS version 25.

RESULTS

Table 1: Sociodemographic Data of the Respondents

Variables	Options	Frequency=220	Percentage
Age	Less than 12 years 12-14 years 15 years and above	207 13	94.10 5.90
Gender	Male Female	89 131	40.50 59.50
Class	Primary 3 Primary 4 Primary 5 Primary 6	62 56 58 44	28.20 25.50 26.40 19.90

Data on table 1 show the socio-demographic characteristics of the respondents. Majority of the respondents are below 12 years of age (94.10%). Theres are more female pupils (59.5%) in the sampled pupils than males (40.50%). The data further shows that more of the pupils are in primary 3 (28.20%).

Table 2: level of knowledge of oral hygiene among pupils in Community Primary School Umuowa, Orlu L.G.A

Variables	Options	N=220	Percentage
Main purpose of brushing	Make teeth shiny Remove plaque from teeth Change the shape of teeth Show teeth to friends	99 121 0 0	45.00 55.00
Consequence of irregular brushing of teeth	Stronger teeth Get a prize	0 0	

	Develop toothache and gum disease Be a good person	220 0	100.00
Reason for fluoride	Changes tooth shape Strengthens the enamel Makes teeth grow bigger Sweetening toothpaste	0 180 20 20	0 81.80 9.10 9.10
Importance of rinsing mouth after brushing	Making parents happy To be excited Removing food particles and bacteria	0 0 220	 100.00
Benefits of oral hygiene (multiple response allowed)	Prevents tooth decay Stops bad breath Keeps gum clean and disease free For good. health	180 179 199 58	81.80 81.40 90.50 26.40
Knowledge level	Good knowledge Poor knowledge	179 41	81.40 18.63

Data on table 2 show the responses of the pupils on their knowledge of oral hygiene. The data shows that 55% of the pupils correctly know that the primary purpose of brushing is to remove plaque from the teeth. All the pupils are aware that not brushing regularly leads to toothache and gum disease (100%). Majority of the students know the benefits of oral hygiene viz: prevention of tooth decay (81.80%), stopping bad breath (81.4%), keeping gum from disease (90.50%). Generally, 179 (81.4%) of the pupils have good knowledge of oral hygiene while 41 (18.63%) have poor knowledge of oral hygiene.

Table 3: Extent of practice of oral hygiene among pupils in community Primary School Umuowa

Variables	Options	N=220	Percentage
Practice oral hygiene	Yes No	150 70	68.20 31.80
Frequency of brushing teeth	Once daily Twice daily Thrice daily After each meal	90 130 0 0	40.90 59.10
Materials used for cleaning teeth	Toothpaste and brush Charcoal and water Water and fingers Chewing stick	141 30 0 49	64.10 13.60 0 22.30
Frequency of changing toothbrush	Once a month Twice a year Once a year When the brush is peeling	100 28 13 0	70.90 19.90 9.20
Pattern of brushing	Up and down movement Side to side Zigzag Swallow paste	132 9	93.60 6.40
Extent of practice	Good practice Poor practice	130 90	59.10 40.90

Data on table 3 shows the extent of practice of oral hygiene among the pupils. The data shows that 59.10% of the pupils brush twice daily as recommended by WHO. Furthermore, 64.10% of the pupils use toothpaste and tooth brush to brush their teeth. Furthermore, 70.90% of the pupils who use toothpaste and brush change their toothbrush daily and 93.60% brush their teeth in the up and downward movement pattern. Generally, 130 (59.10%) of the pupils have practice oral hygiene to a good extent while 90 (40.90%) practice oral hygiene to a poor extent.

Table 4: barriers preventing pupils in Community Primary School Umuowa, Orlu L.G.A. from practicing proper oral hygiene

Variables	Options	n=220	Percentage
Do you practice oral hygiene?	Yes No	150 70	68.20 31.80
If No, what barriers cause you not to practice?	No toothbrush No toothpaste Toothpaste is expensive No reminder from parents to brush Forgetting to brush Tired or lazy to brush Brushing is not important Pain in the mouth	50 31 41 22 0 15 0 0	71.40 44.30 58.60 31.40 0 21.40 0 0

Data on table 4 shows the responses of the pupils on the barriers to practice of oral hygiene. From the table, it is seen that 70 (31.80%) of the students agreed to not practicing oral hygiene. Among the pupils who did not practice oral hygiene, the major barriers include: no toothbrush (71.4%), cost of toothpaste (58.60%), no toothpaste (44.30%) and no reminder from parents to brush (31.40%).

Table 5: Chi-square association of significant relationship between knowledge of oral hygiene and extent of practice of oral hygiene

KnowledgeCategory * PracticeCategory Crosstabulation

		PracticeCategory								
		Good Practice		Poor Practice		Total				
		N	%	N	%	N	%	X^2	Df	p-value
KnowledgeCategory	Good Knowledge	103	79.2%	76	84.4%	179	81.4%			
	Poor Knowledge	27	20.8%	14	15.6%	41	18.6%	.953	1	.329
	Total	130	100.0%	90	100.0%	220	100.0%			

Data on table 5 shows the chi-square association between knowledge of oral hygiene and practice of oral hygiene. The chi-square value is .953 with an associated p-value of .329. The p-value is greater than 0.05. The null hypothesis is therefore not rejected and it is concluded that there is no significant association between knowledge of oral hygiene and its practice among the pupils of Community Primary School Umuowa.

Table 6: T-test of significant difference between oral hygiene practice of male and female pupils in a community primary school

Test: Oral hygiene practice	mean	Std. deviation	df	t-statistic	p-value	remark
Male	8.12	0.24	218	1.070	.331	Significant
Female	8.03	0.29				

From table 6, the test of significant difference between oral hygiene practice of male and female pupils are seen. The mean scores of the male and female students are similar (8.12 and 8.03 for males and females respectively), implying that the practice scores of male and female pupils are similar. The t-test statistic is low (1.070). The associated p-value is 0.331 which is greater than 0.05. the null hypothesis is not rejected and it is therefore concluded that there is no significant difference between the oral hygiene practice of male and female pupils in community primary school Umuowa.

Table 7: Chi-square association of significant association between barriers and oral hygiene practices of the pupils

Barriers_Category * PracticeCategory Crosstabulation

		Practice_Category								
		Good Practice		Poor Practice		Total				
		N	%	N	%	N	%	X^2	Df	p-value
Barriers_Category	Few Barriers	74	79.2%	76	84.4%	150	81.4%			
	Many barriers	56	20.8%	14	15.6%	70	18.6%	.448	1	.748
	Total	130	100.0%	90	100.0%	220	100.0%			

Data on table 7 shows the chi-square association oral hygiene practices and barriers to practice among the pupils. The chi-square value is .448 with an associated p-value of .748. The p-value is greater than 0.05. The null hypothesis is therefore not rejected and it is concluded that there is no significant association between oral hygiene practices and barriers to practice among the pupils of Community primary school Umuowa.

Discussion

According to the study's findings, 41 students (18.6%) knew very little about oral hygiene, while 179 students (81.4%) knew a lot. This suggests that most students understood the value of practicing proper mouth hygiene, which could be explained by media sensitisation, family influence, or basic health education classes. Nonetheless, the presence of a minority with inadequate knowledge suggests that not all students receive enough instruction on oral health. The results of the statistical analysis showed that there was no significant correlation between oral hygiene knowledge and practice ($p > .05$). This suggests that although students may be aware of the significance of oral hygiene, whether they actually practice it depends on external factors like parental influence and the availability of hygiene tools. This is consistent with the results of [14], who found that 63.5% of Kano State primary school pupils had adequate oral hygiene knowledge. Additionally, the majority of Borno State's primary school-age children were found to have a good level of oral hygiene awareness [[15].

Additionally, the study revealed that 90 (40.9%) of the students exercised poor dental hygiene, whereas 130 (59.1%) practiced it well. The comparatively large percentage of bad practice indicates that information alone does not always transfer into consistent hygienic behaviour, even if more than half of the students showed good oral hygiene practices. This could be brought on by a lack of parental supervision, financial obstacles, or insufficient access to personal hygiene products like toothpaste and toothbrushes. Additionally, there was no discernible difference between male and female students' oral hygiene habits ($p > .05$), suggesting that both sexes exhibit similar cleanliness habits, perhaps as a result of similar home and school circumstances. This contrasts with the findings of [16], who discovered that 66.80% of Bangladeshi students practiced inadequate dental hygiene. Additionally, it was discovered that just 44% of Owerri Municipal secondary school pupils maintained proper dental hygiene [18].

Obstacles to students' oral hygiene practices in the Umuowa community According to the study's findings, the biggest obstacles among students who did not practise proper oral hygiene were not having a toothbrush (71.4%), not having toothpaste (58.6%), not having toothpaste (44.3%), and not having a parent remind them to brush (31.4%). These results suggest that children's capacity to practise good oral hygiene is significantly influenced by parental and economic conditions. The absence of necessities like toothpaste and toothbrushes indicates low household health priorities and poverty. Additionally, the lack of parental supervision or reminders implies that family engagement is crucial in influencing school-age children's dental hygiene habits. This result supports the findings of [19], who noted that poor oral hygiene among Bangladeshi primary school students is hampered by the expense of dental health supplies and a lack of parental instruction. All things considered, these results highlight that students' good oral hygiene habits cannot be ensured by knowledge alone. In addition to educational initiatives, environmental, economic, and parental concerns must be addressed.

Conclusion

The survey found that while the majority of students (81.4%) knew a lot about oral hygiene, only 59.1% really performed it, indicating a disconnect between knowledge and practice. Lack of a toothbrush, the price and accessibility of toothpaste, and the absence of parental supervision were the main obstacles to practicing proper oral hygiene. Neither gender nor practice levels were significantly correlated with knowledge or practice. In order to guarantee that students maintain consistent and efficient oral hygiene, the results emphasise the necessity of integrated oral health promotion including both families and schools.

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