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Attitude Towards Oral Hygiene Among Senior Secondary School Students in Cross River State Nigeria A Cross-Sectional Study

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Research Article

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Abstract

Background

While knowledge is necessary for positive health behaviour, it is not sufficient. Attitude — the affective disposition towards health practices — critically mediates the relationship between knowledge and behaviour, particularly in adolescent populations.

Objectives

This study examined the attitudes of senior secondary school students in the Southern Senatorial District of Cross River State, Nigeria, towards oral hygiene practices, and identified associations with socio-demographic variables, knowledge, and practice levels.

Methods

A cross-sectional descriptive study was conducted among 394 students recruited via multi-stage random sampling from five public secondary schools. Data were collected using a validated 55-item structured questionnaire (Cronbach alpha = 0.82). Attitude was assessed across seven items. Chi-square tests assessed associations ($p < 0.05$).

Results

Overall, 55% of respondents demonstrated poor attitude towards oral hygiene despite 80% having good knowledge, confirming a knowledge-attitude gap. Significant associations were found between sex and attitude ($\chi^2 = 40.39$, df = 1, $p = 0.001$), with females showing more favourable attitudes. Age was also significantly associated with attitude ($\chi^2 = 19.64$, df = 3, $p = 0.001$). A significant knowledge-attitude association was established ($\chi^2 = 19.82$, $p = 0.001$), and attitude strongly predicted practice ($\chi^2 = 45.25$, $p = 0.001$).

Conclusions

The knowledge-attitude gap represents a critical challenge to oral health promotion in this population. Interventions must move beyond information delivery to engage motivational and social determinants of attitude, with particular attention to male students and younger age cohorts.

1. INTRODUCTION

The health promotion theory uses attitude as its primary element because researchers define attitude as a learned evaluative disposition that leads people to react in the same way to health-related behaviors [1, 2]. The Health Belief Model (HBM) shows that people who have positive attitudes toward health protection activities will perceive their vulnerability and the severity of dangers together with the advantages of preventive actions which will lead them to practice health protection activities [3, 4]. The KAP framework establishes a process that begins with knowledge and moves through attitude development until people adopt specific practices; however people face challenges that create structural barriers and their social environment and limited resources which prevent them from following this path [5].

The study conducted by Blaggana et al. [6] surveyed 1027 secondary school students from Chandigarh India who showed sufficient knowledge about dental care but only 48 percent practiced brushing their teeth two times each day and 12.9 percent maintained regular dental checkups. The study conducted by Balogun [7] showed that 65.5 percent of secondary school students from Lagos State demonstrated good understanding of oral hygiene yet they did not practice proper dental care habits on a regular basis. The research conducted by Akbar and his team [8] on 1233 primary school students from Tallo District in Indonesia showed that there existed a significant statistical relationship between their oral health condition and their knowledge and attitude and behavioral patterns ($p < 0.05$).

The peer-reviewed literature does not contain any published studies that present data about secondary school students' dental care practices in Cross River State Nigeria. The present study arose from the existing evidence deficiency. The research study presents KAP data which consists of attitudinal information for 394 senior secondary school students from Southern Cross River State Nigeria. The paper serves as the second installment of a three-part research series. The specific objectives are to: (i) describe attitude levels towards oral hygiene; (ii) identify socio-demographic correlates of attitude; and (iii) establish the knowledge-attitude and attitude-practice associations.

2. METHODS

2.1 Study Design and Setting

The study utilised cross-sectional descriptive design in line with Elendu's [9]. The researchers conducted their study in Southern Senatorial District of Cross River State Nigeria which includes seven local government areas: Akamkpa Akpabuyo Bakassi Biase Calabar Municipality Calabar South and Odukpani. The study used the Health Belief Model as its foundation which Rosenstock developed [3] and Glanz expanded [2] to create research instruments and evaluate study findings. The study population included 4,888 senior secondary school students who attended public secondary schools in the district according to the Secondary School Education Board of Cross River State Ministry of Education from 2022.

2.2 Sample Size and Sampling

The sample size calculation used the Freund and William [10] formula which requires the parameters p=0.64 and margin of error=0.05 and Z=1.96 and non-response adjustment of 10% to estimate the required sample size for the study which observed a 64% positive dental attitude according to Balogun [7]. The study used a four-stage multi-stage random sampling method according to Elendu [9] which resulted in 394 participants from five schools in five randomly selected LGAs with a response rate of 97.7.

2.3 Instrument and Attitude Assessment

The 55-item validated questionnaire (Cronbach alpha = 0.82) included Section C — seven attitude items with Agree/Disagree/Undecided response options [9]. Items addressed: (i) sweet food consumption despite awareness of dental risks; (ii) perceived compulsion of tooth brushing; (iii) attribution of teeth appearance to dietary habits; (iv) causal beliefs about tooth decay; (v) attitudes toward soft drinks and enamel damage; (vi) perceived oral-systemic health linkage; and (vii) dental check-up orientation. Respondents scoring above the section mean were classified as having good attitude.

2.4 Ethical Considerations

Ethical approval was obtained from the Cross River State Health Research Ethics Committee (CRS-HREC), Government of Cross River State of Nigeria, Ministry of Health, Calabar. Full Ethical Approval was granted under REC Number CRSMOH/HRP/REC/2023/399 (File Reference: CRS/MH/HREC/023/Vol.V1/222), dated 24th July 2023, signed by Dr. Bassey Ikpeme, Chairman CR-HREC. Permission was secured from school principals via an introductory letter from the University of Calabar. Informed consent was obtained from all participants prior to questionnaire administration. For participants under 16 years of age, informed consent was additionally obtained from a parent or legal guardian. Participation was entirely voluntary, anonymous, and confidential. All procedures complied with the Declaration of Helsinki [11].

2.5 Data Analysis

Data were analysed in SPSS Version 23 [9]. Chi-square tests assessed associations between attitude level and: (i) socio-demographic variables; (ii) knowledge level; and (iii) practice level. Statistical significance was set at $p < 0.05$.

3. RESULTS

3.1 Attitude Responses

Table 1 shows respondents' attitude towards oral hygiene. Overall, 55% exhibited poor attitude. Notably, 194 (49.2%) agreed that doctors may recommend regular tooth brushing but it is not really compulsory. 250 (63.5%) agreed that they like soft drinks and do not think they can damage their teeth. 194 (49.2%)

agreed that it is okay to go for an oral check-up only once in a while. However, 216 (54.8%) correctly disagreed that teeth appearance is natural and unrelated to dietary habits.

Attitude Item	Agree n (%)	Disagree n (%)	Undecided n (%)
Most students eat sweet food despite knowing it can cause tooth problems	151 (38.3%)	161 (40.9%)	82 (20.8%)
Tooth brushing is not really compulsory	194 (49.2%)	142 (36.0%)	58 (14.7%)
Teeth appearance is natural; not due to eating sweet food	144 (36.5%)	216 (54.8%)	34 (8.6%)
I don't believe only sweets cause tooth decay	151 (38.3%)	161 (40.9%)	82 (20.8%)
General body health has relationship with oral hygiene	152 (38.6%)	108 (27.4%)	134 (34.0%)
I like soft drinks and don't think they can damage teeth	250 (63.5%)	70 (17.8%)	74 (18.8%)
It's okay to go for dental check-up once in a while	194 (49.2%)	142 (36.0%)	58 (14.7%)

Table 1: Attitude responses of secondary school students on oral hygiene (n = 394)

3.2 Associations Between Socio-Demographics and Attitude Level

Table 2 presents chi-square associations between socio-demographic variables and attitude level. A strongly significant association was found between sex and attitude level ($\chi^2 = 40.389$, df = 1, $p = 0.001$), with females demonstrating substantially more favourable attitudes than males. Age was also significantly associated with attitude ($\chi^2 = 19.644$, df = 3, $p = 0.001$), with younger students aged 10–15 years displaying more negative attitudinal orientations. Caregiver type ($\chi^2 = 0.994$, $p = 0.985$), caregiver education ($\chi^2 = 0.423$, $p = 0.188$), and religion ($\chi^2 = 4.755$, $p = 0.576$) showed no significant associations.

Variable	Good Attitude n (%)	Fair Attitude n (%)	Poor Attitude n (%)	χ^2	p-value
Sex — Male	14 (11.3%)	26 (21.0%)	35 (28.2%)	40.389	0.001*
Sex — Female	35 (13.0%)	141 (52.2%)	45 (16.7%)		
Age 10–15 yrs	9 (10.3%)	40 (46.0%)	7 (8.0%)	19.644	0.001*
Age 16–19 yrs	19 (12.2%)	58 (37.4%)	37 (23.9%)		
Age 20+ yrs	21 (13.8%)	69 (45.4%)	36 (23.7%)		
Caregiver: Both Parents	17 (10.7%)	68 (42.8%)	32 (20.1%)	0.994	0.985
Caregiver Education: Primary	20 (40.4%)	68 (40.4%)	30 (16.6%)	0.423	0.188
Religion: Christian	150 (38.2%)	166 (42.2%)	65 (16.5%)	4.755	0.576

*Table 2: Chi-square analysis — socio-demographics and attitude level (*p < 0.05 = statistically significant)*

3.3 Knowledge-Attitude and Attitude-Practice Associations

Table 3 presents associations between knowledge and attitude, and between attitude and practice. A statistically significant association was confirmed between knowledge level and attitude level (χ^2 = 19.821, df = 1, p = 0.001), indicating that students with good knowledge were significantly more likely to hold positive attitudes. Similarly, attitude level was strongly associated with practice level (χ^2 = 45.250, df = 1, p = 0.001), confirming attitude as the most proximal predictor of oral hygiene behaviour in this population.

Association	χ^2 Value	df	p-value	Interpretation
Knowledge Level ↔ Attitude Level	19.821	1	0.001*	Good knowledge predicts more positive attitude
Attitude Level ↔ Practice Level	45.250	1	0.001*	Positive attitude predicts better practice

*Table 3: Knowledge-attitude and attitude-practice associations (*p < 0.05 = statistically significant)*

4. DISCUSSION

The KAP paradox which exists in oral health research shows that 55% of respondents had bad attitudes while 80% of them showed proficient knowledge [7, 12]. Blaggana et al. [6] in India and Akbar et al. [8] in Indonesia discovered that people who knew information about a topic still held different opinions about

it. The research shows that cognitive awareness cannot create positive evaluative orientations toward oral hygiene because social and motivational and structural forces need to be used [4, 2]. The research shows that males and females have different attitudes which results in females showing more positive attitudes than males ($\chi^2 = 40.389$, $p = 0.001$). The research shows that females protect their health better than males as documented in international studies which show this pattern among female adolescents [13, 14]. Males' poorer attitudes may reflect gender-socialized indifference to personal health aesthetics and preventive care. The research shows that male students need specific oral health messages which should be delivered through sports culture and peer-led programs and social media platforms [7].

The Health Belief Model provides a useful theoretical frame for interpreting these findings [3, 2]. The 49.2% of students who viewed tooth brushing as 'not really compulsory' likely perceive low personal susceptibility to oral disease or insufficient perceived benefit of preventive behaviour [3]. Cues to action via teacher instruction and parental reinforcement and peer modelling create essential methods for educators to shift their assessment results [4]. The researchers Solhi et al. [15] proved that HBM-based oral health education led to better health belief understanding and correct brushing practices and lower sugar consumption.

The significant age-attitude association shows that younger students (10–15 years) hold more negative attitudinal orientations. The developmental literature shows that teenagers gradually develop health behaviour attitudes according to research by Kritsotakis et al. [13] and Eaton et al. [16]. The interventions need to address younger groups because negative attitude patterns will become permanent when they reach entrenched habits.

The strong attitude-practice association ($\chi^2 = 45.250$, $p = 0.001$) is the most clinically significant finding of this paper. The research establishes attitude as the primary factor that drives behaviour in this particular group of people while demonstrating the effectiveness of attitude-based programs for school dental health initiatives [2]. The finding supports the results of Yakubu et al. [17], who discovered that positive attitude was a stronger predictor of oral hygiene practice than knowledge alone.

5. CONCLUSION

The adolescent community continues to face an important obstacle which prevents them from implementing the oral health knowledge they acquire because of their existing attitude problems [5, 2]. The study found that students understood 80% of the material yet 55% of them showed negative attitudes. The two primary social and demographic factors which impact the study results are sex and age, with younger male students representing the group that faces the greatest danger.

Cross River State needs to establish oral health programs which go beyond just delivering information because they must address the factors which drive people to develop certain attitudes [4, 2]. The study recommends secondary schools to implement gender-responsive oral health curricula, while the Health Belief Model should guide program development according to Rosenstock [3] and Solhi's [15] research, which also requires teachers and parents to actively shape student attitudes according to Balogun [7]

and Johnson's [12] findings, while structured oral health education must target the 10 to 15 age group before negative attitude development occurs according to Kritsotakis [13] research.

Declarations

Ethics Approval and Consent to Participate

Ethical approval was obtained from the Cross River State Health Research Ethics Committee (CRS-HREC), Government of Cross River State of Nigeria, Ministry of Health, Calabar. Full Ethical Approval was granted under REC Number CRSMOH/HRP/REC/2023/399 (File Reference: CRS/MH/HREC/023/Vol.V1/222), dated 24th July 2023. Informed consent was obtained from all participants prior to data collection. For participants under 16 years of age, informed consent was additionally obtained from a parent or legal guardian. All procedures complied with the Declaration of Helsinki [11].

Consent to Publish

Informed consent to publish was obtained from all participants prior to data collection. For participants under 16 years of age, informed consent to publish was additionally obtained from a parent or legal guardian.

Competing Interests

The author declares no competing interests, financial or otherwise, in relation to the research, authorship, or publication of this manuscript.

Authors' Contributions

C.U.E.: Conceptualisation, study design, instrument development and validation, data collection, data analysis and interpretation, manuscript writing, critical revision, and final approval.

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Data Availability

The datasets generated during the current study are not publicly available due to participant confidentiality obligations but are available from the corresponding author upon reasonable request and subject to institutional ethical clearance.

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