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Knowledge of Primary School Pupils toward Dental Hygiene in Adamawa State, Nigeria

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Abstract

This study investigated the knowledge of dental hygiene among public primary school pupils in Adamawa State, Nigeria. Employing a descriptive survey design, the research addressed three key questions and tested two null hypotheses. The target population consisted of 101,500 pupils enrolled in public primary schools across the state. A multi-stage sampling technique was used to select a representative sample of 400 respondents.
Data were collected using a self-developed questionnaire, which demonstrated a reliability coefficient of 0.75, as determined by the Pearson Product-Moment Correlation Coefficient. The Chi-square statistical method was applied to test the hypotheses at a 0.05 level of significance.
Findings revealed that pupils possessed significant knowledge of dental hygiene ($\chi^2 = 364.810$, $df = 1$, $P < 0.05$). However, no significant differences were observed in dental hygiene knowledge between urban and rural pupils ($\chi^2 = 1.375$, $df = 1$, $P > 0.05$), nor across different age groups ($\chi^2 = 1.042$, $df = 1$, $P > 0.05$).
The study concluded that primary school pupils in Adamawa State have adequate knowledge of dental hygiene. It recommended that teachers incorporate dental health education into the school curriculum to further enhance pupils' awareness and practices.

Key words: Dental Hygiene, Primary School Pupils, Adamawa State, Health Education, Chi-square Analysis, Knowledge Assessment

Introduction

Effective functional living is possible only when people are healthy and practice healthy habits. Health is a major factor in man's existence without which productivity in any sphere of life would be at its lowest (Sa'adu, Musa, &Abu-Saeed, 2018). According to United Nation Children Fund (UNICEF) (2020) dental hygiene is an important part of general health. It determines the oral status of an individual. Thus, dental hygiene is an important for good health in general. Poor dental hygiene can be a source of many diseases, which can be prevented by maintaining good dental hygiene. Dental caries and periodontal problems are due to poor dental hygiene practices.

The mouth is the major gateway to the body; whatever affects oral health, may also affect general health. World Health Organization (WHO) (2021), define dental hygiene as being free from chronic mouth and facial pain, oral and throat cancer, oral sores, birth defects such as cleft

lip and palate, periodontal (gum) disease, tooth decay and tooth loss and other diseases and disorders that affect the mouth and oral cavity. Dental hygiene can also be define as standard of health which enables an individual to eat, speak and socialize without active disease, discomfort or embarrassment and which contributes to general wellbeing (WHO, 2019).

Studies around the world have demonstrated a sufficient degree of knowledge amongst school going children regarding importance of dental hygiene, which has been shown to improve with age (Symth,Caamano ,Fernandez-Riveiro,2019). Knowledge of dental hygiene does not necessarily correlate with practice. This is specially a problem in third world countries like Pakistan where only 16% of patients with dental carries seek dental hygiene, the authors further say that, Public and professional knowledge and attitude about dental hygiene needs to be created to ensure a healthy society free of dental and systemic illnesses, they also pointed out that, Schools are the key to educating children and making them accept responsibility for their health including dental care. Children's knowledge to dental hygiene is built on experience and information imbibed from different sources including parents, teachers, electronic and print media (WHO, 2018).

Lubisich , Hilton , Ferracane, Pashova and BurtonB (2019), defined dental hygiene knowledge as "any learning activity which aims to improve individuals' behavior, attitudes and skills relevant to their oral hygiene". It is important that everyone has a right to be educated regarding the prevention of dental diseases; this can be achieved through school-based dental health education programs, with the assistance of dental health professionals (Irish Dental Association 2019). Although dental care knowledge is an integral part of professional responsibility, simply passing across information does not by itself lead to desirable action. Personal involvement is necessary (Irish Dental Association, 2016). There are different methods of disseminating information, such as through mass media, one-to-one instruction and meetings with small groups. Sheiham (2016) suggested that small groups and mass approaches should be used during oral health education programs. Rustvold (2017) explained that technical problems can be solved with established knowledge, and procedures, that is, if information or a roadmap is given, the action can be taken, but adaptive challenges on the other hand require innovation, new learning. It is necessary for dental professionals to know that information by itself is not sufficient to bring about change in attitude, if this attitude requires that the individual go beyond familiar patterns,

beliefs and understanding. As such, the principle of adaptive challenges must be slightly adhered to (Rustvold, 2017). Rustvold (2017) further explained that it is necessary for dental professionals to know that there are differences between technical problems (understanding the oral environment, adopting ideal tooth brushing pattern and flossing, and the rationale for cleaning) and adaptive challenges (multiple system of beliefs, knowledge, motivation and attitude that do not lend themselves easily to technical analysis), when encouraging people to take action.

According to Tolvanen , Anttonen , Mattila , Hausen and Lahti (2016), health knowledge is that process of education that allows people to increase their control over and improve their health attitude through empowerment so as to take favorable option to good health .Therefore, health education is as fundamental as literacy and numeracy in schools. Health education bridges the gap between scientific knowledge, attitude and effective utilization for man's progress in life (Razanamihaja2016). Rustvold (2017) believe that health education is teaching individuals, families and communities what to do to be healthy and avoid illness. It involves teaching good health habits with the aim of promoting healthy minds and bodies, use of preventive health services and to enable people change their attitudes and knowledge and adopt better dental care habits.

He further explains that, the goal of health education is to motivate changes in man's habits, knowledge patterns that affect health. Health knowledge can be taken place at home, school, hospital or the community public places. Health education in school setting is channeled through formal health institution, provision of health services and ensuring a conductive learning environment. Promotion of health knowledge and attitude among school children will contribute to their ability to learn and participate well in all aspects of educational programmes (Rustvold 2017).

Dental hygiene education includes all those activities that help individuals to develop an appreciation for dental health and take appropriate steps in order to maintain healthy mouth (Choi, 2015). The need to educate the public to comply with and support the preventive activities recommended by oral hygiene experts is therefore imperative. Diseases that affect dental care need to be addressed so that preventive measures can be developed (Brown, 2009). The

acquisition of relevant oral hygiene knowledge and attitude for prevention is vital, no matter how the process may be.

Dental health knowledge is frequently advocated as measure to prevent and control oral diseases. Dental or oral hygiene knowledge should therefore be designed to improve oral hygiene, especially by preventing dental caries (teeth decay) Batchelor, Sgan-cohen &Sheiham, 2022). Oral hygiene knowledge should not be limited to instructing school children, but a whole community (Shenoy & Sequeira, 2018)). According to Chung (2015), the goal of dental hygiene education is not establish good dental hygiene and dietary habits for life. Dental hygiene measures and instructions on diets should form the major components of dental care knowledge. He added that, dental e attitude should not be seen as a process similar to inoculation, assuming that appropriate behaviors will automatically follow receipt of information. This because making information available on oral hygiene is one thing, and putting such information into practice is another thing.

Dental hygiene knowledge includes a wide variety of social processes, such as seeking information, listening, planning diets, organizing one's activities and guiding oneself (Chung, 2016). Normark and Mosha (2018) observed that, dental hygiene attitude could work best when the state of knowledge and the general dental habits of the recipients is taken into consideration. Low level of awareness on dental hygiene in the African continent has been attributed to ignorance, poverty and lack of knowledge in a related study; they also reported that though 92 percent of rural Tanzanian children brushed their teeth every day poor dental hygiene knowledge and attitude was observed. This was because only 27 percent knew the actual reasons for doing so. Similarly, low level of attitude and knowledge of the effects of surgery substances on dental health was reported among Tanzanian children, only 14 percent of the children in the study knew the influence of surgery substances on dental health (Normark and Mosha 2008).

Health education is an essential and non-detachable part of health promotion (Center for Disease Control, 2022). They also observed that although healthy behavior and attitude it is in most cases, not provided in sufficient degree. If individuals are aware of the relevant facts that they need for healthy living, they could and would choose to adopt healthy lifestyle pattern.

Ogundele and Ogunsile (2001) conducted a quantitative study on dental health knowledge, attitudes and practices in relation to dental caries among adolescents in a local government area (LGA) of Oyo State, Nigeria. The findings from the study revealed a significant high knowledge of positive dental health among the participants; this knowledge was not significantly influenced by demographic attributes of respondents;.

Among those with dental caries, female were more than males, and those affected were more from the public schools. The researchers concluded that when healthful knowledge is allowed to influence attitude and practice of dental health, occurrence of common dental disease will be reduced (Ogundele & Ogunsile, 2018)

Research Question

(i) Do primary school pupils have knowledge on dental hygiene in Adamawa State?

ii. Do knowledge of dental hygiene differ between rural and urban primary school pupils in Adamawa State?

iii. Do knowledge of dental hygiene among primary school pupils in Adamawa State differ based on age?

Major Hypotheses

H_{O1}. Primary school pupils do not have significant knowledge of dental hygiene in Adamawa State.

Sub Hypotheses

Ho_1 Knowledge of dental hygiene do not significantly differ between primary schools pupils of urban and rural areas of Adamawa State.

H_{O2} Knowledge of dental hygiene among primary school pupils in Adamawa State do not significant differ based on age.

Methodology

Descriptive design of survey type was used for this study. Thomas (2009), stated that this type of survey design is a kind of research design which enable a person to find the feelings of others about something, stressing further, stated that descriptive design is a systematic description of events in a very factual and accurate manner. Therefore, the descriptive survey was found suitable for this study on knowledge and attitude of dental hygiene among primary school pupils in Adamawa State.

Table 1: χ^2 Analysis on knowledge of Dental Hygiene among Primary School Pupils in Adamawa State.

Knowledge	FO	FE	df	χ^2	P*
Knowledgeable	391	200	1	364.810*	.000
Not knowledgeable	9	200			
Total	400	400			

χ^2 crit = 3.84,* df 1 (<0.05)

The statistical computation of table 1 shows χ^2 value of 364.810 at df 1 ($p<0.05$).The result reveals that primary school pupils in Adamawa State have significant knowledge of dental hygiene. Therefore, the null hypothesis is rejected on the account that the primary school pupils have significant knowledge of dental hygiene.

v **Ho_1.** Knowledge of dental hygiene do not significantly differ between primary schools pupils of urban and rural areas of Adamawa State.

Table 2. χ^2 Analysis on difference in Knowledge of Dental Hygiene among Urban and Rural Primary School Pupils in Adamawa State.

Knowledge	urban	rural	total	df	χ^2	P
Agree	196	192	388	1	1.375 *	.241
Disagree	4	8	12			
Total	200	200	400			

$\varkappa^2$=1.375, df= 1, (P > 0.05)

Table 2 compared dental hygiene knowledge between pupils in urban and rural primary schools in Adamawa State. The result showed that there is no significant difference. Therefore hypothesis which states that the knowledge of primary school pupils towards dental hygiene do not significantly differ on the basis of rural and urban area in Adamawa State is accepted.

Table .3: $\varkappa^2$. **Analysis on difference in knowledge of Dental Hygiene among urban and rural primary school pupils in Adamawa State towards dental hygiene bases on age.**

Dental hygiene Knowledge on Age	8-10years	11-12years	13-14years	total	df	$\varkappa^2$	P·
Agree	104	187	97				
Disagree	4	4	4	400	1	1.042	.594

$\varkappa^2$=1.042, df= 1, (P > 0.05)

Table 3: compared dental hygiene knowledge between pupils in urban and rural primary schools in Adamawa State based on Age. The result showed that there is no significant different. Therefore the null hypothesis which states that the attitude of primary school pupils towards dental hygiene do not significantly differ on the basis of age is accepted.

Discussion

Results of H_{O1} revealed that primary school pupils of Adamawa State have significant knowledge towards dental hygiene. This finding is consistent with assertion of Ogundele and Ogunsile (2008) who conducted a quantitative study on dental health knowledge, attitudes and practices in relation to dental caries among adolescents in Oyo State, Nigeria. The findings from the study revealed a significant high knowledge of positive dental health among the participants; this knowledge was not significantly influenced by demographic attributes of respondents. This result was in accordance with the results of this study as pupils' shows significant high knowledge towards dental hygiene. Medeiros, Otero, Frencken, Bronkhorst and Leal,. (2015) also conducted a comparative descriptive cross sectional study on dental health knowledge, attitudes and practices among medical students In a study, most of the medical (80%), dental (96%) and paramedical (85%) students considers oral health as important as maintaining a good

general health ($P < 0.001$). This result was in accordance with the results of the study as students felt that the health of the mouth and dentition had an impact on the health of the body.
This finding is consistent with assertion of Amich (2016) in a study stated that 282 (61.3%) students brushed their teeth twice or more times a day, 163 (35.4%) brushed at least once a day while only 11 (2.4%) claimed to not brush their teeth on a daily basis, the result revealed that they have knowledge of brushing their teeth. This result was in accordance with the result of this study as pupils' shows significant knowledge towards brushing teeth.

Results of null hypothesis (HO_2) revealed that there is no significant difference among pupils of urban and rural schools in Adamawa State. This finding is consistent with assertion of Nyamuryekung'e,(2012) who presented a critical review of the level of primary dental hygiene in Nigeria, three decades after the Alma-Ata declaration of primary health care. Nyamuryekung'e came to the conclusion that significant dental hygiene knowledge was observed. This result was in accordance with the results of this study as dental hygiene knowledge was significant among pupils' urban and rural primary schools in Adamawa State.

This finding is consistent with assertion of Normark and Mosha (2008) observed that, dental hygiene attitude could work best when the state of knowledge and the general dental habits of the recipients is taken into consideration. High level of knowledge on dental hygiene was observed; in the study the children knew the influence of surgery substances on dental health.

The study also agree with the findings of Plunket, (2015) , who conducted a study on instruction on knowledge, attitude and behavior of community Dental health and also found no significant difference existing between the groups studied. Slight difference was observed between urban and rural schools; hence the urban schools have better knowledge in comparison to the rural schools counterpart, which may not be unconnected with socio- economic background and the level of literacy among parents. The result is consistent to that of CDC report and Brooxwell (2001), whose findings reports that more than 40% of all children have cavities by the time they reach kindergarten, it further states that is imperative that all parents learn the importance of early dent hygiene and that they teach their children proper dental hygiene. This result also was in accordance with the results of this study as the pupils of primary school in Adamawa State have significant dental hygiene knowledge.

Result hypothesis $H_{O3,}$ revealed knowledge among primary school pupils in Adamawa State do not differ based on age. This finding is consistent with assertion of Smyth (2007) conducted a comparative descriptive cross sectional study on oral health knowledge, attitudes and practices among primary school pupils in 12-13 years old school children, the result showed that no significant difference on knowledge was exist based on the age . This result also was in accordance with the results of this study as the pupils of primary school in Adamawa State have no significant dental hygiene knowledge based on age this also agreed with the study of Shenoy (2013) who conducted a study on Effectiveness of school dental education programme in improving oral health knowledge and oral hygiene practices and status of 12-13 years old school children, he observed that no significant difference in knowledge among primary school pupils based on age.

Conclusions

Based on the findings of this study, the following conclusions are drawn:

1. There is adequate knowledge of dental hygiene among primary school pupils in Adamawa State.
2. Pupils of urban and rural primary schools in Adamawa Sate are knowledgeable about dental hygiene
3. No significant difference in knowledge of dental hygiene between urban and rural primary school pupils in Adamawa State based on age

Recommendations

Based on the findings, the following recommendations are made:

1. Health education should be continuing to be taught so as to maintain knowledge of oral health hygiene among primary school pupils in Adamawa State.
2. Health talk should be organized so as to bridge the gap on the knowledge of oral health care among urban and rural primary school pupils in Adamawa State.

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