REVIEW OF EDUCATION *Vol. 36, Issue 1, 2024*
http://instituteofeducation.unn.edu.ng/journal/

KNOWLEDGE OF CAUSES AND PREVENTIVE MEASURES OF DENTAL CARIES AMONG SECONDARY SCHOOL TEACHERS IN NSUKKA LOCAL GOVERNMENT AREA OF ENUGU STATE, NIGERIA

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Abstract
The study determined Knowledge of causes and preventive measures of dental caries among secondary school teachers in Nsukka Local Government Area of Enugu State. Three objectives, three corresponding research questions and two null hypotheses guided the study. The study adopted cross-sectional survey research design. The population of the study comprised of 735 secondary school teachers in the 17 public secondary schools in Nsukka. Simple random sampling without replacement and proportionate sampling technique was used to draw the sample of 240 secondary school teachers for the study. A researcher designed instrument, title: Causes and Preventive Measures of Dental Caries Questionnaire (CPDCQ) were the instrument used for data collection. The face validity of the instrument was established by three experts from the Department of Human Kinetics and Health Education, University of Nigeria Nsukka. The percentages and frequencies were used to answer the research questions. The null hypothesis was tested using chi-square at 0.05 level of significance. The findings revealed that secondary school teachers had slightly moderate knowledge (46.2%) on knowledge of preventive measures of dental caries. Also, secondary school teachers had moderate knowledge (56.6%) on knowledge of causes of dental caries. The study recommended that School health workers, and nurses, can play an important role as agents of change, training the traineer to enhance and maintain the health of secondary students via their teachers.

Keywords: Knowledge, preventive measures, dental caries, secondary school, teachers

Introduction

Dental Caries (DC) is an infectious disease that can affect infants, children, adults and elderly. DC can result in the inflammation of dental pulp and associated tissues which can ultimately lead to tooth loss, cellulitis and rarely to brain abscess (Alkarimi , Watt, Pikhart, Jawadi & Sheiham , 2012). Dental Caries is a debilitating condition that can cause a child to suffer a significant degree of pain (Edelstein, 2000). If left untreated the disease may lead to further complications including sepsis (Pine, Harris, Burnside & Merrett, 2006). According to Sheiham (2006), severe untreated caries has also been found to have links to general health and well-being, affecting young children's body weight and growth. It is particularly critical because even following repair, destroyed tooth structure exhibits increased vulnerability (Sheiham, 2006). Furthermore, poor oral health impacts children's development. Toddlers may exhibit poor growth and nutrition when chewing is painful. Older children may miss school days or be distracted due to dental pain. Young people may interact less with their

peers and society when they are uncomfortable by the appearance of their teeth (Al Agili, 2013). Dental Caries is painful, expensive to treat, and can harm the nutrition and overall health of a child. According to the World health organization (WHO), dental caries (tooth decay) is defined as the destruction of the enamel layer of the tooth by acids produced by the action of bacteria on sugar (WHO, 2017). Oral diseases are common in many societies globally, with dental caries being the most prevalent chronic disease among children (Gussy, Waters & Walsh, 2006). It is estimated that nearly 3.5 billion people are affected by oral disease in the world (WHO, 2020). Approximately 2.4 billion or 36% of the world population have dental caries in their permanent teeth (Yadav & Prakash, 2016). More than 530 million of children lose their primary teeth due to dental caries (WHO, 2020). Due to lack of health education and insouciant preventive measures, there is a high prevalence of morbidity that highly affects the health status of adolescents (Haque, Rahman, Itsuko, Mutahara, M., Kayako, Tsutsumi &Mostofa (2016). Low-income, middle-income and high-income countries are affected by Dental Caries. The World Health Organization (WHO) emphasizes that the disease affects about 60–90% of school children, the vast majority of adults and that dental caries contributes to an extensive loss of natural teeth in older people globally (WHO, 2016). Dental caries is highly prevalent and has a negative impact on adolescent's quality of life, and is a major public health problem in the whole world (Dixit, Shakya, Shrestha, & Shrestha, 2013). The United States Surgeon General report on oral health stated that oral health problems are five times more likely to occur in children than asthma and seven times more than hay fever (General, 2000). Dental caries is the most common disease affecting 90% of the world's population (Williams, 2011). Although the prevalence rates of childhood caries have markedly decreased in some developed countries because of community-level prevention programs and fluoridation programs (Neamatollahi, Ebrahimi, Talebi, Mana & Keiwan, 2011), they remain high in developing countries, such as Nigeria.

Recently, there has been a reduction in the prevalence of dental caries and periodontal diseases among the population of industrialized countries. In contrast, dental caries and periodontal diseases are increasing in some developing countries especially, where preventive programs have not been implemented properly (Ahmad, Bhayat, Al-Samadani & Abuong, 2013). With proper knowledge and oral health behavior, health care professionals can play an important role in the oral health education of individuals and groups and act as role models for patients, friends, families and the community at large. Dental caries, though preventable, is the most prevalent oral condition which can have huge public health impact on the oral and systemic health, social well-being, income of individuals and health care systems (Al-Ansari & Knutsson, 2014). Meanwhile, in most westernized high income countries, an improvement in dental health has taken place over the past three decades in parallel with the introduction of prevention-oriented oral health systems. A decline in the prevalence and the severity of dental caries is particularly observed in countries having established public health programmes using fluoride for dental caries prevention, coupled with changing living conditions, healthy lifestyles, and improved self-care practices. Hence, knowledge of preventive measures is essential for reduction of dental caries in developing countries.

Knowledge is a set of understandings that one have through information, which comes from education. Knowledge is the ability to envisage information about a particular

situation, having an understanding of a situation that may result to healthy outcome (Enemuo & Obayi, 2021). According to Agu, Agbaje and Nnamani (2020), Knowledge is the familiarity and awareness of something such as fact, information, description or skill which is acquired through experience or education. The change from an unhealthy attitude to a healthy attitude will occur when adequate knowledge is provided; and adequate practice of the measures is adopted by the subject (Attaullah & Ali, 2010). Undoubtedly, one of the methods for prevention is to improve the knowledge of the community regarding promotion of health behavior and influence of self-effective methods on preventing diseases (Neamatollahi, Ebrahimi, Talebi, Mana & Keiwan, 2011). Dental caries are caused by a complex interaction of factors like host susceptibility, bacteria, diet, and time (duration).The bacteria and sugary food act together to form acid productions that result in the formation of teeth cavity (Chugh, Sahu, and Chugh, 2018). Consequently, the acid destroys the enamel surface; if the process is not seen, it will result in progressive destruction of the tooth (Garkoti, Singh, Rawat & Pandey, 2015). Dental caries is highly in-creasing among children due to the excessive consumption of sugary substances, poor oral hygiene, lack of fluoride exposure, and inadequate health service utilization (Mulu, Demilie, Yimer, Meshesha & Abera, 2014; Amit, Manohar & John, 2017). Poor oral health can lead to tooth decay which affects the growth and maturation of secondary dentition (permanent dentition) which leads to malocclusion of teeth (Chugh, Sahu & Chugh, 2018).

Preventive measures are necessary steps taken to avoid an unhealthy outcome from happening. Preventive measures are actions taken to avoid something from happening (Okeke, Charles-Unadike & Eze-Ufodiama, 2021; Salama, 2017). Preventive measures as actions aimed at stopping a situation from occurring. These measures can be achieved through modification or removal of risk factors for health condition. Contextually, preventive measures refer to actions taken to ensure that those diet, lifestyle and behaviour when exposed to can result to dental caries do not occur especially among adolescents. It is widely known that dental caries is one of the preventable oral health problems and the most common chronic infectious, childhood diseases (Syreen, Anwar, Ahmad & Rahman, 2018).A healthy mouth not only enables the nutrition of the physical body, but also enhances social interaction and promotes self-esteem and feelings of well-being (Chen, Gao, Duangthip, Lo, & Chu, 2019; Roy, 2018). The prevalence of dental caries has shown a dramatic decline over the past decades among children and adolescents in developed countries (Ramesh & Sundari, 2019). During the adolescent years, young individuals learn and acquire health related attitudes and behaviors that continue with them into their adulthood. It was found that relatively stable patterns of tooth brushing and dietary behaviors are usually established during the childhood and adolescence period (Al-Subait, Ali, Alehaideb, Alshebel & Alqahtani, 2017).

Teachers have great role to play in impacting the knowledge. Schools have a major role in promoting and implementing health problems like dental caries. Schools are the best center for effectively implementing the comprehensive healthcare program as children are easily accessible at school (Pai, Acharya, Vaghela & Mankar, 2017).Schools are an excellent starting point for preventive action in the field of oral health. Secondary schools are a level where almost all the student are an adolescent. Education is the backbone of development in any country, and in order to be really fit for school, children first need to be healthy. Those

who suffer poor health cannot concentrate or actively participate in school activities (World Health Organization, 2014). Healthy children, on the other hand, attend school more regularly and can benefit fully from what the education system has to offer. School health programmes, therefore, have the potential to combine resources for education, health, nutrition and sanitation at the same venue: the school (Arrow, Raheb & Miller, 2013).It is important that teachers have knowledge of dental caries to ensure that children and adolescents do not become limited. Since parents may not have a wide knowledge about oral health, thus teachers should be able to transmit it to their children under their care, if they have the adequate knowledge. (Jawdekar, 2013; Arpalahti, Tolvanen & Pienihakkinen, 2013).Children and adolescence tend to copy the habits and attitudes of their own parents and teachers. This study tends to determine the knowledge of causes and preventive measures of dental caries among secondary school teachers in Nsukka LGA.

The aim of the study is to protect the oral health of adolescents against any unhealthy situation that may occur due dental caries through the knowledge of their school teachers. These can be achieved through several factors such as improved oral hygiene practices, effective use of fluorides, modification of dietary habits and consumption of sweets as well as the establishment of school-based preventive oral care programs (Ramesh & Sundari, 2019). Some good oral health behaviors are; regular tooth brushing with fluoridated toothpaste at least two times a day is the most important, together with the use of the dental floss once daily to clean interproximal surfaces (Pradhan, Kumer, Shavi, Pruthi and Gupta, 2016). Reduction of the consumption of sweets, and regular visits to dentist twice a year is essentials for preventing DC and maintaining optimum oral health (AL-Jawfi & Alhaj, 2018). Good oral health is important in terms of the psychosocial factors which relate to quality of life and optimum social functioning including self-expression and communication (Akinyamoju, Dairo, Adeoye & Akinyamoju, 2019).

Purpose of the study

The purpose of this study is to determine the knowledge of cause and preventive measures of dental caries among secondary school teachers in Nsukka Local Government Area of Enugu State. Specifically, the study sought to determine the:

1. Knowledge of causes of dental caries among secondary school teachers in Nsukka Local Government Area of Enugu State
2. Knowledge of preventive measures of dental caries among secondary school teachers in Nsukka Local Government Area of Enugu State.
3. knowledge of causes of dental caries among secondary school teachers in Nsukka Local Government Area of Enugu State based on level of education.

Research Questions

Three research questions were formulated to guide the study:

1. What is the impact of knowledge of causes of dental caries among secondary school teachers in Nsukka Local Government Area of Enugu State?
2. What is the impact of knowledge of preventive measures of dental caries among secondary school teachers in Nsukka Local Government Area of Enugu State?

3. What is the impact of knowledge of causes of dental caries among secondary school teachers in Nsukka Local Government Area of Enugu State based on level of education?

Hypotheses

Two null hypotheses were postulated guide the study:

1. There is no significant difference in the knowledge of causes of dental caries among secondary school teachers in Nsukka Local Government Area of Enugu State based on level of education.
2. There is no significant difference in the knowledge of preventive measures of dental caries among secondary school teachers in Nsukka Local Government Area of Enugu State based on level of education

Methodology

The study adopted cross-sectional survey design. Cross-sectional research design is an observational research that analyses data of variables collected at one given point in time across a sample population**.** The study was conducted in Nsukka Local Government Area of Enugu State. It is situated in the northern part of Enugu state. It is one of the seventeen LGAs of Enugu state. It consists of three autonomous communities; Ihe/Owere, Nru and Nkpunanou. Nsukka is surrounded by lands, markets of different sizes, financial institutions, hospitals, police stations, schools of all types and dwellers from all part of the country and beyond with different ethnic, religion and socio-cultural background. This gave Nsukka LGA the opportunity of having great number of student and since adolescents' characteristics predispose them to eating junk and fast foods. Thus, the researcher deemed the area appropriate for the study. The population for the study comprised of all the secondary school teachers in the 17 public secondary schools in Nsukka. The number of secondary school teachers was 735 (PPSMB, 2019). The schools comprised of government secondary schools in Nsukka LGA. The sample for the study consisted of 240 teachers. This is in line with Cohen, Manion and Morrison (2011) that if the population is 300 and above at 95 per cent confidence level and 5 per cent confidence interval, the sample size should be 168 and above. Using simple random without replacement to select 6 schools out of 17 secondary schools, Proportionate sampling technique was used to select 40 teachers from each selected school. This process yielded 240 respondents for the study. The instrument for data collection was the researcher designed questionnaire, titled: Causes and Preventive Measures of Dental Caries Questionnaire (KCPDCQ). This consists of 20 items that determined the Knowledge of causes and preventive measures of dental caries among secondary school teachers. Knowledge level was categorized into low, moderate and high. Response scores of 0-39% was considered low knowledge, 40-69% was considered moderate knowledge while 70% and above was considered high knowledge level. The face validity of the instrument was established by three experts from the Department of Human Kinetics and Health Education, University of Nigeria, Nsukka. The reliability of the instrument was established using the split half method. The reliability coefficient of 0.75 was obtained. The instrument was therefore deemed reliable for the study. A total of 240 questionnaires were administered and collected

back by the researcher and two research assistants. Frequencies and percentages were used to answer questions while Chi-square analysis was used to test the hypotheses at 0.05 level of significance.

Results

Table 1: Socio-demographic factor on level of education (n=240)

S/N	Level of Education	f (%)
1.	NCE	90 (37.5)
2.	B. ED	110 (45.8)
3.	M. ED	40 (16.7)

Table 1 shows the socio demographic factor of level of education of the secondary school teachers in Nsukka Local Government Area of Enugu State. The result shows the percentage of level of education, teachers with NCE had 90(37.5%) , Bachelors in education had the 110(45.8%), while Masters in Education were 40(16.7%). The result further shows that those with Bachelors in education were the major respondents.

Table 2: Response of the secondary school teachers in Nsukka LGA on knowledge of causes of dental caries (n= 240)

S/N	Items	f(%)	Decision
1	Bacteria and sugary food act together to form acid productions	152	(63.3)MK
2	Acid destroys the enamel surface	114	(47.5)MK
3	Excessive consumption of sugary substances,	205	(85.4)HK
4	Poor oral hygiene	136	(56.7)MK
5	Lack of use of fluoridated tooth paste	95	(39.6)LK
6	Exposure to extreme temperature, will result in progressive destruction of the tooth	129	(53.8)MK
7	Using the dentine for hard objects	141	(58.8)MK
8	Lack of balanced diet	108	(45.0)MK
9	Lack of health education	128	(53.3)MK
10	Inadequate health service utilization	151	(62.9)MK
	Overall		56.6

Low knowledge - 0-39%, Moderate knowledge - 40-69%, high knowledge - 70% and above.

Table 2 showed an overall response of secondary school teachers on knowledge of causes of dental caries was moderate knowledge (56.6%). The majority of the respondents indicated that cause of dental caries on excessive consumption of sugary substance was (85.4%) and the least response on knowledge of causes of dental caries, indicated that Lack of use of fluoridated tooth paste (39.6%). The table revealed other response on causes of dental caries; Bacteria and sugary food act together to form acid productions (63.3%), Exposure to extreme temperature, will result in progressive destruction of the tooth (53.8%), Using the dentine for hard objects (58.8%), Inadequate health service utilization (62.9%), Lack of health education

(53.3%), Lack of balanced diet (45.0%), Poor oral hygiene (56.7%) and Acid destroys the enamel surface (47.5%). An overall response of secondary school teachers on knowledge of causes of dental caries is moderate knowledge (56.6%).

Table 3: Response of secondary school teachers in Nsukka LGA on knowledge of preventive measures of dental caries (n=240)

S/N	Items	f(%)	Decision
1	Regular rinsing of the mouth in-between meals	121	(50.4)MK
2	. Avoid exposure of the dentine to extreme temperature	94	(39.2)LK
3	Modification of dietary habits; increase intake of fruits and vegetables	101	(42.1)MK
4	Increase frequent intake of water	86	(35.8)LK
5	Regular tooth brushing with fluoridated toothpaste two times a day	91	(37.9)LK
6	Brushing after breakfast and after dinner	109	(45.4)MK
7	Use of the dental floss once daily to clean inter-proximal surfaces	111	(46.3)MK
8	Reduction of the consumption of sugar-coated snacks and drinks	168	(70.0)HK
9	Establishment of school-based preventive oral care programs	123	(51.3)MK
10	Regular visits to dentist twice a year is essentials for preventing DC	105	(43.8)MK
	Overall		**46.2**

Low knowledge - 0-39%, Moderate knowledge - 40-69%, high knowledge - 70% and above

Table 3 showed an overall response of secondary school teachers on knowledge of preventive measures of dental caries was 46.2%. The response is below average. The majority of the respondents indicated that preventive measure of dental caries on Reduction of the consumption of sugar-coated snacks and drinks (70.0%) and the least responses on knowledge of preventive measures of dental caries are; Avoid exposure of the dentine to extreme temperature (39.2%), Increase frequent intake of water (35.8%) and Regular tooth brushing with fluoridated toothpaste at least two times a day (37.9%). The table further showed other response on preventive measures of dental caries; Regular rinsing of the mouth in-between meals(50.4%), Modification of dietary habits; increase intake of fruits and vegetables (42.1%), Brushing after breakfast and after dinner (45.4%), Use of the dental floss once daily to clean inter-proximal surfaces (46.3%), Establishment of school-based preventive oral care programs(51.3%) and Regular visits to dentist twice a year is essentials for preventing DC (43.8%). An overall response of secondary school teachers on knowledge of preventive measures of dental caries is slightly moderate knowledge (46.2%)

Table 4: Knowledge of causes of dental caries among secondary school teachers in Nsukka L G A of Enugu State based on level of education (n=240)

S/N	Items	Levels of education NCE (n=90)	B. ED(n=110)	M.ED (n=40)
		f(%)	f (%)	f (%)
1	Bacteria and sugary food form acid productions	35(38.9)	80(72.7)	37 (92.0)
2	Acid destroys the enamel surface	29(32.2)	55(50.0)	30 (75.0)
3	Excessive consumption of sugary substances,	72(80.0)	98(89.1)	35(87.5)
4	Poor oral hygiene	55(61.1)	45(40.9)	36 (90.0)
5	Lack of use of fluoridated tooth paste	05(5.6)	30(27.2)	39 (97.5)
6	Exposure to extreme temperature, will result in progressive destruction of the tooth	41(45.6)	48(43.6)	40 (100)
7	Using the dentine for hard objects	44(48.9)	67(60.9)	30(75.0)
8	Lack of balanced diet	28(31.1)	50(45.4)	30(75.0)
8	Lack of health education	47(52.2)	51(46.3)	31(77.5)
10	Inadequate health service utilization	51(56.7)	75 (68.2)	25(62.5)
	Overall	**45.2**	**54.4**	**83.2**

Low knowledge - 0-39%, Moderate knowledge - 40-69%, high knowledge - 70% and above

Results in Table 4 showed an overall percentage on knowledge of causes of dental caries based on level of education was NCE (45.2%), B.ED (54.4%)and M.ED (83.2%). The table revealed that teachers with level of education M.ED had high knowledge on causes of dental caries. Most teachers with education level NCE did not know that lack of use of fluoridated tooth paste (5.6%) causes dental caries, all the teachers with level of education M.ED know that exposure to extreme temperature, will result in progressive destruction of the tooth (100%). The table further revealed; Using the dentine for hard objects M.ED(75.0%),B.ED (60.9%), NCE (48.9%), Lack of balanced diet, M.ED(75.0%),B.ED (45.4%), NCE (31.1%), it follow that majority with M.ED, followed by B.ED, then NCE, indicating that level of education affect the knowledge While Lack of health education; M.ED(77.5%), B.ED (46.3%), NCE (52.2%), Inadequate health service utilization M.ED(62.5%), B.ED (68.1%), NCE (56.7%) varies.

Table 5: Summary of Chi-square Analysis of no significant difference in the knowledge of causes of dental caries among secondary school teachers in Nsukka L G A based on level of education (n=240)

Level of knowledge on causes

Variables	N	LK	MK	HK	χ^2Cal	χ^2Crit	df	decision
NCE	90	47(27.4)	25(33.1)	18(29.6)				
B.ED	110	24(33.5)	58(40.3)	28(36.2)	77.5	7.78	4	Reject H_0
M.ED	40	2(12.3)	5(14.7)	33(13.2)				

Table 5 showed that there is significant difference in knowledge of causes of dental caries based on level of education (χ^2Cal = 77.5, χ^2Crit= 7.78, df=4, P=.05). This implies that secondary school teachers differ in their knowledge of causes of dental caries due to their level of education. However level of education has influence on knowledge of causes of dental caries.

Table 6: Summary of Chi-square Analysis of no significant difference in the knowledge of preventive measures of dental caries among secondary school teachers in Nsukka L G A based on level of education (n=240)
Level of knowledge on Preventive measures

Variables	N	LK	MK	HK	χ^2Cal	χ^2Crit	df	decision
NCE	90	32(26.6)	48(43.5)	10(19.9)				
B.ED	110	27(32.5)	58(53.2)	25(24.3)	21.94	7.78	4	Reject H_0
M.ED	40	12(11.8)	10(19.3)	18(8.8)				

Table 6 showed that there is significant difference in knowledge of preventive measures of dental caries based on level of education (χ^2Cal = 21.94, χ^2Crit= 7.78, df=4, P=.05). This implies that secondary school teachers differ in their knowledge of preventive measures of dental caries due to their level of education. Therefore, the secondary school teachers in Nsukka L.G.A had knowledge of preventive measures of dental caries based on level of education.

Discussion of findings

This study considered knowledge of causes and preventive measures of dental caries among secondary school teachers based on level of education. This finding in Table 2 showed an overall response of secondary school teachers on knowledge of causes of dental caries; they have moderate knowledge of causes of dental caries based on level of education. This finding was expected because they are teachers and majority of them have the education qualification B.ED so they must have through education acquire some knowledge on health and in this area of dental health. Also, the findings in Table 4 showed an overall percentage on knowledge of causes of dental caries based on level of education, thus, teachers with level of education M.ED had high knowledge on causes of dental caries. Similarly, findings in

Table 5 showed that there is significant difference in knowledge of causes of dental caries based on level of education. This is in consonant with the finding of Shitie, Addis, Tilahun and Negash (2021) who revealed that lack of oral health education program was significantly associated with dental caries. This result is similar to those studies conducted in Nepal and Bangladesh; children who did not receive oral health education were significantly associated with having dental caries (Dixit, Shakya, Shrestha and Shrestha, 2013). This might be those children who are getting health education might have gotten some educational messages regarding factors contributing to dental caries and have good knowledge about how to prevent dental caries. Children with lack of oral health education were 4.7 times more likely to have dental caries.

The findings of the study showed an overall response of secondary school teachers on knowledge of preventive measures of dental caries; they have slightly moderate knowledge on preventive measures of dental caries. This finding is in agreement with hypothesis test in Table 7showed; there is significant difference in knowledge of preventive measures of dental caries based on level of education. This was expected that secondary school teachers with higher educational qualification should have more knowledge in all especially in health related issues such as oral health. This agreed with Kaur, Kaur and Ahluwalia, (2015) which reported that people who had a university education had a higher score than the diploma holders. This is in conforms to the report of World Health Organization (2008) to Promote the oral health of adolescents through education in school.

Conclusion

Based on the finding it was concluded that secondary school teachers in Nsukka had moderate knowledge on both causes or preventive measures of dental caries respectively. The majority of the respondents indicated that cause of dental caries on excessive consumption of sugary substance and the least response on knowledge of causes of dental caries, indicated that Lack of use of fluoridated tooth paste. The majority of the respondents indicated that preventive measure of dental caries on Reduction of the consumption of sugar-coated snacks and drinks and the least responses on knowledge of preventive measures of dental caries are; Avoid exposure of the dentine to extreme temperature. However, the level of education was significant factor in knowledge of causes and preventive measures of dental caries among secondary school teachers in Nsukka Local Government Area of Enugu state.

Recommendations

Based on the findings, the following recommendations were made:

1. Government should combine the professional experience that can help in designing, planning, implementation and evaluation of oral health promotion interventions as part of the health-promoting school.
2. School health workers, and nurses, can play an important role as agents of change, training the trainer to enhance and maintain the health of secondary students via their teachers.

3. School‘s should organize seminars and workshops for teachers and students the main focus should be the encouragement of oral health care to avoid behaviours that can lead to dental caries and other oral health problems..
4. Communities can help in the development of health promotion strategies, not only in oral health, but also with a wider public health focus.

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