

UTILIZATION OF DENTAL CONSERVATION METHODS AMONG SCHOOL ADOLESCENTS IN MBARARA MUNICIPALITY – SOUTHWESTERN UGANDA

Igga Ibrahim B.

Ssemakula E

Mbabazi A.

Kazibwe F

Abstract

Dental conservation methods are those methods that can be utilized to maintain good oral health. They can be instituted at both individual and professional levels like; tooth brushing, amalgam fillings, inlays, among others. Like most other diseases, oral diseases affect all age groups irrespective of their nationality, race, and creed (WHO, 1999). Oral health describes a standard of health of dental and related tissues which enable an individual to eat, speak and socialize without active disease, discomfort or embarrassment and which contributes to the general wellbeing. This is stressed further by the Commonwealth Dental Association (CDA) which states that “good oral health is an essential and important component of general health and it is a birth right of every individual in the world” (NOHP, 2002).

Objective: The main objective of this study was to determine factors that influence utilization of dental conservation methods among school adolescents.

Methods: An analytic cross-sectional study was carried out in 3 secondary schools within Mbarara District. Mbarara Municipality was selected purposively. Individual study participants were sampled using systematic random sampling method with a desired sample size of 384 individuals. Data were collected using structured interview schedules and key informant interviews. Data were analyzed using STATA Version 10. Chi-square test was used to determine the strength and significance of the association between the variables.

Results: The study findings revealed the level of dental extractions at (74%) and that of utilization of professional dental conservation methods at (8%). The significant factors associated with utilization of dental conservation methods included; age ($\chi^2=70.991$, $df=50$, $p=0.027$), class level at school ($\chi^2 = 13.635$, $df=4$, $p=0.009$), earlier fillings ($\chi^2=24.260$, $df=1$, $p=0.0001$) and social cultural beliefs ($\chi^2=83.539$, $df=68$, $p=0.047$).

Conclusions: Knowledge of dental conservation methods among school adolescents in Mbarara

Municipality was generally low. Most teeth ended up being extracted instead of being conserved.

The high cost of dental care coupled with the breakdown/ lack of facilities for restorative procedures in public hospitals greatly contributed as major hindrances to the uptake of dental conservation methods like fillings. There was a significant relationship between fillings and seeking of professional dental conservation methods.

Key words: Dental conservation, Oral health, dental extractions, dental fillings and Uganda.

Corresponding author: Francis Kazibwe
<fkazibwe@gmail.com>

INTRODUCTION

Like most other diseases, oral diseases affect all age groups irrespective of their nationality, race, colour and creed (WHO, 1999). Oral health describes a standard of health of dental and related tissues which enable an individual to eat, speak and socialize without active disease, discomfort or embarrassment and which contributes to the general wellbeing. This is stressed further by the Commonwealth Dental Association (CDA) which states that “good oral health is an essential and important component of general health and it is a birth right of every individual in the world” (NOHP, 2002). The psychosocial impact of oral disease often significantly diminishes quality of life (WHO, 2003). Despite great achievements in the oral health of populations globally, problems still remain in many communities around the world. This is particularly among underprivileged groups in both developed and developing countries. Dental caries and periodontal diseases have historically been considered the most important global oral health burdens (WHO, 2003). The two major causes of tooth loss in Uganda are dental caries and periodontal disease. Most of the studies on dental caries in Uganda have been carried out in the capital city, Kampala. Dental caries was cited as one of the most common causes of oral morbidity at Mulago National Hospital which is the largest referral hospital in Uganda (Kaimenyi *et al.*, 1988) and the main cause of tooth loss in Uganda in general (Sanya *et al.*, 2004). Periodontal disease was present from the past decades

and results in tremendous economic and social burdens both to the individual and society. The disease has been reported as the second major cause of tooth loss at Mulago National Hospital (Kaimenyi *et al.*, 1988) and in Uganda in general (Sanya *et al.*, 2004). Most of the teeth that have caries are reportedly extracted rather than filled (Ng'ang'a, 2000). Other diseases and conditions that affect the oral cavity include dental fluorosis, oral cancer, cranial facial birth defects and malocclusion of teeth.

METHODS AND MATERIALS

The study population included all secondary school adolescents studying within the three selected school divisions of Mbarara Municipality. Three secondary schools; one from each division were chosen purposively, that is; Welden School (Kamukuzi), Sentah College (Kakoba), and Shuhadae Secondary school (Nyamitanga). Study participants were sampled using systematic random sampling method. A structured interview schedule with open and closed-ended questions was used to collect the data. This instrument captured socio-economic, socio-demographics and socio-cultural factors that influenced utilization of dental conservation methods. Key informant interview was applied to both dentists and clinical oral health officers with questions targeting affordability and other oral health challenges faced by school adolescents within the locality. Pre-testing of the research instruments was done before the actual data collection to enhance the validity and reliability of the responses. The information on the research instruments was cross-checked, inspected and scrutinized to ensure accuracy, relevance, completeness, consistency and uniformity of the collected data. The conditions under which the measurements took place were standardized by minimizing external variations such as fatigue and boredom. Broadening the sample of respondents improved the equivalence aspect. The responses from interview schedules were edited, coded and entered using excel data entry package. Later the data were transferred to STATA software version 10.0 package for analysis. Descriptive statistics was used to derive frequencies tables, percentages, bar graphs and pie charts.

The variables were subjected to correlation analysis. The significant variables were then subjected to Chi-square statistics to determine the strength and significance of association between the variables. Responses from key informants and the open-ended questions were analyzed qualitatively according to emerging themes and then used to explain and interpret quantitative data. Ethical clearance to undertake the

study was obtained from Bishop Stuart University Ethical Committee and the Head teachers of the selected schools. Confidentiality of information and anonymity in data recording was ensured. Participants were also informed about the study before commencing the interview. Only participants who consented to take part in the study were interviewed.

RESULTS

Class level of the respondents

One hundred and seventy-two (45%) were in S.2 class level, 144 (37%) were in S.3 class level while 46 (12%) were in S.4 class. Only 22 (6%) were in S.6 class level (Table 1). Hence, the majority of the respondents were in S.2 and S.3 class levels. Respondents in S.6 class level were likely to mind losing all their teeth at old age ($\chi^2 = 12.964$, $df = 4$, $p = 0.013$). Respondents in S.2 class level at school were less likely to know any other form of treatment apart from extractions ($\chi^2=13.635$, $df=4$, $p=0.009$). Younger adolescents among the respondents were likely to be in a lower class level at school ($\chi^2=298.656$, $df=200$, $p=0.0001$). While, older adolescents were less likely to know any other form of treatment apart from extractions ($\chi^2=70.991$, $df=50$, $p=0.027$).

Table 1: Class level at school

Class level	Frequency	Percentage (%)
S.2	172	45
S.3	144	37
S.4	46	12
S.6	22	6.0
Total	384	100

Knowledge and awareness of dental conservation methods

Experience of dental problem: Three hundred and nine (80%) of the respondents had experienced a dental problem before while seventy-five (20%) had never had any dental problem (Fig. 1).

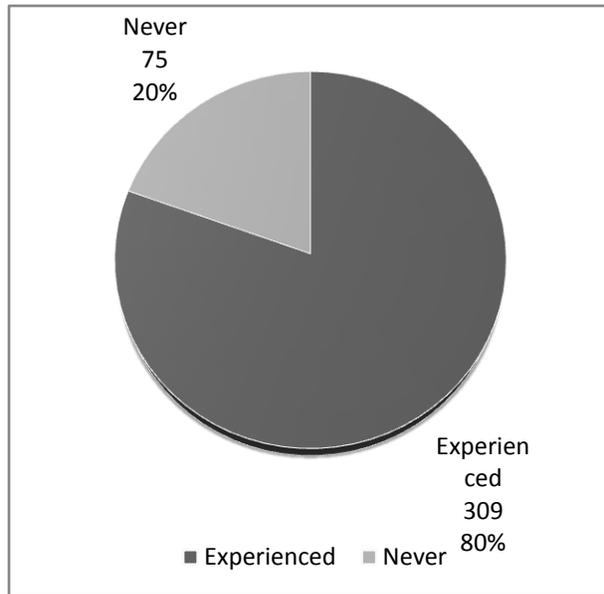


Figure 1: Experience of dental problem

Facility visited by respondents with toothache

Two hundred and two (82.5%) of the respondents with a toothache sought help from a Government hospital, 37 (15.1%) sought help from private clinics and 6 (2.4%) chose to use herbal/traditional medicine (Table 2).

Knowledge on brushing of teeth

Table 2: Facility visited by respondents with toothache

Class level	Frequency	Percentage (%)
S.2	172	45
S.3	144	37
S.4	46	12
S.6	22	6.0
Total	384	100

The results presented in table 3 below indicate that two hundred and forty-one (63%) of the respondents who brushed their teeth said they did it to avoid decay. One hundred and sixteen (30%) said they brushed their teeth to remain clean. Six (2%) of the respondents who did not brush their teeth said it was not important while 21 (5%) said they did not have a toothbrush. Three hundred and seventy-one (97%) of the respondents thought it was important to brush one's teeth while 13 (3%) thought it was not important. Two hundred and ninety-five (77%) of the respondents said they brushed

their teeth after eating. Eighty-nine (23%) said they brushed before eating. Fifty-one (57%) of the respondents who brushed their teeth before meals in the morning said they did it so that food does not stick to the teeth. Thirty-three (37%) said they did it to avoid badbreath and 5 (6%) gave other reasons like forgetting to brush at night. Two hundred and six (70%) of the respondents who brushed their teeth after meals said they did so to remove food particles while 89 (30%) said they did it to have fresh breath.

Table 3: Knowledge on brushing of teeth

Reason for:	Knowledge	Frequency
Brushing teeth	Avoid decay	241
	Remain clean	116
Not-brushing teeth	Not important	6
	No tooth brush	21
Total		384
Importance of:		
Brushing teeth	Not Important	13
	Important	371
Total		384
Period of brushing teeth	Before eating	89
	After eating	295
Total		384

Reasons for using toothpaste

One hundred and ninety-eight (70%) of the respondents used toothpaste when brushing teeth for freshbreath while 80 (28%) said teeth get cleaner. Five (2.0%) gave other reasons like the toothpaste contains fluoride (Table 4).

Table 4: Reasons for using tooth paste

Use of tooth paste	Frequency	Percentage (%)
For fresh breath	198	70
Teeth get cleaner	80	28
Other	5	2
Total	283	100

DISCUSSION

The class level at school plays a big role as far as health and effective communication are concerned. Respondents in a higher class level at school (beyond S.3) were more likely to be informed on dental health issues. The results also indicated that these respondents were likely to mind losing all their teeth ($\chi^2 = 12.964$, $df = 4$, $p = 0.013$). Respondents in a lower class level at school were less likely to know any other form of treatment apart from extractions ($p = 0.009$). Oral health education and prevention programmes are hardly given priority among Ugandan schools and this contributes to the general lack of oral health knowledge among the adolescents in our community (Kassim *et al.*, 2007). Thus, the higher in class an adolescent is at school the more knowledgeable he is likely to be and consequently, the more empowered him/her is to make informed decisions; for example, one who is more informed will know that conservation of a tooth is better than its extraction.

The roles held at school by an individual adolescent are likely to affect utilization of dental conservation methods because this facilitates affordability and easy access to health services available. One of the key informants, a dentist, had this to say when asked about the challenges the adolescents face on the uptake of dental conservation methods; "One of the major problems why the uptake of dental conservation methods is low especially among adolescents is due to the fact that individuals people come or are brought to hospital only when the dental pain is too much to bear. We find that by then the tooth may be completely decayed and cannot be conserved. Sometimes lack of funds to receive treatment contributes to the delay." This finding corresponds to a study done in Kampala central, Uganda where it was found out that patients tend to visit a dentist only when in deep pain (Chindia *et al.*, 1992). In another study done among Makerere University students in Kampala, lack of financial resource was given as one of the reasons for failing to see a dentist (Wakiaga *et al.*, 1996). In the same study, the cost of dental treatment was considered to be very high.

The results indicated that the level of knowledge and awareness of dental conservation methods was low. Majority of the respondents had experienced a dental problem in their life (80%). The most common problem was toothache (97%). When not attended to in good time toothache leads to the tooth being extracted. In this study most of the respondents sought help for their toothache in a government hospital (83%) and out of these, 74% had tooth extraction. This corresponds with the finding at Mulago National Referral Hospital that in the event of pain from dental caries most teeth are reportedly extracted rather than filled (Ng'ang'a,

2000). This can be attributed to the fact that most individual patients go to government hospitals because the services are cheaper. They however get disappointed especially if the care needed cannot be provided either because of breakdown of facilities or lack of necessary materials, for example in the case of fillings. The lucky few who can afford normally go to the private clinics. Majority of the respondents (84%) said they knew of other people with dental problems. This corresponds with the report that although many oral diseases are not always life threatening, they too are important public health problems because of their high prevalence (WHO, 1999). Majority of the respondents said they practiced some good oral health habits like brushing of teeth (93%). Most of the respondents in the study (68%) knew that brushing assists in preventing tooth decay. Majority of the respondents (89%) used conventional toothbrush from the shops while 11% used a chew stick. However, these claims of tooth brushing are not reflected in the tooth mortality as it is still very high (73%). This finding can be attributed to the fact that the respondents may not be brushing their teeth effectively and hence still end up with tooth decay. These findings also correspond to a study done in Kampala, Uganda where 67% of the respondents claimed they brushed their teeth at least once a day. Conventional toothbrush was most commonly used (54%) and the chew stick was used by 10% of the respondents (Macigo *et al.*, 2006). In this study 7% of the respondents said they used a chew stick because it had some medicinal properties. This corresponds to the study whereby some traditional chew sticks like those from the Neem tree are claimed to have an added advantage in that they have antibacterial effects which may be useful in plaque control (Wolinsky *et al.*, 1996).

Although the majority of the respondents (74%) reported that they used toothpaste while brushing their teeth, they were not aware of the important abrasive properties dentifrices have. Most of the respondents (63%) knew about the presence of fluoride in their toothpaste of choice. Respondents with a lower level of formal education were less likely to know that tooth paste contains fluoride ($p = 0.029$). Fluoride in water or in dentifrices has a caries-reducing effect.

Asked whether they used inter-dental cleaning instruments 98% said they used tooth picks while 1% used floss. Inter-dental cleaning instruments are beneficial because they remove food particles between teeth. According to one key informant (a dentist), only adolescents with a higher class level at school know about floss as an inter-dental cleaning tool, and even then only a few utilize it.

The results indicated that only a minority of the respondents (8%) had a filled tooth as compared to 74% who had a tooth extracted. Respondents with a filled tooth thought that dental fillings are useful ($p=0.001$). Those who had the experience of a dental filling were at an advantage of knowing its usefulness. They were also likely to seek dental conservation methods in future in case of a dental problem. Majority of the respondents (71%) thought dental fillings were not useful because the fillings come out and that the teeth will end up being extracted. This finding shows the negative attitude adolescents have towards fillings and this definitely affects the utilization of this type of conservation method. The duration the filling takes in the mouth depends on factors like the size of the cavity compared to the tooth substance. A small occlusal filling can take years in the mouth whereas a big proximal filling may take a shorter duration. Most of the respondents (57%) thought that a dental filling procedure is painful. This finding corresponds to a study done among Makerere University students in Kampala where 60% of the respondents who had sought dental treatment described the dental visit as uncomfortable and painful. About (48%) of the respondents considered the cost of treatment as being unreasonably high (Wakiaga *et al.*, 1996). The mouth is a very sensitive part of the body and most people fear the local anaesthetic injection in the oral cavity. This is a normal reaction and assurance from the dental professional, but with a clear explanation of the procedure to be done usually reduces the fear considerably. Cost may also be a hindrance to the uptake of dental conservation methods. The cost in government hospitals is about fifty thousand shillings per filling; which is rather expensive given the current income situations. Several studies that have been done elsewhere indicate that very few fillings have been done compared to extractions. In a study done in Kampala Central, none of the decayed permanent teeth were restored and only one deciduous tooth had a filling (Simon *et al.*, 2008). Most of the respondents (73%) who had a filling had it done in a private clinic. Respondents with a filled tooth were likely to have sought help from a private clinic facility ($p=0.006$). A key informant, (a dentist), in Mbarara Regional Referral Hospital (MRRH) when asked about the challenges the professionals face when providing dental conservation methods had this to say; "The biggest challenge we face is when the dental machines break down and then they take very long to be repaired. It affects patients because they get frustrated when they are given appointments for fillings only to find the machines not in operation. Prompt restoration of decayed teeth is necessary to avoid further damage and loss of teeth but sometimes this is not possible when the machines break down."

This finding corresponds to a study done at Mulago National Referral Hospital, Kampala where it was found out that one of the main reasons for high tooth mortality was lack of facilities for restorative procedures in most public hospitals (Maina and Ng'ang'a, 1991). This can be supported by the fact that in spite of its importance in general health, oral health has not been given its due priority in the general health planning in Uganda. This is evidenced by the meagre annual budgetary allocation to this health sub-sector (0.0016% of the total health budget) (NOHP, 2002). This explains why most of the fillings were done in the private clinics because those who afford go to private clinics to avoid the delays in the government hospitals. Some beliefs and perceptions may also affect the uptake of dental conservation methods. Some respondents (22%) said they would not mind losing all their teeth at old age. Most of them said this is because they would get a denture ($p=0.047$). Older adolescents (above 18 years) were less likely to mind losing all their teeth compared to the younger respondents ($p=0.013$). A large percentage of the respondents (48%) thought dentures are beautiful and 32% thought they could be used to eat all types of food. At the back of their minds adolescents feel that they can get better chance in life with their teeth by getting another artificial set of teeth. Therefore, they may not take conservation of their teeth with the weight it deserves. Even among individuals with some knowledge on dental problems, dental care is not given due priority. In a study carried out on some university students at Makerere, most of the students did not appreciate the need to see a dentist for check-up unless they had a dental problem and even so a significant proportion (35%) of those with a problem gave one reason or another for not seeing a dentist (Wakiaga *et al.*, 1996). In another study carried out in Jinja Municipality among school children, none of the adolescents examined had gone for routine dental check-up before except for 12.6% who had previous dental consultation due to toothache (Onyeaso, 2004). Routine dental check-ups twice a year are necessary so that problems like dental caries can be noticed early enough and necessary measures taken to treat them.

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Authors' profiles:



Mr. Igga Ibrahim is a graduate student pursuing a Master's degree in Public Health at Bishop Stuart University – Mbarara Uganda. A Ugandan citizen with good research skills and reputable moral values. He shares a background in Biological Science Technology and has participated in several intern programmes at Uganda Industrial Research Institute (UIRI), Masindi Hospital, and Mbarara Regional Referral Hospital and in various community outreach projects across the country.



Mr. Apollo Mbabazi has a Bachelor's degree in Science from Makerere University, Kampala (MUK) and a Master's degree in Public Health from London School of Hygiene & Tropical Medicine. He is currently a Senior Lecturer and Head of the Public Health Department at Bishop Stuart University, Mbarara, since 2009 to date. His major areas of specialization are in Health Policy Preparedness Strategies for addressing the Impact of Climate Change in Uganda and the Impact of Globalization on Public Health.



Professor Edward Ssemakula (PhD) is the Coordinator of the

Graduate School at Bishop Stuart University (BSU), Mbarara Uganda, P. O. Box 9 Mbarara; *essemakula@as.bsu.ac.ug* or *essemakula121@gmail.com*, Tel. 256 777 912012. He received his PhD from Makerere where he taught for 15 years in the College of Agriculture and Environmental Management, he has taught at BSU for the last six years. His major research interest is research methodology, community innovations and value chain development.



Dr. Francis Kazibwe (PhD) is an Associate Professor of Public Health at Bishop Stuart University, Uganda. He has been engaged in operational research on Vector Borne Diseases and on the role of biodiversity in determining the endemicity of these diseases in the country. He has accumulated knowledge on the ecological dynamics of disease vectors and has held many consultancies for the business community and international research institutions. He has been responsible for parasitological, socioeconomic and demographic baseline data collection for the Neglected Tropical Diseases Control Programme in Uganda and has participated in planning, monitoring and evaluation of many disease control projects.