UTILIZATION OF DENTAL CONSERVATION METHODS AMONG SCHOOL ADOLESCENTS IN MBARARA MUNICIPALITY – SOUTH-WESTERN UGANDA.

Igga Ibrahim B., Ssemakula E. and Kazibwe F.
Bishop Stuart University, P.O. Box 9, Mbarara, Uganda.

Received: 23, Apr, 2015  Accepted: 20, May, 2015

Abstract
Dental conservation methods are those processes 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 birthright 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. 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.

Keywords: Dental conservation, oral health, dental caries, dental extractions, dental fillings.

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 birthright 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. 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 in 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 questionnaire with open and close-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 interviews were 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 senior 2 class level, 144 (37%) were in Senior 3 class level while 46 (12%) were in
senior 4 class. Only 22 (6%) were in senior 6 class level (Table 1). Hence, the majority of the respondents were in senior 2 and senior 3 class levels. Respondents in senior 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 senior 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 sample mix

<table>
<thead>
<tr>
<th>Class level</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior 2</td>
<td>172</td>
<td>45</td>
</tr>
<tr>
<td>Senior 3</td>
<td>144</td>
<td>37</td>
</tr>
<tr>
<td>Senior 4</td>
<td>46</td>
<td>12</td>
</tr>
<tr>
<td>Senior 6</td>
<td>22</td>
<td>6.0</td>
</tr>
<tr>
<td>Total</td>
<td>384</td>
<td>100</td>
</tr>
</tbody>
</table>

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).

![Fig(1) Experience of dental problem](image)

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).

Table (2) Facility visited by respondents with toothache

<table>
<thead>
<tr>
<th>Facility</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Hospital</td>
<td>202</td>
<td>82</td>
</tr>
<tr>
<td>Private clinic</td>
<td>06</td>
<td>03</td>
</tr>
<tr>
<td>Herbal medicine</td>
<td>37</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>245</td>
<td>100</td>
</tr>
</tbody>
</table>

Knowledge on brushing of teeth

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 bad breath 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

<table>
<thead>
<tr>
<th>Reason for:</th>
<th>Knowledge</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brushing teeth</td>
<td>Avoid decay</td>
<td>241</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>Remain clean</td>
<td>116</td>
<td>30</td>
</tr>
<tr>
<td>Not-brushing teeth</td>
<td>Not important</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>No tooth brush</td>
<td>21</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>384</td>
<td>100</td>
</tr>
</tbody>
</table>

Reasons for using toothpaste

One hundred and ninety eight (70%) of the respondents used toothpaste when brushing teeth for fresh breath 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

<table>
<thead>
<tr>
<th>Use of tooth paste</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>For fresh breath</td>
<td>198</td>
<td>70</td>
</tr>
<tr>
<td>Teeth get cleaner</td>
<td>80</td>
<td>28</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>2.0</td>
</tr>
<tr>
<td>Total</td>
<td>283</td>
<td>100</td>
</tr>
</tbody>
</table>

**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/she 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. It is noted that the majority of respondents did not know the significance of toothpaste as a measure to fight tooth decay but seem to consider it more important in ensuring good breath.

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. The majority of 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. The majority of 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., 1998).

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 anesthetic 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 meager annual budgetary allocation to this health sub-sector amounting to (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 to 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 checkup 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 checkup before except for 12.6% who had previous dental consultation due to toothache (Onyeaso,2004). Routine dental checkups twice a year are necessary so that problems like dental carries can be noticed early enough and necessary measures taken to treat them.

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 and/ 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.

Acknowledgements
We thank Bishop Stuart University Ethical Committee for clearing the study and all the students who agreed to take part. We also acknowledge the head teachers of Sentah College-Mbarara, Shuhadae Secondary School-Mbarara, and Welden School-Mbarara for their support during data collection period.

References
11)Sanya, B. O., Ng’ang’a, P. M. and Ng’ang’a, R. N. (2004); Causes and patterns of missing teeth among Ugandans; East African Medical Journal 2004; 81:322-325.