

East African Medical Journal Vol. 88 No. 10 October 2011

ORAL HEALTH KNOWLEDGE, HYGIENE PRACTICES AND TREATMENT SEEKING BEHAVIOUR AMONG 12 YEAR-OLD CHILDREN FROM KITALE MUNICIPALITY IN KENYA

R. O. Owino, BDS, MDS, M. A. Masiga, BDS, MSc, Department of Paediatric Dentistry and Orthodontics, F. G. Macigo BDS, MPH, PGD-STI, Department of Periodontology and Community Dentistry and P. M. Ng'ang'a BDS, MSD, PhD, Department of Paediatric Dentistry and Orthodontics, College of Health Sciences, University of Nairobi, P. O. Box 19676-00202, Nairobi, Kenya

Request for reprints to: Dr. R. O. Owino, Department of Paediatric Dentistry and Orthodontics, College of Health Sciences, University of Nairobi P. O. Box 12723-00100, Nairobi, Kenya

ORAL HEALTH KNOWLEDGE, HYGIENE PRACTICES AND TREATMENT SEEKING BEHAVIOUR AMONG 12 YEAR-OLD CHILDREN FROM KITALE MUNICIPALITY IN KENYA

R. O. OWINO, M. A. MASIGA, F. G. MACIGO and P. M. NG'ANG'A

ABSTRACT

Background: Several behavioural studies have shown a direct correlation between oral health awareness and practices. Awareness of individuals regarding their periodontal health status when accompanied with knowledge about the periodontal disease process can help improve self oral healthcare and prevent periodontal diseases.

Objective: To describe the knowledge on aetiology, prevention of periodontal disease and the oral health practices among 12 year-old children.

Design: Descriptive cross-sectional study.

Setting: Eight out of 16 primary schools in Kitale municipality.

Results: Majority of the children 197(67.5%) brushed their teeth among whom 109(55.3%) brushed their teeth three times a day, 43(21.8%) brushed twice a day and 45(22.8%) brushed once a day. Out of the children who brushed their teeth, 104(52.8%) started brushing their teeth before joining primary school while 53(26.9%) started brushing their teeth in primary school. A small number of children 29(14.7%) did not remember when they started brushing their teeth. Out of those children who brushed their teeth, 127(64.5%) used a toothbrush, 33(16.8%) used 'miswaki' and 32(16.2%) used both toothbrushes and 'miswaki'. Among those who brushed their teeth, 173(87.8%) used toothpaste while 24(12.2%) did not use any. Less than half of all the children interviewed (36.3%) had visited a dentist before. Most of the children (18.2%) who visited a dentist went for tooth extraction, 6.8% for tooth cleaning and 4.1% for filling. A very small number of children (5.1%) went for check-up. Majority of all the children interviewed (69.9%) had moderate oral health knowledge while only a few children (8.9%) had poor information.

Conclusion: A large number of children carried out oral hygiene practices. Majority of those children who brushed their teeth started cleaning their oral tissues before joining primary school, possibly a result of parental influence. The utilisation of dental healthcare services was low among the children in the study.

INTRODUCTION

Oral hygiene is defined as those measures that are necessary to attain and maintain oral health including practices required to cleanse teeth, the periodontal tissues and the mouth in general, and contribute to a state of cleanliness in the oral cavity (4). Oral hygiene plays an important role in the prevention of dental caries and periodontal disease. It has been reported that the degree of oral hygiene determines the absence or presence of dental caries (5-7). The

patient's crucial role in oral hygiene involves actions against the factors that are indicated as very important in the development of dental caries especially dental plaque. The reduction or elimination of dental plaque from tooth surfaces by mechanical or chemical means is very important. Another objective of oral hygiene is to increase the resistance of the tooth and periodontal tissues against pathogenic microorganisms, for example, with the use of fluorides. To date the most effective way of controlling plaque accumulation is by mechanical means (8, 9). This includes tooth brushing

and inter-dental cleansing aids such as dental floss, wooden tips and rubber tips (8). It is necessary to establish the population's perceptions of oral health as it is from this that its promotion through education can succeed (10).

Oral health knowledge, attitude and behaviour among Saudi Arabia school children in Jeddah showed that 87.1 % of the 12-18 year-olds knew that tooth brushing helped to prevent periodontal disease (11). Only 33% knew that dental floss helped in preventing periodontal disease. In 2004 Okada *et al.* in a study among elementary school children, found out that parents' oral health behaviour affected their children's behaviour (12). It was also noted that parents' oral health behaviour had a significant direct effect on their children's decayed teeth. Very few studies on oral health knowledge of and practices by the children have been done in Eastern Africa. Masanja *et al.* in 2004 conducted a study to find out the knowledge on gingivitis and oral hygiene practices among secondary school adolescents in rural and urban Morogoro (13). This study showed that secondary school teenagers had partial knowledge about gingivitis and a good knowledge of basic oral hygiene measures necessary to maintain proper oral health.

MATERIALS AND METHODS

Setting: Kitale municipality in North-Western Kenya.

Study Design: This was a descriptive cross-sectional study of primary school children drawn from Kitale municipality.

Study Population: The study population was defined as 12-year-old children attending randomly selected primary schools in Kitale municipality.

Sampling Methods: Kitale municipality has 26 public primary schools distributed in four educational zones namely; Bidii, Milimani, Grassland and Bondeni. Two schools were selected from each of the four educational zones by simple random

Sampling. Therefore, a total of eight schools were selected for this study. The calculated sample size for this study was 288 children. The number of children selected from each zone was based on the number of 12-year-old children in that zone as a proportion of the total number of 12 year-old-children enrolled in all the public primary schools (1668) multiplied by the calculated sample size of 288. It therefore followed that the different zones were represented as follows:

- Bidii zone = $402/1668 \times 288 = 69$ pupils
- Milimani zone = $272/1668 \times 288 = 47$ pupils.
- Grassland zone = $402/1668 \times 288 = 69$ pupils.

- Bondeni zone = $592/1668 \times 288 = 102$ pupils.

Since two primary schools were selected from each zone, each school was represented by the calculated number of children for that zone divided by two. Therefore, 35 children per school were selected from Bidii and Grassland zone, 24 from Milimani zone and 51 from Bondeni zone. For each school a list of all 12 year old children with consent from parents was made using class attendance registers for standard five, six and seven where most of the 12-year-old children were found. Every second 12-year-old child was selected for interview. Those children without parental consent, those who did not assent to the study and those who were too sick to be examined were excluded from the study.

Data collection instruments and techniques: A questionnaire designed to assess oral health knowledge, hygiene practices and treatment seeking behaviour was pre-tested and validated using 12 year-old children from Unity primary school in Nairobi. Two clinical oral health officers (COHO) were recruited to be field assistants and were trained on how to administer the questionnaire. The children in Kitale municipality answered the questionnaires in classrooms under the supervision of the principal investigator and the COHOs. To prevent the children from copying from each other, they were sat in a classroom and at a distance apart. The children were reassured that it was not an examination and hence the need not to panic. The children were carefully taken through the questionnaire and were allowed time to answer one question before proceeding to the next. There were six questions on the knowledge of these children concerning dental caries and gingivitis which were filled in as part of the questionnaire. These questions were adopted from a study by Kaimenyi *et al.* (14). At the end of the data collection exercise, the children were all assembled together and given oral health education including oral hygiene instructions and diet counselling.

Data analysis: Data were analysed using the SPSS version 12 (SPSS Inc., Chicago, IL, USA) computer software. The mean, mode and median values were computed for oral health knowledge. Chi-square test was used to determine associations between oral health practices and gender (proportions) and oral health seeking behaviour between males and females. Statistical significance was accepted at 5%.

RESULTS

Among the two hundred and ninety two children aged 12 years who participated in the study, 140(47.9%) were boys and 152(52.1%) were girls thus giving a male to female ratio of 1: 1.1. Majority of the children 197(67.5%) brushed their teeth, among

whom 109(55.3%) brushed three times daily (Table 1). There was no statistically significant difference in the oral hygiene practices between males and females (Chi-square $p>0.05$).

Most of the children 104(52.8%) started brushing their teeth before primary school, while 53(26.9%) started brushing their teeth in primary school. A small number of children 29(14.7%) did not remember when they started brushing their teeth. Among those children who brushed their teeth, 127(64.5%)

used toothbrushes, 33(16.8%) used 'miswaki' and 32(16.2%) used both toothbrushes and 'miswaki' (Table 2).

Out those who brushed their teeth, 173(87.8%) used toothpaste while 24(12.2%) did not use any. About 32.5% of the children did not brush their teeth of which was affordable, 80% stated that tooth paste, 10% had no knowledge on tooth bomby while less than 10% thought it was not helpful.

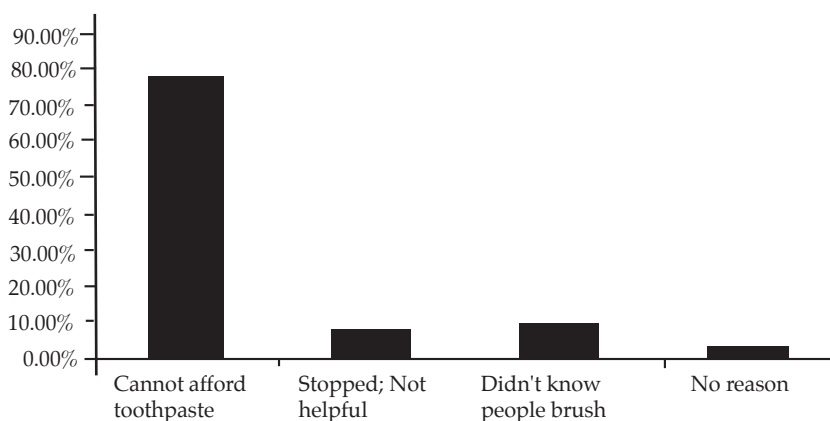
Table 1
Oral hygiene practices of 12-year-old children

| Variable | Male (%) | Female (%) | Total (%) |
|-----------------------|----------|------------|-----------|
| Brushing | | | |
| Yes | 98(70.0) | 99(65.1) | 197(67.5) |
| No | 42(30.0) | 53(34.9) | 95(32.5) |
| Frequency of brushing | | | |
| Once | 28(28.6) | 17(17.2) | 45(22.8) |
| Twice | 16(16.3) | 27(27.3) | 43(21.8) |
| Thrice | 54(55.1) | 55(55.5) | 109(55.3) |
| When brushing started | | | |
| Before primary school | 49(50.0) | 55(55.6) | 104(52.8) |
| In Primary school | 28(28.6) | 25(25.3) | 53(26.9) |
| This year | 4(4.1) | 7(7.1) | 11 (5.6) |
| I don't remember | 17(17.3) | 12(12.1) | 29(14.7) |

Table 2
Oral hygiene aids of 12-year-old children

| Variable | Male (%) | Female (%) | Total (%) |
|-----------------------|----------|------------|-----------|
| Brushing implement | | | |
| Mswaki | 19(19.4) | 14(14.1) | 33(16.8) |
| Toothbrush | 64(65.3) | 63(63.6) | 127(64.5) |
| Toothbrush and Mswaki | 12(12.2) | 20(20.2) | 32(16.2) |
| Tooth pick | 3(3.1) | 2(2.0) | 5(2.5) |
| Use of Toothpaste | | | |
| Yes | 85(86.7) | 88(88.9) | 173(87.8) |
| No | 13(13.3) | 11(11.1) | 24(12.2) |

Figure 1
Reasons for not brushing teeth according to the 12 year old children



Overall, less than half of the children, 36.3% had visited a dentist before. Regarding gender, 37.5% of females and 35% of males, had visited a dentist. However, there was no significant statistical difference in the oral health seeking behaviour between males and females (Chi-square $p > 0.05$). About 18.2% of the children visited a dentist for tooth extraction, 6.8% for tooth cleaning and 4.1 % for filling. Only a few

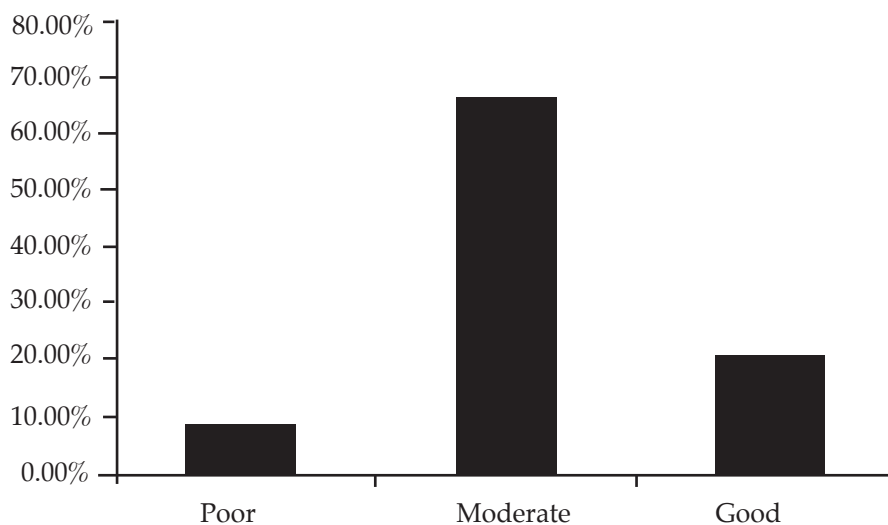
children (5.1 %) went for check-up (Table 3).

Oral health knowledge was based on the number of correct responses from the six questions presented to the children. A score of zero to two was rated as poor knowledge, a score of three to four was rated as moderate and a score of five to six was rated as good. Majority of the children (69.9%) had moderate oral health knowledge (Figure 2).

Table 3
Oral health seeking behaviour of 12-year-old children

| Variable | Male (%) | Female (%) | Total (%) |
|------------------------|-----------|------------|-----------|
| Ever visited a dentist | | | |
| Yes | 49(35.0) | 57(37.5) | 106(36.3) |
| No | 91 (65.0) | 95(62.5) | 186(63.7) |
| Reason for visiting | | | |
| Extraction | 30(60.4) | 23(41.4) | 53(18.2) |
| Tooth cleaning | 10(20.8) | 10(17.2) | 20(6.8) |
| Filling | 5(10.4) | 7(12.1) | 12(4.1) |
| Check up | 2(4.2) | 13(22.4) | 15(5.1) |
| Other | 2(4.2) | 4(6.7) | 6(2.1) |

Figure 2
Oral Health knowledge among 12 year old children



DISCUSSION

Information on oral health knowledge and practices was based pre-tested questionnaire undertaken in a classroom. To control cheating the children were asked to seat two meters apart and reassured by the principal investigator (ROO) that the process was not an examination. Recall bias was a major challenge in a few of the questions as the children were supposed to remember certain past events.

Most children (52.8%) who brushed their teeth learnt how to brush before they joined primary school indicating a possible parental influence in the acquisition of this Okada *et al* (12). Possibly parents should be targeted during oral health education

campaigns to encourage them to teach tooth brushing habits to their children. The school environment also appeared to influence the brushing habits of children in this study as 26.9% of the children had learnt how to brush their teeth at the primary school level. Therefore, school based oral health promotion and education programmes should be instituted to give positive reinforcement of the oral hygiene practices the child may have learnt at home and to educate those who had never brushed their teeth before starting primary school.

A study by Hodge *et al.* in 1982 reported that tooth brushing among adolescents was strongly related to cleanliness and appearance rather than to motives related to dental health (15). The same

study also demonstrated that tooth brushing was more responsive to family and pressures than to the influences of dental personnel. It is possible that when planning oral hygiene programmes for children, the influence of personal hygiene, grooming behaviour, family and peer group pressure should be taken into account (15). Once children are educated on oral hygiene, then through peer pressure and social interactions they be able to influence their other friends to brush their teeth.

Of the children who did not brush their teeth only 10% lacked awareness on tooth brushing. While the majority (80%) said that the toothbrush was unaffordable. Although socio-economic status was not assessed in this study, children attending public primary schools in Kitale municipality are likely to have been from poor family backgrounds with their parents being either peasant farmers or farm workers in the peri-urban areas taking advantage of the free primary education. Another possible reason for not acquiring brushing habits may have been the family size. Families in Kitale are large and data from the Kenya demographic health survey indicate that the total fertility rate in this area was 5.8 children per mother (16). Studies have shown that mothers who have large families may not be able to teach their children oral hygiene procedures and supervise tooth brushing (15).

Research has shown that in questions concerning exact facts, validity and reliability of answers by adolescents about oral health knowledge and habits is high (17). Majority (69.9%) of the 12 year-old children in Kitale municipality had moderate knowledge of the various oral health issues regarding the aetiology and prevention of oral diseases. This demonstrates the gap between knowledge and practice that is usually a concern in oral health education programmes. Probably the children may have the knowledge but lack the resources such as toothpaste and tooth brush to apply what they theoretically know.

Most children (63.7%) had never visited a dentist indicating low utilisation of dental services. This level of utilisation is similar to that of 12 year-old children in Kerala, India (17). In contrast, the level of attendance by the 12 year-old children in Kitale was low compared to that of a Finnish adolescent population, in Jordan and in China (18-20). In Kenya where majority of the population may be ignorant of dental services available, most people would visit a dentist only when in pain. In this study majority of the children who visited a dentist (18.2%) went for dental extractions. It is possible that since these children went for extractions, pain may have been the chief complaint. Pain has been reported as the main reason for attendance to dental health among children seen at dental clinics in Nairobi, Kenya (21, 22).

A study in Scotland where extractions are

relatively common revealed that irregular attendance to dental clinics was a contributor to the higher tooth morbidity rates (23). This may also have been the case with the present study. Dental visits by the children were largely symptom oriented. Majority of the children who attended dental clinics suffered from dental disease. Only a few children (12%) visited a dentist for dental check-up. This demonstrates that the habit of going to hospital for routine check-up is not deep-rooted in the population from which the children were drawn. Similar observations have been made in other studies (21, 22). Some of the reasons underlying failure to seek dental treatment have been evaluated by Wakiaga *et al.* and include fear of dentists, or dental disease not considered serious, lack of money and the notion that the problem would resolve on its own (24). These reasons may also be applicable among the population of 12-year-old children examined in Kitale.

In conclusion, large percentage of the school children engaged in daily oral hygiene practices. Majority of those children who brushed their teeth started doing so joining primary school suggesting possible parental influence in the acquisition of oral hygiene habits. Oral health knowledge was moderate. However, the utilisation of dental services was low among these children.

Recommendations: Oral health knowledge among school children should be increased and the importance of regular dental check-ups emphasised through school based oral health education programmes and parents

ACKNOWLEDGEMENTS

To thank the School of Dental Sciences and Colgate Palmolive for being part sponsors of this research. We would also like to thank Caroline Kinuthia for their valuable contribution in preparation and proof reading of this manuscript.

REFERENCES

1. Croxson, L.J. Practical periodontics. Awareness of periodontal disease-the patient. *Int. Dent. J.* 1998; **48**: 256-260.
2. Ainamo, J. Awareness of the presence of dental caries and gingival inflammation in young adult males. *Acta. Odontol. scand.* 1972; **30**: 615-619.
3. Vignarajah, S. Oral health knowledge and behaviours and barriers to dental attendance of school children and adolescents in Caribbean island of Antigna. *Int. Dent. J.* 1997; **47**: 167-172.
4. Stallard, R.E. A textbook of preventive dentistry, 3rd edition. W B Saunders: Tokyo. 1982; pp 150-155.
5. Armin, S.S. An effective programme of oral hygiene for assessment of dental caries and control of periodontal disease. *J. South. Calif. Dent. Ass.* 1967; **35**: 264-268.
6. Brandtzaeg, P. The significance of oral hygiene in the

- prevention of dental diseases. *Odontol. Tidsker.* 1964; **72**: 460-463.
7. Zoe, H., Thelaide, E. and Jensen, J. B. Experimental gingivitis in man. *J. Periodont.* 1965; **36**: 177-181.
 8. Irving Glickman: Clinical periodontology, 3rd edition. W B Saunders: *Harcourt.* 1966; pp 11-19.
 9. Kaimenyi, J.T, Wagaiyu, E.G. and Ndung'u, F.L. Efficacy of traditional chewing sticks in plaque control. A review article. *East Afr. Med. J.* 1987; **64**: 232.
 10. Jaafar, N. and Razak, I. A. Reasons for seeking dental care in Malaysian urban adult population: Analysis by sex and ethnic group. *Com. Dent. Oral Epidemiol.* 1988; **6**: 75-78.
 11. Farsi, J. M., Farghaly, M. M. and Farsi, N. Oral health knowledge, attitude and behaviour among Saudi school students in Jeddah city *J. Dent.* 2004; **32**: 47-53.
 12. Okada, M., Kawamura, M., Kaihara, Y., Matsuzaki, Y., et al. Influence of parents' oral health behaviour on oral health status of their school children: an exploratory study employing a casual modelling technique. *Int. J. Paed. Dent.* 2002; **12**: 1 01-1 06.
 13. Masanja, I. M. and Mumghamba, E. G. S. Knowledge on gingivitis and oral hygiene practices among secondary school adolescents in rural and urban Morogoro, Tanzania. *Int. J. Dent. Hygiene.* 2004; **2**: 172-178.
 14. Kaimenyi, J. T., Ndung'u, F. L., Maina, S. W. and Chindia, M. L. Oral hygiene habits and dental awareness in children 9-15 years in a peri-urban and suburban school. *East Afr. Med. J.* 1993; **70**: 67-70.
 15. Hodge, H. C., Holloway, P. J. and Bell, C. R. Factors associated with tooth brushing in Adolescents. *Br. Dent. J.* 1982; **152**: 49-52.
 16. Ministry of Health-Kenya. Kenya Demographic Health Survey: 2003. Loe, H. Oral hygiene in the prevention of caries and periodontal disease. *Int. Dent. J.* 2000; **50**: 129-139.
 17. David, J., Wang, N. J, Astrom, A.N. and Kuriakose, S. Dental caries and associated factors in 12-year-old schoolchildren in Thiruvananthapuram, Kerala, India. *Int. J. Paed. Dent.* 2005; **15**: 420-428.
 18. Honkalu, S., Honkalu, E., Runipela, A. and Vikat, A. Oral hygiene instructions and dietary sugar advice received by adolescents in 1989 and 1997. *Community Dent and Oral Epidemiol.* 2002; **30**: 124-131.
 19. Rajab, L. D., Petersen, P. E., Bakaeen, G. and Hamdan, M. A Oral health behaviour of schoolchildren and parents in Jordan. *Int. J. Paed. Dent.* 2002; **12**: 168-176.
 20. Zhu, L., Petersen, P. E., Wang, H. Y., et al. Oral health knowledge, attitudes and behaviour of children and adolescents in China. *Int. Dent J.* 2003; **53**: 289-298.
 21. Masiga, M. A Presenting chief complaints and clinical characteristics among patients attending the department of Paediatric dentistry clinic at the University of Nairobi Dental Hospital. *East Afri. Med. J.* 2005; **82**: 652-655.
 22. Masiga, M. A Sociodemographic characteristics and clinical features among patients attending a private paediatric dental clinic in Nairobi, Kenya. *East Afri. Med. J.* 2004; **81**: 577-582.
 23. Kay, E. J and Blinkham, A. J. The reasons underlying extraction of teeth in Scotland. *Brit. Dent. J.* 1986; **160**: 287-291.
 24. Wakiaga, J., Kaimenyi, J. T. and Kisumbi, B. K. Reasons underlying failure to seek dental treatment among Nairobi University students. *East Afri. Med. J.* 1996; **73**: 320-322.