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*Full Length Research Paper*

# The oral health knowledge and hygiene practices among primary school children aged 5 - 17 years in a rural area of Uasin Gishu District, Kenya

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**This paper aims at determining the oral health knowledge and oral hygiene practices among school children in the study region. This was a descriptive cross-sectional study carried out among primary school children in Kapsaret Educational division, Uasin-Gishu District, Kenya. A research administered questionnaire was used to determine the oral health knowledge and practices in a random sample of 401 students in the period March to June, 2002. 92% of the students claimed they brushed their teeth, about 48% brushed at least twice daily. More students (59.1%) reported using chewing stick compared to those using commercial toothbrushes ( $p = 0.000$ ). Female students brushed more frequently than their male counterparts ( $p = 0.000$ ,  $\chi^2 = 24.65$ ). 39.9% of the students knew the cause of tooth decay, 48.2% could state at least one method of prevention, while 16.5% knew the importance of teeth. Use of toothpaste was reported by 38.9% of the students. Less than half of the students knew the causes of tooth decay and how to prevent it. Only about half of the students brushed their teeth twice daily with the chewing stick being more frequently used. Therefore, it was recommended that there is need to increase the oral health knowledge through well planned school based oral health education programmes in the primary schools. This would hopefully lead to improvement on the oral hygiene practices.**

**Key words:** Oral health knowledge, oral hygiene practices, school children, chewing stick, Kenya.

## INTRODUCTION

Changes to positive oral health behaviour among individuals are more likely to occur when these individuals have information on the causes of dental diseases and how to prevent them. Studies have shown that provision of oral health education to school children result in improved oral health among these children (Mwangosi et al., 2007; Stella et al., 2005). The burden of oral disease is growing in many low income and middle income countries (Petersen, 2003). Generally, studies done so far in

Kenya indicate that the burden of oral disease is still low (Kaimenyi, 2004; Ng'ang'a, 2002). However, no national survey has been done in Kenya to show the true status on oral health of the population. More research is therefore necessary and moreso, especially in the rural areas (Petersen, 2003; Ministry Of Health, 2002).

The most common dental diseases-dental caries and periodontal disease-can be prevented through good oral hygiene practices and reduction in sugar consumption amongst other measures. Good oral health is essential for good nutrition and ultimately good general health. A set of healthy teeth is essential for speech, appearance and normal development of the jaws.

Dental caries and periodontitis/gingivitis can be prevented

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through good oral hygiene, regular scaling and polishing, a healthy low sugar diet and use of fluorides and dental sealants (Ng'ang'a, 2002). In order to establish community programs to prevent and treat dental health problems, it is important to know the disease status in the target population and also the knowledge and practices which are associated with the occurrence of the disease. Initially this should involve young populations in the hope that it will reduce the long term needs for treatment especially given the high curative costs of medical diseases in general and dental diseases in particular. Children constitute unique health priority groups in both developed and developing countries. Decisions about their health are normally made for them, therefore they should be targeted early in intervention programs so that they grow up with a positive attitude towards not only their dental health but also their general health.

## METHODS

### Study area

The study was carried out in Kapsaret educational division of Uasin Gishu district situated in the northern part of the Rift Valley province of Kenya. The district lies between longitudes 34° 50' and 35° 37' East and latitudes 0° 03' and 0° 55' North. It is a highland plateau with altitude between 1500 m and 2100 m above sea level. The educational division covers part of Kapsaret and Soy administrative divisions of the district. The division had 29 primary schools with a student population of 9,535 at the time of the study (Government of Kenya, Ministry of Education Records).

### Sample size and sampling technique

Given that the level of oral health knowledge among school children in this region was not known at the time of the study, an estimated prevalence of 50% was taken. A 95% confidence interval was used with a margin of error of 5%. Using standard procedure (Fisher formula) the sample size was estimated at 384 students. However, a round figure of 400 was taken so as to get equal numbers of pupils from each school. But by the end of the exercises 401 students had been seen and all were considered in the analysis. Multi-stage random sampling was used. Five schools were randomly picked from the 29 schools in the division. Using the class register, ten students were numbered 1 up to the number equivalent to the number of students in each class. The pieces of paper were folded, put in a box and then randomly picked. The students whose names corresponded to the numbers picked constituted the study subjects.

### Data collection

Consent to carry out the study was obtained from Institutional Research and Ethics Committee (IREC) of Moi University School of Medicine and Moi Teaching and Referral Hospital. Consent was also obtained from the school administration. The activity was carried out in a room provided by the school. In order to avoid interfering with the normal learning activities of the school, one student was called out of class at a time and interviewed and examined after which the student went back to class. This ensured privacy for the student. No advice was given to the students interviewed to minimize the chance of the student

passing on this information to others. However at the end of the exercises in each school an oral health education talk was given to all the students. A research administered questionnaire was used to collect data on the oral hygiene habits (frequency of brushing, timing of brushing, type of toothbrush used, use of toothpaste) and knowledge (cause of tooth decay, prevention of decay, importance of teeth). The age, gender, class and school of each study subject were recorded. Subjects were identified by numbers and not by names. English and Kiswahili were used as the medium of communication. However where the student had a problem communicating in either of the two languages, the assistance of a teacher who understood the student's vernacular language was sought. This was not a major problem and was experienced only among a few students in the lower classes. With regard to knowledge, a yes answer from a student was followed by asking the student to state the explanation. Only when the explanation given was correct was the response recorded as knowledge of oral health, otherwise it was recorded as no knowledge.

An oral education talk was given to all the students in each school at the end of the exercise. Any student with a dental problem was referred to Moi Teaching and Referral Hospital for treatment.

### Data analysis

The data was stored, processed and analysed using the SPSS program. Frequency tables and graphs were used to display results. Pearson Chi-squared tests ( $\chi^2$ ) were used to test for differences in the various parameters between age groups and between males and females. The level of significance was taken at  $p = 0.05$ .

## RESULTS

Four hundred and one students were interviewed. They consisted of 221 (55.1%) males and 180 (44.9%) females. The age ranged from 5 to 17 years with a mean of 12 years and a standard deviation of 2.87 years. A large percentage of the children (92%) claimed they brushed their teeth (Table 1). There was a significant difference in the brushing frequencies between males and females ( $p = 0.000$ ,  $\chi^2 = 24.65$ ). Females brushed more frequently than males. There was no significant difference found in the frequency of brushing between the different age groups ( $p = 0.132$ ).

Brushing after meals was reported by 86.5% (320) of the students who responded to this question. Among the 372 students who reported use of either the commercial toothbrush or the chewing stick, the use of the 'chewing' stick was reported by 59.1% (220) of the students in this category (Table 2). Use of toothpaste was reported by 38.9% (156) of the children. With regard to knowledge 39.9% (160) of the students could state at least one valid cause of tooth decay (Table 3). The reasons given included failure to brush, consumption of sweets and consumption of biscuits. Among the students 48.2% knew of at least one valid way in which tooth decay could be prevented. The ways stated included brushing ones teeth and reduction in the consumption of sweets and biscuits. A total of 66 (16.5%) of all the students could tell the importance of teeth.

**Table 1.** Frequency of brushing by gender and age group.

Category	Frequency (%)					
	Overall	Male	Female	5 - 10 years	11 - 14 years	15 - 18 years
Do not brush	8	10	5	13	6	2
Brush occasionally	15	20	8	15	15	13
Brush once a day	29	31	26	29	30	27
Brush twice daily	32	27	39	29	33	37
Brush thrice daily	16	12	22	14	16	21

**Table 2.** Distribution of timing of brushing, type of toothbrush and toothpaste used by gender and age group.

Variable	Practices					
	Timing of brushing N = 370		Type of brush N = 372		Toothpaste use N = 401	
	After meals N (%)	Before meals N (%)	Toothbrush N (%)	Chewing Stick N (%)	Yes N (%)	No N (%)
Overall	320 (86.5)	50 (13.5)	152 (40.9)	220 (59.1)	156 (38.9)	245 (61.1)
Gender						
M	170 (85.4)	29 (14.6)	82 (41.4)	116 (58.6)	83 (37.6)	138 (62.4)
F	150 (87.7)	21 (12.3)	70 (41.4)	99 (58.6)	73 (40.6)	107 (59.4)
p-value	0.41		0.001		0.54	
Age group						
5 - 10	97 (82.2)	21 (17.8)	54 (44.6)	67 (55.4)	52 (38.2)	84(61.8)
11 - 14	145(86.3)	23 (13.7)	67 (40.1)	100 (59.9)	71 (39.7)	108(60.3)
15 - 17	78 (92.9)	6 (7.1)	31 (36.9)	53 (63.1)	33 (38.4)	53(61.6)
p-value	0.09		0.524		0.961	

p-values are associated with Chi-square tests; Significance at 0.05; M = males, F = females.

The reasons given included eating, aesthetics and speech. Gender and age group specific awareness levels are shown in Table 3.

## DISCUSSION

### Oral hygiene practices

Brushing eliminates bacterial plaque and therefore contributes to preventing decay, gingivitis and periodontitis. It is therefore important for children to know the association between tooth brushing and dental diseases. Brushing at least twice daily after meals has been shown to be effective for good oral hygiene. This frequency was reported by 48% of the children, with the frequency of brushing being higher in females than males. Use of the chewing stick was higher than use of commercial toothbrushes among

the children. It has been shown in several studies that the chewing-stick is as good as the toothbrush in the maintenance of oral hygiene (Ndung'u et al., 1990; Lembarati, 2001; Kaimenyi et al., 1987; Al-otaibi, 2004). Indeed, due to the economic limitation which makes it difficult for individuals to replace toothbrushes every 3 - 4 months as recommended, most people use toothbrushes even when they are no longer effective (Lembarati, 2001). This is as opposed to the use of the chewing stick which is easily available and can be changed frequently. This practice, along with that of use of commercial toothbrushes should be encouraged in this area.

Use of toothpaste was reported by almost 40% of the students. This means that a majority of the students are missing the beneficial effects of topical fluoride which is usually contained in toothpaste. It has been shown in epidemiological studies that fluorides at optimal levels play an important role in caries prevention (Francis et al.,

**Table 3.** Knowledge by gender and age group.

Variable	Knowledge					
	Prevention N = 401		Cause of decay N = 401		Importance of teeth N = 401	
	Know N (%)	Do not know N (%)	Know N (%)	Do not know N (%)	Know N (%)	Do not know N (%)
Overall	94(48.2)	207(42.8)	160(39.9)	241(60.1)	66(16.5)	335(83.5)
Gender						
M	110 (49.8)	111 (50.2)	86 (38.9)	135 (61.1)	33 (14.9)	188 (85.4)
F	84 (46.7)	96 (53.3)	74 (40.6)	106 (59.4)	33 (18.3)	147 (81.7)
p-value	0.54		0.704		0.361	
Age group						
5 - 10	45 (33.1)	91 (66.9)	49 (36.0)	87 (64.0)	19 (14.0)	117(86)
11 - 14	93 (52.0)	86 (48.0)	74 (41.3)	105(58.7)	25 (14.0)	154(86.0)
15 - 18	56 (65.1)	30 (34.9)	36 (41.9)	50 (58.1)	22 (25.6)	64 (74.4)
p-value	0.000*		0.567		0.036*	

p-values are associated to Chi-square tests; \* = Significant at 0.05; F = females; M = males.

2006). Fluoride has the capability to reduce enamel solubility in acid and has further anti-caries property through its effects on plaque organisms (Francis et al., 2006). On the other hand the cost of toothpaste may be prohibitive to most families and especially in our set up where the family unit is large and the economy is poor. In view of the changing lifestyles to more westernised versions associated with high intake of sugar, the role of fluorides as a community preventive measure need to be emphasised. However more studies need to be undertaken to find out the levels of fluorides in our drinking water supplies and in the various foodstuffs eaten and on the best ways of making toothpaste and other forms of topical fluoride affordable.

### Oral health knowledge

There was generally poor knowledge about the causes and prevention of dental caries with only 40% of the children mentioning at least one valid predisposing factor to tooth decay. A slightly higher percentage of the students knew how to prevent tooth decay where avoidance of the cariogenic foodstuffs and good oral hygiene were mentioned. There were no significant differences in the levels of this knowledge between males and females but there was a significant difference between the different age groups ( $p = 0.000$ ; Table 3). Only 16.5% of the children had some knowledge on the importance of teeth. An understanding of the importance of teeth and the cause of dental diseases by an individual is an important precursor to understanding how to prevent the problem. There is need to improve the awareness levels among these children through school based education

programmes. This could be done not only through regular educational talks by oral health personnel but also by training teachers as oral health educators. Studies have shown success in the use of school teachers as oral health educators in terms of improved oral health among school children (Mwangosi et al., 2007; Stella et al., 2005). Proper integration of relevant oral health educational information in the primary school curriculum may be one of the aspects which can be looked into.

### REFERENCES

- Al-otaibi M (2004). The miswak (chewing stick) and oral health. Studies on oral hygiene practices of urban Saudi Arabians. Swed. Dent. J. suppl., 167: 2-75
- Francis A, Arnold Jr, Trendley H, Dean P, Jay J, Knutson W (2006). Effect of fluoridated Public water supplies on dental caries prevalence. Bull World Health Organ. 84(9): 761–764.
- Kaimenyi JT (2004). Oral health in Kenya. Inter. Dental J., 54: 378-382
- Kaimenyi JT, Wagaiyu EG, Ndungu FL (1987). A review article: Efficiency of traditional chewing sticks in plaque control. East Afr. Med. J., 64: 624-626
- Lembarati BS (2001). Challenges of plaque control in the millennium. Afr. J. Oral. Health Sci., 3: 55-58
- Ministry of Health, Government of Kenya (2002). Kenya national oral health strategic Plan.
- Mwangosi AT, Nyandidi U, Matee M (2000). Participation of primary school teachers in oral health education in Rungwe district-Tanzania. East Afr.med. J., 78: 662-665. (Kindly cite the correct year).
- Ndung'u FL, Kaimenyi JT, Arneberg P, Muthami LN (1990). A comparative study of the efficacy of plaque control by a chewing stick and toothbrush. East Afr. Med. J., 67: 907-911
- Ng'ang'a PM (2002). An overview of epidemiological and related studies undertaken on common dental diseases and conditions in Kenya between 1980 -2000. Afr. J. Oral Health Sci., 3: 103-110
- Petersen PE (2008). Global policy for improvement of oral health in the 21<sup>st</sup> century-implications to oral health research of World Health

Assembly 2007, World Health organization. Community Dent Oral epidemiol. 37(1): 1-8. **(Kindly cite the correct year)**.  
Stella YL, Poul EK, Cynthia MP, Annerosa B (2005). Health promoting schools; an opportunity for oral health promotion. Bull. World Health Organ., 9: 641-720

**Kindly cite the correct year**