

*Full Length Research Paper*

## The magnitude of tooth bud extraction in Uganda

J. F. Tirwomwe<sup>1</sup>, E. Agwu<sup>2\*</sup> and M. Ssamula<sup>3</sup>

<sup>1</sup>Department of Dentistry, Faculty of Clinical Sciences, School of Health Sciences, Kampala International University, Western Campus, P. O. Box 71, Bushenyi, Uganda.

<sup>2</sup>Tropical Disease Research Unit, Department of Medical Microbiology, Faculty of Biomedical Sciences, School of Health Sciences, Kampala International University, Western Campus, P. O. Box 71, Bushenyi, Uganda.

<sup>3</sup>Department of Social Services, Makerere University, Kampala Uganda.

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Uganda traditional healers consider that extraction of un-erupted deciduous canines cures childhood diarrhea, vomiting and fever. This study was therefore designed to establish tooth bud extraction (TBE) practice and determine the prevalence of missing deciduous teeth due to TBE in Uganda. Purposive multistage sampling was used to get a total of 1,121 children (<36 months), who were clinically examined. Interviews of identified parents, traditional healers, elders and health workers were conducted using questionnaires. Results were analyzed using epi-info version 5. TBE was found in 29.3% of the children. This was the highest among Nilotics (45.5%) and the lowest among Bantus (22.3%). It differed significantly across the six districts ( $p$ -value < 0.01). The mean number of affected teeth per child was 3.8, and 99.4% of these were canines. TBE was higher in children staying with guardians as compared to those staying with parents ( $p$ <0.01). Children from rural areas were more affected (33.8%) than those in the urban areas (23.9%). The operation was carried out by traditional healers using crude and unsterile instruments without anesthesia. TBE was the highest in the north and the lowest in the south, supporting the suggestion that it spread from Northern Uganda Southwards. TBE in Uganda is a real health problem that needs further investigation and appropriate intervention.

**Key words:** Tooth, bud, extraction, traditional healer.

### INTRODUCTION

Tooth bud extraction (TBE) by traditional healers has been reported in different parts of Uganda and Tanzania for over forty years (Pindborg, 1966; Tirwomwe and Ekoku, 1987; Raikes, 1988; Mosha, 1983; Hiza and Kikwilu, 1992). Traditional healers, in their attempts to find the causes of diarrhoeal diseases and fevers in child population, found prominencies in the areas corresponding to unerupted deciduous canines. Underneath these prominencies are developing tooth buds. The traditional healers consider these prominences abnormal

and were incriminated as the causes of diarrhea, vomiting and fever in children. They therefore, thought that extraction of these tooth buds would cure these childhood diseases.

Mothers in Uganda, have commonly noticed that soon after birth or at the earliest sign of ill-health, there is a swellings on the gums, commonly seen at the canine sites in both jaws. The baby is thus taken to "Traditional Healers", for treatment which in most cases involves the crude extraction of the tooth bud. In Uganda, the

\*Corresponding author. E-mail: [agwuezera@yahoo.com](mailto:agwuezera@yahoo.com) or [agwuezera@gmail.com](mailto:agwuezera@gmail.com). Tel: +256782101486 or +256703129679.

extracted tooth buds are commonly referred to as “false teeth”, “ebinyo”, “telek”, etc., depending on the ethnic locality.

The magnitude of the problem is not precisely known, but isolated and scanty information available shows its existence in both Uganda and Tanzania. The study in the then four Uganda districts (Pindborg, 1969) revealed that 16.1% of the Acholi tribe had abnormal dental conditions related to the ritual extraction of the primary canines. The Uganda National Oral Health Survey results (Tirwomwe and Ekoku, 1987) showed that some teeth in children aged 6 years had been lost due to “ethnic reasons” which could be attributed to TBE. The survey on “ Social Aspects of Oral Health in context of Primary Health Care in Uganda (Raikes, 1988) revealed that 95.1% of the respondents had heard of “false teeth” but 89.1% did not know what caused this condition. In Tanzania, reports about cases of TBE in Arusha (Moshia, 1983) have been recorded. Reports of missing teeth due to “nylon teeth” extraction in Tanzanian Children (Matee and Van Palenstein, 1991) revealed prevalence with a weighted mean of 9.5%. Canines were the most involved teeth, accounting for 95% of all the missing teeth. It is clear that the magnitude of this harmful belief and practice of TBE in Ugandan children is not well known. This study was therefore designed to determine the prevalence of missing deciduous teeth due to TBE practice by district, ethnicity, sex, age, jaw and tooth bud type; identify and describe the TBE practice itself and establish the consequences of the practice on the dental health of the victim.

## METHODOLOGY

The sampling methodology differed according to the specific objectives: for purposes of achieving objective one, and a purposive multi-stage sampling technique was used to select households with children under the age of 36 months.

### Sample size

Using the formula for descriptive studies, the estimated minimum sample size was 186 children aged 36 months and below for each district. A total of 1,121 children were identified and included in the 6 study districts of Arua (200), Gulu (69), Kabale (205) Kampala (204), Masindi (202) and Mbale (241).

### Sample selection

In the first stage, purposive sampling was done to identify six districts out of the then thirty eight districts of Uganda. Based on the 1987 National Oral Health Survey report which revealed TBE practices, and ensuring that each of the social-cultural and geographic regions in Uganda were represented by at least one district, Kampala, Kabale, Mbale, Masindi, Gulu and Arua were included in the study.

In the second stage, four sub-counties were randomly selected

from each of the five districts except Kampala where four parishes were selected. The deviation from sub-county to parish choice was due to high density of the population in Kampala. A parish is smaller than a sub-county in area but the population size in a Kampala parish is estimated to be close to the population size in a sub-county in other districts.

In the third stage, specific villages were selected on the basis of verbal reports of TBE in the area by the civic and political leaders, health workers and traditional healers in each district. In Kampala, a list of households and their family members was obtained from the Chairman of a Local Council 1 (LC1) in the study parish. The LC1 chairman’s residence was used as starting point. The households were numbered from one to infinite. A coin was used to determine a factor which was added to the numerical list of house hold to obtain the final house hold for inclusion in the study.

In the other five districts, the use of comprehensive household lists was not possible due to large surface areas to be covered. Using the LC1 chairman’s residence as a starting point, the direction with the highest concentration of homesteads was selected. Children of age 36 months and below were identified among all selected. Children included in this study were diagnosed with diarrhoeal diseases, fevers in the child population, and with unerupted deciduous canines.

### Mouth examination

If the visited house hold had a child below 36 months, consent to have the child clinically examined was sought from the parent/guardian. The clinical examination was by direct inspection of the oral cavity using natural light and a mouth mirror to retract the lips and cheeks. These clinical examinations were carried out by two previously trained and calibrated dental surgeons. The clinical diagnostic criteria used were: Score 0 = Normal; Score 1 = Missing deciduous tooth due to TBE; (clinically observed on the position where a given tooth is supposedly to have erupted or is erupting in a child younger than twenty months; and/or tooth which is not seen in oral cavity in a child older than twenty months. In both cases, this was accompanied by confirmation from parent of the child that the child was a victim of the practice); Score 2 = As in score 1 but not confirmed by the parent/guardian; Score 3 = Tooth malformed/malpositioned as a consequence of TBE; Score 4 = incising/scratching of gum; Score 5 = incising/scratching of gum and rubbing in herbs.

The interviews were conducted by previously trained student interviewers from the Department of Social Sciences at Makerere University, Kampala Uganda. Consent to interview of parent/guardian whose child was found affected was obtained. The interview was done using the questionnaire for parents. The parents interviewed were mostly mothers because the fathers were not available at the household site. The local councilors, health workers and local leaders were consulted in identifying the traditional healers in the area. The residences of the identified traditional healers were then visited. Consent to interview them was obtained and those that consenting were interviewed using the structured and pre-tested questionnaire for traditional healers. Local councilors were consulted to identify the village leaders and those identified were then visited. Consent to interview them was obtained and those consenting were interviewed using questionnaire. The health workers were found in government and private health units, clinics and drug shops. Their consent to be interviewed was obtained and those that consented were given a self-administered questionnaire which was left with them for completion. The duly completed questionnaire was collected later.

Clinical data and responses from health workers, elders, traditional healers, and parents were recorded. The developed data

**Table 1.** General characteristics of the examined children

Variable	Number examined	Sex	
		Male	Female
<b>District</b>			
Arua	200	118	82
Gulu	68	32	36
Kabale	104	96	108
Kampala	204	111	93
Masindi	202	91	111
Mbale	239	122	117
<b>Ethnicity</b>			
Bantu	751	367	384
Nilotics	134	82	52
Nilo-Hamites	201	113	88
<b>Locality</b>			
Rural	523	290	233
Urban	590	276	314
<b>Age (Months)</b>			
1-10	334	162	172
11-20	279	154	125
21+	491	249	242

**Table 2.** Common diseases among children by category of respondent

Disease	Category of respondent			
	Health worker (%)	Traditional healer (%)	Elders (%)	Parents (%)
Diarrhoea	88.4	78.8	58.2	60.4
Measles	47.0	40.0	33.4	24.3
Whooping Cough	19.0	31.8	45.5	48.6
Malaria	89.9	74.1	82.7	76.4
False teeth	28.4	83.5	43.9	27.5

capture screens in dbase III+ were used to enter the data. Frequencies and cross-tabulations of key variables were done using epiinfo version 5.

## RESULTS

A total of 1,121 children drawn from the districts of Arua (200), Gulu (69), Kabale (205), Kampala (204), Masindi (202) and Mbale (241) were examined (Table 1). A total of 354 parents, 440 elders, 270 health workers, and 85 traditional healers were interviewed (Table 2). Experience of TBE was found in 328 (29.3%) of the children. From Table 3, the prevalence of TBE in children was the highest in districts Gulu (55.1%), Arua (41.0%), and Masindi (36.1%). In the other study districts, the preva-

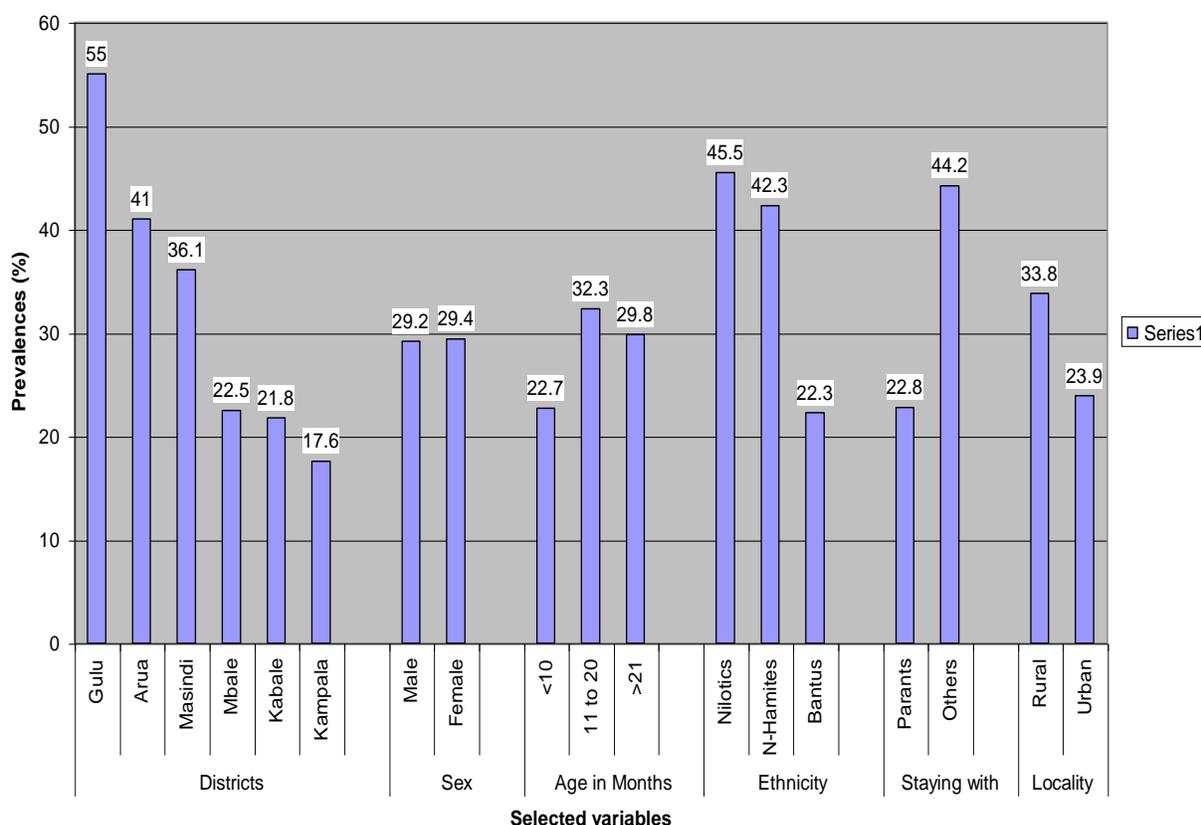
lence of TBE practice was 22.5% in Mbale, 21.8% in Kabale and 17.6% in Kampala (Figure 1). This shows that the prevalence of the practice of TBE differed significantly across the six districts ( $p$ -value < 0.01).

The number of affected teeth per child with TBE experience ranged from 2 to 6 with a mean of 3.84. Over 90% of the cases had at least four affected teeth due to TBE practice. Overall, the canine was found affected by the TBE practice in 99.4% of the affected children. Both jaws were equally affected by the TBE practice and there was no difference between the sides of the jaws.

The prevalence of TBE practice was 45.5% among Nilotics, 42.3% among Nilo-Hamites and 22.3% among Bantus (Figure 1). Further analysis shows that the practice of TBE is more than twice more prevalent among

**Table 3.** Summary of study subjects by district.

District	Category of respondent				
	Children	Parents	Elders	Health workers	Traditional healers
Arua	200	89	63	56	11
Gulu	69	43	3	2	45
Kabale	206	50	102	58	4
Kampala	204	49	42	42	15
Masindi	204	82	98	56	3
Mbale	240	81	132	56	7
Total	1121	354	440	270	85



**Figure 1.** Pravalence of tooth bud extraction practices by selected variables

the non-Bantu than among the Bantus (Odds ratio = 0.38,  $p < 0.01$ ). TBE practice was found in 44.2% of the children staying with guardians and 28.7% of the children staying with at least one of the parents. The prevalence of TBE practice was higher in children staying with guardians than in the other children ( $p < 0.01$ ).

The TBE experience was found in 35.7% of the children whose parents were peasants. This prevalence was higher than in children whose parents were engaged in other occupations (22.8%). Children staying in the rural

areas (33.8%) were more affected by the TBE practice than those in the urban areas (23.9%). Affected children in the rural were also found to have more teeth affected by the TBE practice than their urban counterparts.

The practice involves the crude and brutal extraction of mainly the canine tooth buds. The operation was carried out by known traditional healers in the villages. The parent identifies the false teeth by the presence of the associated conditions of diarrhea, fever, and vomiting in the child. The parent who highly believes that these false

teeth cannot be treated by health workers takes the affected child to the traditional healer.

Crude extraction of the tooth bud was done by 95.7% of the traditional healers at their residence and 28.6% used sharp pointed chisels, 26.2% used sharp bicycle spokes, 19.0% used razor blades, and sharp pointed nails, respectively while 4.8% used locally made clippers/tongs. During TBE, the traditional healers were assisted by 75.0% of the patient's parents in holding the affected child. Only 29.8% of the TBE practitioners mentioned having sterilized their instruments by boiling prior to use. Of these traditional healers, 11.9% admitted having had complications such as excessive bleeding, infection of the gum and jaw bone following false teeth extraction. About 67.9% of the traditional healers claim to have ever referred false teeth patients to health units. About 81.0% of them claimed that they followed up false teeth cases after treatment.

## DISCUSSION

Overall, the prevalence of TBE practice was high at 29.3% among the studied population in this region. The prevalence of TBE practice differed significantly across the six districts ( $p < 0.01$ ). The 29.3% prevalence is higher than the 9.5% reported (Matee and Van Palenstein, 1991) in Tanzania, lower than 87% reported in rural Kenya (Hassanali et al., 1995). The TBE prevalence of 55.1% in Gulu district is higher than the old study report of 16.1% by Pindborg (1969). It is similar to another 31.4% reported by Kikwilu and Hiza (1997) in Tanzania. The significant (intra-country) variation in TBE practice underscores the strength of socio-demographic, socio-economic and cultural dynamics of TBE practice in East-African region. This observation needs effective intervention to be quickly developed and implemented to optimize the uptake of healthcare delivery services available at various health centers and hospitals nationwide.

The TBE practice was found more prevalent among the Nilotics (45.5%) and Nilo-Hamites (42.5%) than among the Bantus (22.3%). This trend across the ethnicity variable is similar to that reported in by Pindborg (1969). These findings tend to support the suggestion that the TBE practice originated from Southern Sudan and spread southwards to the northern districts of Uganda and eventually to southern districts of Uganda. This is further supported by the fact that 72.9% of the traditional healers were of Nilotics and Nilo-Hamite ethnicity.

The mean number of affected tooth buds was higher ( $3.93 \pm 0.48$ ) in the affected rural children than in the affected urban children. The prevalence of the TBE practice was higher in children staying with guardians (44.2%) than among those staying with at least one of the parents (28.2%). The number of teeth affected by the

practice per child is high ranging from 2 to 6 teeth with a mean of  $3.84 \pm 0.61$ . Over 90% of the cases had at least four of their teeth affected by the TBE practice. Overall, the canine was found affected in 99.4% of the cases. This figure is similar to 95.0% affected canine reported in Tanzanian children (Matee and van Palenstein, 1991), and higher than 72% reported in rural Kenya (Hassanali et al., 1995; Paul et al., 2008). Risks for children who undergo these procedures are extensive, including septicaemia, potential for HIV transmission, numerous dental complications and death (Johnston and Riordan, 2005).

Almost everybody interviewed had ever heard about false teeth: health workers (98.5%) and elders (97.3%). Of the health workers, 74.4% had ever had at least a case of false teeth in their practice. Almost all the parents (97.2%) claimed to have noticed improvement in the health status of the child after treatment by the traditional healer. This is higher than the 65.0% previously reported (Welbury et al., 1993) among Sudanese mothers.

The traditional healer uses crude and unsterilised instruments to extract false teeth. This may lead to the TBE complications and it is not surprising that the health worker receives patients with these complications such as infection of the gum/bone, excessive bleeding, fever and tetanus-like conditions.

Conclusively, the TBE practice is generally high, being the highest in the north and the lowest in the southern part of Uganda. The TBE in Uganda is a real health problem that needs further investigation and appropriate intervention that may bring about changes in people's attitudes and behaviour regarding TBE.

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