COMMUNITY PERCEPTIONS ON THE PRACTICE OF NYLON TEETH EXTRACTION (GUM MUTILATION) AND FACTORS ASSOCIATED WITH ITS CONTINUITY IN SERENGETI DISTRICT – MARA REGION, TANZANIA

By

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A dissertation submitted in partial fulfillment of the requirements for the degree of master of public health of the University of Dar es salaam.

University of Dar es salaam

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CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance by the University of Dar es salaam a dissertation entitled *Community perceptions on the practice of nylon teeth extraction (Gum mutilation) and factors associated with its continuity in Serengeti district – Mara region, Tanzania,* in partial fulfilment of the requirements for the degree of Master of Public Health of the University of Dar es salaam.

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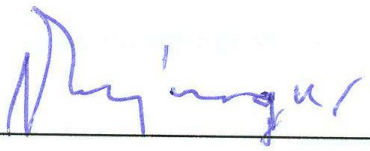
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DEDICATION

This work is dedicated to my parents, the late Mr. Masau Mujungu and the late Mrs. Nyatanda Bernice Masau. May the Lord rest their souls in eternal peace, Amen!

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ABSTRACT

A Cross-sectional descriptive study was conducted in Serengeti district Mara region in June 2003. It involved interviewing 285 selected mothers and/guardians of children aged 0-24 months in order to get insights into the subject of investigation.

The main objective was to explore local people's perceptions and associated factors on the practice of nylon teeth extraction with a view of eliciting information that may influence the design of appropriate intervention measures so as to effect changes against the persistence of the cultural practice, which has negative impact on health. Field data collection was conducted in Serengeti, Mara region, Tanzania where through anecdotal reports it is rampant. Data was analyzed using the Epi –info statistical package. The prevalence of tooth bud extraction among children 0 – 24 months was found to be 64.9% (The actual figure is expected to be higher than this in the absence of the study limitations encountered).

Cure of ill-health conditions associated with infancy was perceived by most of the respondents, 93.7% as a reason for tooth bud extraction responsible for the existence of the practice and that tooth bud extraction is the only way of rescuing children's lives. Persistence of the practice is based on this strong constructed cultural belief.

The study leads to the following recommendations: Parents/guardians should be encouraged to send their children in ill-health conditions to any health facility where it will be determined whether it is really the teething process or an illness and treatment given. There is need to ensure that health services are available to the community.

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LIST OF ACRONYMS

DDH	-	Designated District Hospital
DMO	-	District Medical Officer
HF	-	Health Facility
HTP	-	Harmful Traditional Practices
IPH	-	Institute of Public Health
MPH	-	Master of Public Health
MUCHS	-	Muhimbili University College of Health Sciences
PI	-	Principal Investigator

DEFINITION OF TERMINOLOGIES USED

Tooth bud - Immature and incompletely mineralized primary tooth germ which, is milky whitish and with varying degrees of flexibility.

Nylon teeth - These are follicles or tooth buds which are future Primary teeth or permanent teeth but perceived by local communities as nylon teeth due to their physical appearance which is whitish and with some degree of flexibility.

Gum mutilation - An injury to, or destruction or disfigure by damaging of the gums (gingiva) during an attempt of tooth bud extraction by local tooth bud extractors or by traditional healers.

CHAPTER 1.0

INTRODUCTION

Each Community has its own beliefs, behaviours and attitudes that govern their traditional practices. These may be perceived as beneficial for those who practice them. However, some of the cultural practices may impact negatively or positively to human health and development. Regarding the negative aspects there are cultural practices that raise concern to Health Professionals due to the dangers associated with them. For example the cultural practice of tooth bud extraction. Tooth bud extraction is among the practices that have been noted to exist in different parts of Africa including Uganda (Pindborg, 1969), Sudan (Rassmusen et al., 1992), Kenya (Hassanali et al., 1995). In Tanzania it has been documented and reported to exist in several regions including Arusha, Tanga, Dodoma, Singida, Kilimanjaro, Morogoro (Matee et al., 1991), and Kagera (Kikwilu et al., 1997). Teething process in children is perceived in some cultures to be associated with fevers and / or diarrhoea, irritability, and night crying (Barlow et al., 2002).

Some traditional healers have been reported to associate this condition in infants with gingival swellings overlying developing teeth (Kikwilu; Hiza, 1997). In Medical scientific knowledge there is no nylon tooth; but when the tooth buds are extracted they exhibit a milky appearance and have varying degrees of flexibility, these consequently have been called "Nylon teeth"; locally known as **"Meno ya nailon" "Meno ya plastiki" or "Ibino"** (Kikwilu; Hiza, 1997). Several communities in Tanzania believe in this practice. Thus extracting tooth buds has varied health consequences, which

include terrible suffering by children from pain, denial of having correct treatment for their illnesses, and sometimes death from either uncontrolled bleeding or sepsis (Kikwilu; Hiza, 1997). In some occasions, individual victims of this practice suffer from permanent complications/deformities which may include non teething of the permanent teeth thus presenting with missing teeth and or deformed dentition which may further lead into an abnormal development of jaws (often evident with the lower jaw) commonly referred to as **malocclusion.** Thus the practice has detrimental effects to both health and rights.

A study on missing primary teeth due to tooth bud extraction carried out in a remote village, Manghweta village, situated in the central part of Tanzania in Mpwapwa District Dodoma, showed that the practice of tooth bud extraction had a prevalence of 2.8% among children of an age of 0 -12 months and 60.3 % among children of an age of 13-24 months (Hiza et al., 1992). However, it appears there are no similar studies, which have been carried out in Serengeti district – Mara Region, an area where the cultural practice is from anecdotal evidence reported to be widely practised.

CHAPTER 2.0

2.1. STATEMENT OF THE PROBLEM

It has been observed and documented that tooth buds extraction has been practised in different parts in Africa especially Uganda, Sudan and Tanzania. In Tanzania it has been reported to be practised in different regions and communities to an extent of drawing up Public health interest because of the health consequences associated with it and which have been frequently reported by health professionals. These include serious life threatening complications, which may quite often be fatal like: - deaths from uncontrolled bleeding, sepsis and occasionally Tetanus; all featuring as health issues. Over and above there are issues of human rights violation under which falls:-

i) Subjecting an individual/s to unnecessary pain and other complications since this procedure is performed using crude instruments and inappropriate methods without anaesthesia.

ii) The denial of human rights as the tooth buds are removed without individuals consent

iii) The denial to an individual/subject of having the right treatment for his true/actual illness.

Empirical evidence of the magnitude of this problem nationally is scanty. This study therefore sought to investigate the extent and pattern of tooth bud extraction and its associated cultural factors.

2.2. Research Question: -Why is tooth bud (Nylon teeth) extraction common and persistently practised in Serengeti district despite reported negative impact on health by health professionals?

CHAPTER 3.0

RATIONALE

Tooth bud extraction has a long history and is reported to be widely practised in various parts of Africa. The social and cultural factors that influence the practice are not adequately documented in specific social cultural settings. Thus a study to gain an understanding into the factors linked to this practice in particular communities was important in order to identify the areas that might require interventions. This study therefore aimed at investigating the possible cultural belief systems responsible for the continuation of the practice.

The following national documents (National Population Policy, National Reproductive and Child Health Communication Strategy, 2001-2005) are all concerned with the eradication of harmful traditional practices (HTP) including gum mutilation. Findings from this study could assist policy formulators and implementers in designing appropriate interventions.

CHAPTER 4.0

OBJECTIVES OF THE STUDY

4.1. Broad Objective

To explore local peoples perceptions and associated factors on tooth buds extraction practice with a view of eliciting information that may influence the design of appropriate intervention measures against the practice in Serengeti area.

4.2. Specific Objectives

The following were the specific objectives of the study:-

1. To determine the extent of tooth bud extraction practice in children 0-24 months.
2. To investigate the characteristics of households where tooth bud extraction has been conducted.
3. To identify social and cultural factors influencing tooth bud extraction.

CHAPTER 5.0

LITERATURE REVIEW

The practice of extracting tooth buds/Nylon teeth by traditional healers has been known to exist in Tanzania and Uganda for many years (Kikwilu et al., 1997). When tooth buds are extracted, they exhibit a milky appearance and have varying degrees of flexibility, and have subsequently been called nylon teeth **("Meno ya nailoni")** or plastic teeth **("meno ya plastiki" or "Ibino")** (Kikwilu et al., 1997). Several Tanzanian communities believe that these teeth can cause fever, general body malaise and diarrhoea, and eventually death if such teeth are not removed (Matee et al., 1991). This belief is not only limited to some Tanzanian communities but rather widespread. For example in parts of Sudan, teething is thought to be the cause of severe health problems in infants, and a traditional treatment involves lancing of the alveolar process over the unerupted canines with a heated needle, a procedure known as "haifat" (Rassmusen et al., 1992). From Sudan it has been reported that primary teeth are looked at as a cause of disease and death even while still lying deeply in the jaws. Thus, a traditional treatment practised in Southern Sudan, named "lugbara" is used for children having diarrhoea, vomiting or fever (Rassmusen et al in Baba and Kay, ed.1992). The unerupted primary canines are held responsible for such diseases and these tooth buds are therefore removed by native practitioners using razor blades, sharpened nails, bicycle spokes or their own fingernails. (A/Wahab, 1987) documents that infants with diarrhoea and vomiting admitted to Sabbah Children's Hospital emergency department had their

canine milk teeth been incriminated as being the cause of the disease and hence extracted. The extraction was widely practised among the illiterates and those who had junior education and above (A/Wahab, 1987).

Similarly (Baba and Kay, 1989) documents that in Southern Sudan is a commonly held belief that the unerupted deciduous canine tooth is injurious to the health of infants and it causes diarrhoeal diseases. The teeth are therefore often removed by tooth extractors in an attempt to alleviate the symptoms of these dangerous diseases. The practice of nylon tooth extraction was also found to exist in Uganda as in 1966, 43% of children 0 – 9 years from the Acholi tribe had missing primary canines due to the practice (Matee et al in Pindborg, ed.1991).

During the 18th century almost half of all deaths in infancy in France were ascribed to teething problems (Rassmusen et al., 1992). In Kenya, among the Kenyan rural Maasai there exists a strong belief that diarrhoea, vomiting and other febrile illnesses of early child hood are caused by gingival swelling over the canine region, and which is thought to contain "worms' or "Nylon teeth" (Hasanali et al., 1995).

However, the milk teeth above (nylon or plastic teeth) incriminated as being the cause of disease and which sets as a base of all the above perceptions, presents immature and incompletely mineralized primary teeth germs, which are plastic in physical character (Matee et al., 1991). In medical scientific knowledge there is no nylon or plastic teeth existing. It is documented (Mosha, 1983) that the term Nylon teeth was invented by local doctors but it represents tooth follicles, which are future primary canines. When

conducting this practice there is life threatening health effects associated with it. Documentation on the above has revealed both immediate, intermediate and long-term health problems. Immediate ones include severe pain and bleeding, shock from the gums of children who become victims of the practice; the intermediate group includes sepsis and occasionally Tetanus and missing primary teeth. Long-term complications are associated with missing and malformed permanent teeth (Matee et al., 1991, Kikwilu et al., 1997).

Commonest diseases affecting children like malaria, upper respiratory tract infections, gastrointestinal tract infections usually present with symptoms of fever, general body malaise and diarhoea. All having their causes linked with different environmental conditions but often confused with the perception of teething associated symptoms. A basis on which the affected children are denied having correct treatment of their illnesses, hence social construction of diseases and unnecessary loss of lives (Leshabari, 2003). This is in accordance with a belief that, becoming ill is a social process, which involves people other than the patient. In each culture there are factors, which determine which symptoms or signs are perceived as abnormal and also influence diffuse emotional and physical changes into a pattern, which is recognized by both the patient and those around him. It is too in accordance with folk illnesses which, refers to a syndrome which members of a particular group claim to suffer and from which their culture provides the cause, diagnosis, preventable measures and regimens of healing (Leshabari, 2003). All in all, it is worth mentioning that little has been researched on this area and scanty literature on the subject is available.

CHAPTER 6.0

METHODOLOGY

6.1. Study area.

The study was conducted in Serengeti district; which is one of the 5 districts in Mara region, Northern part of Tanzania. It consists of 4 divisions, 18 wards and 76 villages. It has a population of 176,609 people; of these 84,263 are males and 92,346 are females and a total number of 31,213 households with an average size of 5.7 (Bureau of statistics, Planning Commission, 2003,Tanzania National census report, 2002).

Administratively the district is subdivided into 4 divisions and 18 wards. The population composition within the district indicates that there are three different tribes namely the **wakurya**, the **wanata** and the **waisenye.** These are mainly cattle herders and peasants/farmers. The subsistence crops grown are millet, finger millet, cassava and maize while cotton is the cash crop. Their main types of foods are milk, meat and stiff porridge (**locally known as "Ugali").** Majority of Serengeti people follow their traditions, religious beliefs and practices; some are Christians or Muslems. The practice of nylon teeth extraction is practised by people irrespective of their religious background.

6.2. Target population.

The focus of the study investigation was on mothers of children aged between 0 – 24 months, which includes the teething age. Mothers or in their absence, guardians of children were interviewed on behalf of the children, as it is impossible to interview individuals in this age group. Guardians were either females or males. This was an ideal age range involving teething age, which covers even the teething for canines as it usually delays to between 13-24 months.

6.3. Study design.

The study was cross sectional descriptive.

6.4. Sample size determination.

Sample size, n, was estimated using a formula

$$n = \frac{4p(100 - p)}{e^2}$$

Where p = estimated prevalence of tooth bud extraction among children aged 0 - 24 months (taken to be 63%)

n = the desired sample.

e = margin of error on p (taken to be 6%).

$$n = \frac{4p(100 - p)}{e^2}$$

$$\frac{4 \times 63\ (100 - 63)}{36} = 259$$

Assumed that 10% of the study population could not respond then there was need to increase sample size to 285.The sample size used covered 285 mothers and guardians of children aged 0 – 24 months.

6.5. Types of research instruments used.

(i). Interviews.

Semi structured questionnaire- an ideal tool for gathering information when interviewing a community with low literacy levels.

6.6. Sampling techniques (Quantitative data)

Multistage cluster sampling technique was used.

The Serengeti district has 4 divisions and 18 wards. In the first stage one division was selected from the four by simple random sampling. In the second stage, a list of wards in the first stage sample (the division) was obtained from which three (3) were randomly selected using simple random sampling. In the third stage, lists of all villages from each ward were obtained. Machochwe has five villages, Mugumu mjini has four and Nyamoko has five villages too; from which six (6) villages, two from each ward were also selected randomly through the same sampling method above. In the fourth stage for each village a list of households was obtained from which mothers/guardians of children aged 0-24 months were randomly selected and informed of the interview and their informed consent elicited for participation. Interviews were conducted in **"Kiswahili"** language.

In households of more than one wife (as majority were polygamous) a fifth stage of random sampling was employed to get a respondent for interview. In each ward one village had one more respondent than the other; the selection of this particular village was effected by tossing a coin in getting which village should include this one more respondent.

6.7. Data collection procedures

1. Questionnaire: -

Quantitative data was collected using structured interviews, which had both open-ended and closed-ended questions. The questions intended to elicit information on individual background, characteristics of households where teeth extraction has been practised, extent of tooth bud extraction practice, social and cultural factors linked to nylon teeth extraction and attitudes to the practice. The PI was assisted by trained research assistants. Schedules were worked out for data collection and supervision.

Pre-testing.

A pre-testing of research instrument was done: - questionnaire, this was carried prior to interviewing process for a purpose of checking for appropriateness.

6.8. Recruitment, training and supervision of personnel.

Two research assistants (Public health nurse B, Health officer) were identified for the study data collection. They were health workers at the DDH (Designated district hospital) for Serengeti district. They were trained for 3 days on the study objectives and administration of questionnaires. After training they conducted the interviews under the supervision of the principal investigator.

6.9. Data analysis.

Quantitative data.

Before data entry in the computer closed responses were checked for completeness, cleaned, and coded after which entry was done using EPI – INFO package. Open ended responses were first categorised before being entered into the computer for analysis

6.10. Ethical considerations.

Ethical clearance was sought from Muhimbili University College of Health Sciences (MUCHS) and the Serengeti district administration. The village administration was clearly told of the study and data collection. Confidentiality was maintained by conducting the interview in privacy, the trained research assistants were required to remain non-judgemental to whatever they listened to or to any reaction/s of the respondents.

6.11. Limitations of the study.

Three weeks prior to the study there was a campaign against tooth bud (plastic teeth) extraction among children, to all divisions in the district launched by the District commissioner, DMO, and other district authorities. This had a strong negative impact on openness of respondents.

Some respondents did not open up due to cultural influences.

Findings from this study may not reflect the pattern of other communities elsewhere.

CHAPTER 7.0.

RESULTS

This section consists of the results elicited through structured interviews. The sample covered comprised of 285 mothers and or guardians of children aged between 0-24 months. The guardians were either females or males. All respondents were from six different villages, which belonged to three wards namely Machochwe ward (Nyamakendo and Merenga villages), Mugumu mjini ward (Kegonga and Matare villages), and Nyamoko ward (Masangura and Kwitete villages). All three wards fall under one division Rogoro in Serengeti District.

Table 1: Areas of research and distribution of respondents.

Village	**No**	**%**
Kegonga	48	16.8
Matare	47	16.5
Masangura	48	16.8
Kwitete	47	16.5
Merenga	48	16.8
Nyamakendo	47	16.5
Total	**285**	**100**

The characteristics of the respondents are shown in table 2. There were more females than males. Protestants were the dominant Christian group.

Of all respondents, 25.3% had no formal education, 12.6% had incomplete primary school education, 56.1% had primary school education and 6.0% had above primary school education.

From the table it is shown that distribution of respondents in age groups 15-24 years were 103 (36.1%), 25-34 years were 121 (42.5%), 35-44 years were 45 (15.8%), 45-54 years were 10 (3.5%) and from an age group of 55 years and above were 6 (2.2%).

Table 2: Socio-Demographic characteristics of respondents.

Age in years	**No**	**%**
15- 24	103	36.1
25 – 34	121	42.5
35 – 44	45	15.8
45 – 54	10	3.5
55+	6	2.1
Total	**285**	**100.0**
Sex	**No**	**%**
Male	48	16.8
Female	237	83.2
Total	**285**	**100.0**
Marital status	**No**	**%**
Married	277	97.2
Single	2	0.7
Others*	6	2.2
Total	**285**	**100.0**
Religion	**No**	**%**
Roman Catholic	82	28.8
Protestant	98	34.4
Seventh Day Adventist	51	17.9
Islam	1	0.4
Pagan	53	18.6
Total	**285**	**100.0**
Level of education	**No**	**%**
No formal	72	25.3
Incomplete P/S education	36	12.6
P/S education	160	56.1
>P/S education**	17	6.0
Total	**285**	**100.0**

*Others: 5 widows, 1 divorced.

**P/S= Primary school.

Distribution of the studied population (respondents) by place of birth.

The results are shown in the figure below.

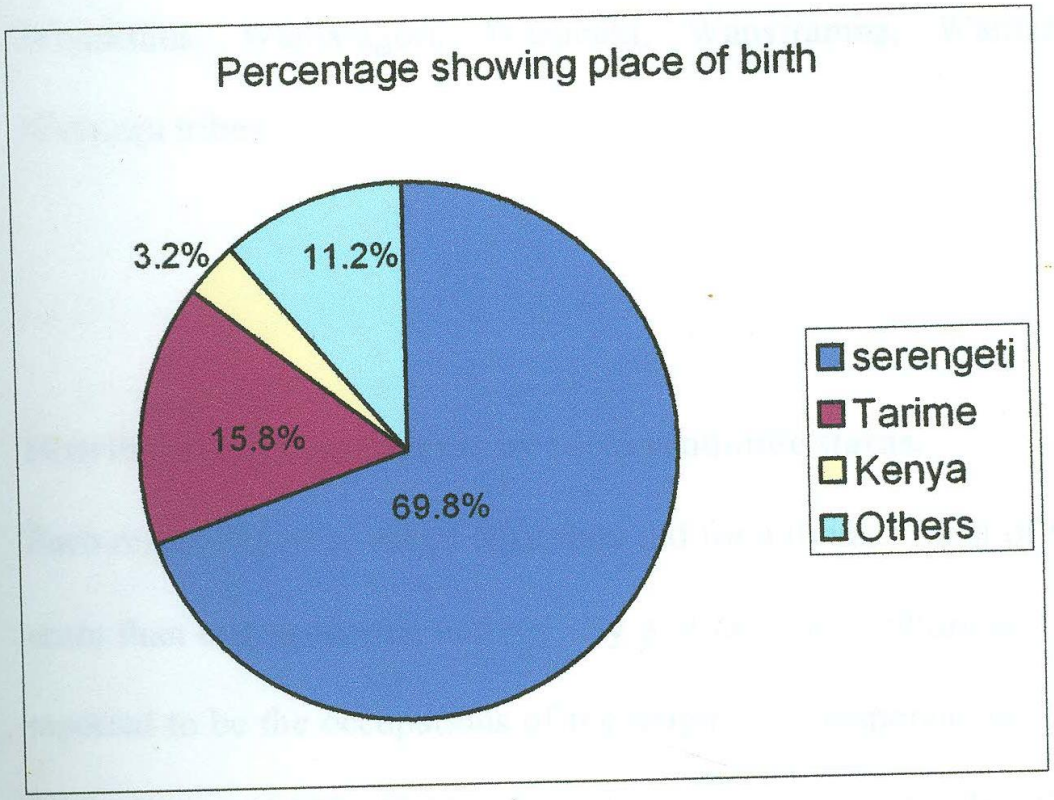


Figure 1: Distribution of studied population by place of birth.

*Others: Musoma (rural), Kigoma, Bunda, Mwanza, Musoma (urban), Dar es Salaam, Singida, Sumbawanga, Morogoro, Tabora, Tanga and Shinyanga.

Of all the studied population 199 (69.7%) were born in Serengeti distirct, 45 (15.8%), 9 (3.2%), 32 (11.3%) were born in Tarime, Kenya and Other places respectively.

Distribution of respondents by tribes.

Most of the respondents 262 (91.9%) were Wakurya. The remaining 23 (8.1%) belonged to Wanata, Waruguru, Wahangaza, Wakisii, Wangoreme, Wajita, Wajaluo, Wasukuma, Wamaragori, Wazanaki, Wanyiramba, Wamambwe, Waikoma, and Wataturu tribes.

Distribution of respondents by socio-economic status.

Each respondent was asked what they did for a living. Most of the respondents reported more than one economic activity. By and large agriculture and animal husbandry were reported to be the occupations of the majority of respondents. 271(95.1%) depended on Agriculture and 120 (42.1%) depended on Animal husbandry. Only 19 (6.7%) had their life dependency on petty business. Others, 15 (5.3%) were either self or government employed.

Distribution of respondents by age groups of children 0-24 months.

Respondents were asked about the age of their children. Table 3 shows the distribution.

Table 3: Respondents/children age groups distribution.

Children age group	No	%
0 – 6 months	67	23.5
7 – 12 months	90	31.6
13 – 18 months	59	20.7
19 – 24 months	69	24.2
Total	**285**	**100.0%**

Magnitude of tooth bud extraction.

Among the respondents, 249 (87.4%) acknowledged the existence of the practice within their locality of residence and 36 (12.6%) did not.

The existence of tooth bud extraction practice in other areas apart from the respondent's locality of residence.

Respondents were asked whether they knew of other areas, apart from their own, where the cultural practice of tooth bud extraction is performed. Table 4 below shows the results.

Table 4: Distribution of the practice of tooth bud extraction apart from the area of respondents residence.

Areas	**No**	**%**
1. Serengeti	223	78.3
2. Outside Serengeti	16	5.6
3. Don't know	46	16.1
Total	**285**	**100.0**

Extent of tooth bud extraction within the respondent's families.

Respondents were asked whether they had a child/children aged 0-24 months who has undergone tooth bud extraction. One hundred and eighty-five 185 (64.9%) had their kid/kids undergone the procedure, 100 (35.1%) had not.

Table 5: The magnitude of tooth bad extraction among children of the respondents.

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Tooth bud extraction	**No**	**%**
Yes	185	64.9%
No	100	35.1%
Total	**285**	**100%**

Tooth bud extraction status in the affected respondent's families.

Respondents, who had their children's tooth buds extracted, were asked how many children in their families had undergone the procedure. The table below shows the distribution of affected respondents by number of children with their tooth buds extracted.

Table 6: Number of children with tooth bud extracted per households.

No of children with tooth bud extracted/respondent's family	**No**	**%**
1	81	43.8
2	54	29.2
3	26	14.0
4	12	6.5
5	7	3.8
6+	5	2.7
Total	185	100.0

Table 6 shows that 81 (43.8) respondents had one child each who had undergone tooth bud extraction, 54 (29.2%) each had 2 children affected; 26 (14.0%), 12 (6.5%), 7 (3.8%), 5 (2.7%) had 3, 4, 5, 6 or more children respectively affected.

Extent of tooth bud extraction in the families of the respondent's neighbours.

Respondents were asked if their neighbours or acquaintances or friends or both had children who had undergone the practice of tooth bud extraction.

Table number 7 below shows the distribution of such respondents.

Table 7: Distribution of respondents in percentage by acknowledgement of having a neighbour and/or a friend and or an acquaintance with children undergone tooth bud extraction.

Respondent's acknowledgement of tooth bud extraction among neighbours/acquaintances or friends.	**No**	**%**
Yes	184	64.6
No	47	16.5
Don't know	54	18.9
Total	**285**	**100.0%**

Table 7 shows that 64.6% (184) had their neighbours/acquaintances or friends with children who had undergone tooth bud extraction.

Variation of tooth bud extraction among children's age groups by respondent's responses.

The variation of tooth bud extraction practice among age groups of children was sought. The table below shows the results.

Table 8: Extent of tooth bud extraction practice among children's age groups.

Children's age group in months	**Extracted**	**Not extracted**	**Total**
0 – 12	95 (60.5%)	62 (39.5%)	157 (55.1%)
13 – 24	90 (70.3%)	38 (29.7%)	128 (44.9%)
Total	**185**	**100**	**285**

$\chi^2 = 5.28$, Df = 3, P-value = 0.15212086

Table 8 shows that the extraction practice was pronounced in the age group of 13-24 months than the age group of 0-12 months.

Characteristics of mothers/guardians of affected children.

The practice of tooth bud extraction was further examined to determine its variation with the socio-demographic characteristics of respondents.

Tooth bud extraction status in children (0-24 months) by parents/guardians age.

Table 9: Proportion of parents/guardians by age carrying tooth bud extraction practice to their children 0-24 Months.

Tooth bud extraction	**Respondents ages**				**Total**
	15-24yrs	**25-34yrs**	**35-44yrs**	**45+**	
Yes	61 (59.2%)	84 (69.4%)	28 (62.2%)	12 (75.0%)	185 (64.9%)
No	42 (40.8%)	37 (30.6%)	17 (37.8%)	4 (25.0%)	100 (31.1%)
Total	**103**	**121**	**45**	**16**	**285**

$\chi 2 = 3.40$, Df = 3, (P value > 0.33374466).

Table 9 above shows that there was no significant difference among the age groups as regards the practice of tooth bud extraction (p-value > 0.05).

The variation of tooth bud extraction status in children by parents/guardians Religion.

Table 10 shows the pattern of tooth bud extraction according to religion.

Table 10: Proportion of children's tooth bud extraction by parents/guardians religion.

Tooth bud extraction	**Catholic**	**Protestant and SDA**	**Muslim and Pagan**	**Total**
Yes	54 (65.9%)	97 (65.1%)	34 (63.0%)	185 (64.9%)
No	28 (34.1%)	52 (34.9%)	20 (37.0%)	100 (35.1%)
Total	**82**	**149**	**54**	**285**

$\chi^2 = 0.12$, Df = 2, P-value = 0.93973395.

These results show no association between the practice of tooth bud extraction and religion (p- value > 0.05).

Tooth buds extraction status in children 0-24 months by the level of parents/guardians education.

The association between level of education and tooth bud extraction status was sought and found to be insignificant (p-value > 0.05).

Table 11: Tooth bud extraction status in children 0-24 months by the level of parents/guardians education.

Tooth bud extraction	**Levels of education**		**Total**
	Below primary	**Primary and above**	
Yes	69 (63.9%)	116 (65.5%)	185 (64.9%)
No	39 (36.1%)	61 (34.5%)	100 (35.1%)
Total	**108**	**177**	**285**

$\chi 2 = 0.08$, P-value 0.77734553.

Relationship between tooth bud extraction and tribes.

Table 12: Association between tribes and tooth bud extraction practice.

Tooth bud extraction	**Tribes**		**Total**
	Wakurya	Others*	
Yes	172 (65.6%)	13 (56.5%)	185(64.9%)
No	90 (34.4%)	10 (43.5%)	100(35.1%)
Total	**262**	**23**	**285**

$\chi^2 = 0.77$, Df =1 P-value 0.379186.

*Others: (See Distribution of respondents by tribes).

Table 12 above shows no significant association between tribe and tooth bud extraction. (p-value > 0.05).

Extent of tooth bud extraction by different villages of respondents.

The status of tooth bud extraction among children 0-24 months was also sought in regard to different villages of the respondents. The table below shows the results.

Table 13: Status of tooth bud extraction practice in association to different villages of the respondents.

Village	Tooth bud extraction		Total
	Yes	No	
Kegonga	34 (70.8%)	14 (29.2%)	48
Kwitete	38 (80.9%)	9 (19.1%)	47
Masangura	20 (41.7%)	28 (58.3%)	48
Matare	23 (48.9%)	24 (51.1%)	47
Merenga	36 (75.0%)	12 (25.0%)	48
Nyamakendo	34 (18.4%)	13 (27.7%)	47
Total	**185**	**100**	**285**

$\chi 2 = 25.92$, Df = 5, P-value = 0.0009251.

Table 13 shows that there is significant association between the practice and the different villages where respondents live (p-value < 0.05).

Relationship of tooth bud extraction practice to sex of respondents.

The variation in tooth bud extraction among the sexes was found not to be significant (p-value > 0.05). Table 16 below show the results.

Table 14: Variation of tooth bud extraction with sex of the respondents.

Tooth bud extraction	**Respondents Sex**		**Total**
	Males	**Females**	
Yes	37 (77.1%)	148 (62.4%)	185 (64.9%)
No	11 (22.9%)	89 (37.6%)	100 (35.1%)
Total	**48**	**237**	**285**

$\chi^2 = 3.75$, p-value 0.05267646.

Association of tooth bud extraction to place of birth of respondents.

Table 15 below shows the results.

Table 15: Association of tooth bud extraction to place of birth of the respondents.

Tooth bud extraction	**Respondents place of birth**				**Total**
	Serengeti	**Tarime**	**Kenya**	**Others***	
Yes	134 (67.7%)	33 (73.3%)	6 (60.0%)	12 (37.5%)	185 (64.9%)
No	64 (32.3%)	12 (26.7%)	4 (40.0%)	20 (62.5%)	100 (35.1%)
Total	**198 (69.7%)**	**45 (15.8%)**	**10 (3.2%)**	**32 (11.3%)**	**285**

$\chi^2 = 12.73$, Df = 3, p-value = 0.005261.

***Others:** Kagera, Musoma rural, Kigoma, Bunda, Mwanza, Musoma urban, Dar es Salaam, Singida, Sumbawanga, Morogoro, Tabora, Tanga and Shinyanga.

Table 15 above shows that 134 (67.7%) respondents born at Serengeti had had their children's tooth bud extracted. Similarly 33 (73.3%) from Tarime, 6 (60.0%) from Kenya and 12 (37.5%) from others. These results show significant association of the practice to places of birth (P-value < 0.05).

Tooth bud practice relationship to marital status of mothers and guardians.

Table number 16 below show the results.

Table 16 relationship between tooth bud practice and marital status of respondents.

Tooth bud extraction	**Marital Status**		**Total**
	Married	**Single**	
Yes	180 (65.0%)	5 (62.5%)	185 (64.9%)
No	97 (35.0%)	3 (37.5%)	100 (35.1%)
Total	**277 (97.2%)**	**8 (2.8%)**	**285**

$\chi^2 = 0.05$, P-value = 0.81754286.

Table 16 above shows that of all married respondents 180 (65.0%) had had tooth bud extraction performed to their children. 5 (62.5%) of singles had the tooth buds of their children extracted. The result shows no significant relationship between the two variables (P-value > 0.05).

Social cultural factors associated with tooth bud extraction .

Respondents were asked what were the reasons for tooth bud extraction in young children in their localities. The reasons given are shown in figure 2.

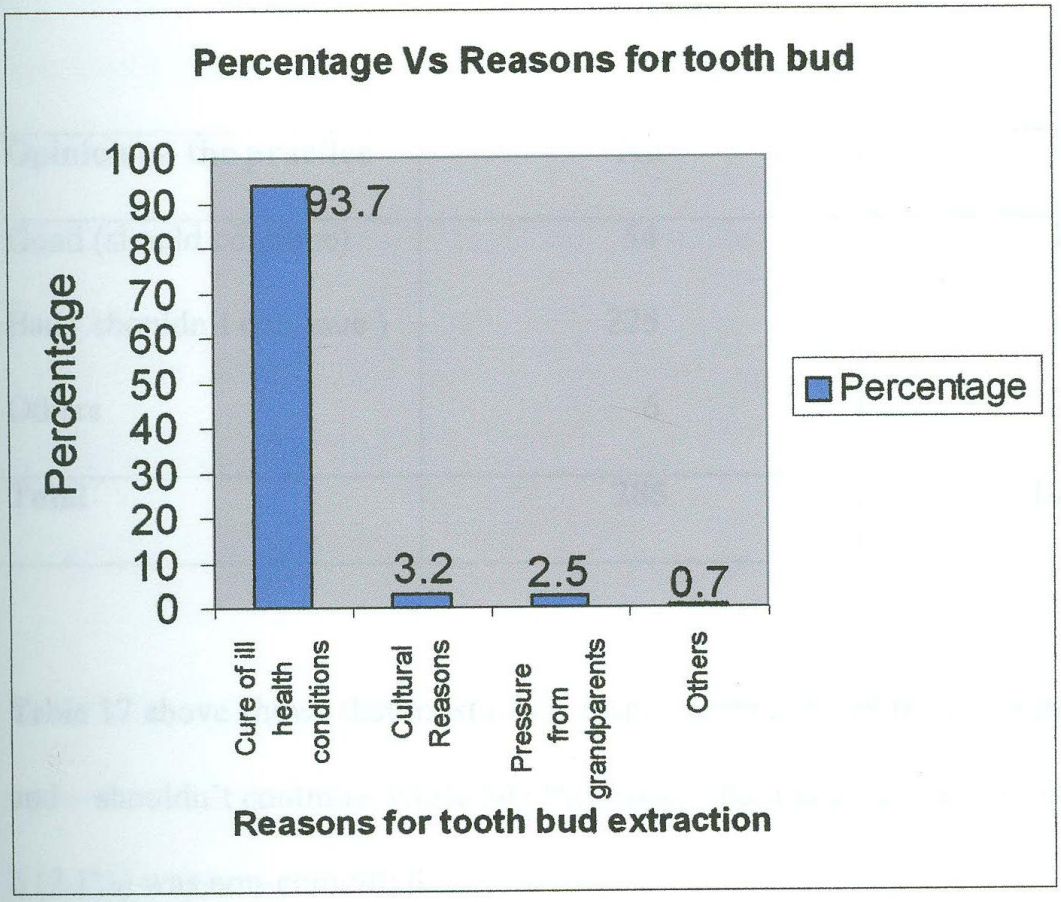


Figure 2: Reasons given for tooth bud extraction.

Others: - Biting of breasts on sucking, sneezing immediately after delivery, a child biting her own lips.

Figure 2 shows that reason for tooth bud extraction given by most of the respondents was cure of ill-health infant conditions 267 (93.7%) of all studied population.

Opinions on the practice of tooth bud extraction.

Respondents were asked about their feelings/opinions regarding the practice of tooth bud extraction. The table below shows the results.

Table 17: Distribution of respondents by their opinion about the practice of tooth bud extraction.

Opinion on the practice	**No**	**%**
Good (should continue)	54	18.9
Bad (shouldn't continue)	225	79.0
Others	6	2.1
Total	**285**	**100.0**

Table 17 above shows that most of the respondents 225 (79.0%) said the practice is bad and – shouldn't continue; while 54 (18.9%) agreed it is good and should continue. Only 6 (2.1%) was non-committal.

Advantages of tooth bud extraction.

Each respondent was asked if there were any advantages associated with tooth bud extraction. Of all respondents only 54 (18.9%) acknowledged that tooth bud extraction had advantages. Majority 231 (81.1%) said they saw no advantages.

Distribution of respondents according to what they perceived as advantages of tooth bud extraction. Table 18 below shows the advantages mentioned.

Table 18: Advantages of tooth bud extraction as perceived by respondents.

Advantages of tooth bud	**No**	**%**
1. Cure for children from fever and deterioration	46	85.2
2. If tooth buds are not extracted the child will definitely die	7	13.0
3. First aid	1	1.8
Total	**54**	**100.0**

Table 18 above shows that most of the respondents among those who said that tooth bud extraction is advantageous, gave a reason of cure for children from fever and child deterioration, 7 (13.0%) had a reason that if plastic teeth are not extracted, the child will definitely die. Only one respondent gave first aid as a reason.

Disadvantage of tooth bud extraction.

Those said there were no advantages mentioned several disadvantages. These are shown in table 19 below.

Table 19 above indicates that majority of respondents 111 (48.0%) said the immediate effects of the procedure as the disadvantage. 66 (28.6%), 50 (21.6%) said disadvantages were intermediate and late effects respectively.

Immediate help subsequent to worsening of child's condition after tooth bud extraction.

Each respondent was asked where she/he seeks for help following worsening of child's health condition after tooth bud extraction procedure. Table 22 below shows the distribution of the respondents by areas of preference for help by the respondents.

Table 20: Distribution of respondents by area of preference for help.

Help area	**No**	**%**
Traditional healer	17	6.0
Health facility	100	35.1
Apply home remedies	87	30.5
Not extracting tooth bud	81	28.4
Total	**285**	**100.0**

Each respondent was asked who usually does the extraction . Majority 176 (62.0%) said tooth extractor; and 89 (31.3%) said traditional healer. 10 (3.5%), 7 (2.5%), 2 (0.7%)

said medical doctor, don't know and nurse respectively. The data is shown in table 23 below.

Table 21: Distribution of respondents as to who does the extraction procedure.

Who extracts	**No**	**%**
Doctor	10	3.5
Traditional healer	89	31.2
Nurse	2	0.7
Tooth extractor	176	61.8
Don't know	8	2.8
Total	**285**	**100.0**

Sex of tooth extractor.

Respondents were asked which sex does tooth extractors belong. 153 (53.7%) said belong to female sex while 67 (23.5%), 65 (22.8%) said male sex and both female and male sexes respectively.

Age of extractor.

A question was asked regarding the common age for extractors. The responses were 226 (79.3%) said old age, 32 (11.2%), 27 (9.5%) said youth and both youth and old respectively.

Instrument/s used for tooth bud extraction.

Respondents were asked which instrument/s is/ are usually used for tooth bud extraction. Table 22 shows the distribution of respondents by responses on instruments used.

Table 22: Respondents distribution by responses on instruments used for tooth bud extraction.

Instrument	No	%
Sharpened bicycle spoke	71	24.9
Surgical blade	3	1.1
Razor blade	39	13.7
Sharpened knife	33	11.6
Sharpened nail	89	31.2
Don't know	50	17.5
Total	**285**	**100.0**

Table 22 shows that majority 89 (31.2%) reported sharpened nail as an instrument usually used while 71 (24.9%0), 39 (13.7%), 33 (11.6%) and 3(1.1%) said sharpened bicycle spoke, razor blade, sharpened knife and surgical blade respectively. 50 (17.5%) didn't know.

Specific place for tooth bud extraction.

Each respondent was asked if there is a specific place at his/her locality of residence where normally the practice takes place. Majority 216 (75.8%0 said outside the house while a small proportion of 30 (10.5%), 1 (0.4%) said inside the house and health facility respectively.

Place of preference in ill- health infant conditions.

Each respondent was asked where in first place a child of 0-24 months is taken for help when with fever, diarrhoea.

Among all respondents 150 (52.6%) gave a response of resorting to home remedies and 113 (39.6%) said to health facility. 22(7.7%) said to traditional healer.

All respondents were further asked in case of no improvement what further action to be taken; and 235 (82.5%) responded to hospital, 37 (13.0%) said to traditional healer, 12 (4.2%) said home based remedies. 1 (0.4%) said to tooth extractor.

The respondents were further interviewed for reasons for their decisions. The distribution of respondents by reasons is shown in table 25 below.

Table 23: Distribution of respondents by reasons of taking a child to another place for help when no improvement from the first place.

Reason	**No**	**%**
For further management – investigations, treatment and advices.	238	82.5
It is impossible in hospital as patient did not improve.	29	10.2
Traditional healers detect plastic teeth easily and to be told who is responsible for the ailment.	18	6.3%
Total	**285**	**100.0**

Table 23 shows that 235 (82.5%) said of further management, 29 (10.2%) said it is impossible in hospital, as patient did not improve. 18 (6.3%) said traditional healers detect plastic teeth easily and to be told who is responsible for the ailment.

Personal opinion on either supporting or opposing the practice.

Respondents were asked if had personal opinions on either supporting or opposing the practice.

Table 25: Proportion of respondents by perceptions for supporting tooth bud extraction.

Opinion	Yes
1. Bring us medicine for plastic teeth otherwise we shall continue with extraction to rescue our children.	24 (42.9%)
2. Children improve well on extraction hence greatly reducing the deaths.	25 (44.6%)
3. Experts would have done research before we stop; Even if you say no others will continue; hospital services are expensive than a tooth extractor's fee and they are far from us. Dying or not dying is Gods will and if you do not extract your child others will never understand you.	7 (12.5%)
Total	**56 (100.0)**

Table 26: Proportion of respondents by perceptions for opposing tooth bud Extraction.

Opinion	No
1. Children shouldn't be extracted because of severe pain, bleeding, failure to eat and suck, deterioration in health – deaths, delays in speaking, becomes more ill by infections from other disease including HIV and Tetanus. Increase in expenses for treating him, loss of permanent teeth, teething of bad permanent teeth: - deformed sometimes with bad colour; get high fever.	120 (50.8)
2. If they bring services in our vicinity (dental clinic, dispensary, experts, medicine and vaccine) there would be no need to extract tooth bud. I oppose, but when we go to hospital there is no medicine.	84 (35.6%)
3. No plastic teeth, we should move with time and research should be done in order to get away of this belief.	10 (4.2%)
4. The government should find a solution to children's illnesses and it should continue banning the practice. People should be educated in order to get away of this belief.	20 (8.5%)
5. If you extract plastic teeth to your child you are not accepted in the hospital even if you have other problem. People should follow and believe in God.	2 (0.8%)
Total	**236 (100.0)**

CHAPTER 8.0.

DISCUSSION

The extent of tooth bud extraction practice in children of 0-24 months, characteristics of households where tooth bud extraction has been conducted and social cultural factors influencing the practice in Serengeti, were all elicited.

The prevalence of tooth bud extraction among children 0-24 months was found to be 64.9%. Bearing in mind of the study limitation, which impacted a strong negative effect on openness of the respondents, the figure above may not represent the actual extent of the problem. This implies that the real figure is higher than the one observed. From this study the prevalence of the practice in children of age of 0-12 months was 60.2%, and that from age group of 13-24 months was 70.3%. This prevalence is much higher than that found by a study done in Manghweta village, Dodoma, which showed a prevalence of 2.8% among children of an age of 0-12 months and 60.3% among children of an age of 13-24 months (Hiza et al, 1992). The higher prevalence found in this study, shows how this cultural practice is ingrained among the Serengeti community. Further research is required to obtain information on which education and communication intervention can be based for the purpose of changing beliefs associated with this practice in this community.

The pronounced prevalence in an age group of 13-24 months coincides with the teething of the canines, which are incriminated as the cause of the disease. The low prevalence in a group of 0-12 months can be interpreted as a question of time factor; that we expect

them to be extracted when reaching an age of 13-24 months because it is the teething age of the canines. Nevertheless, the low prevalence in this age group also may be due to an impact of the banning campaign.

The lack of association between education level and tooth bud practice as elicited by this study, implies that the practice is widely practised among the illiterates and those who have low education and above. Similar finding was also shown by a study done in Sudan (A/Wahab 1987). It further implies that the reason for the continuity of the practice is not lack of education but cultural belief.

Relationship between tooth bud extraction practice to all other socio-demographic characteristics was found to be insignificant with the exception of relationship to village location and to places of birth. These results imply that same culture is shared among all villages but at different intensities. This could either be due to possibility that people in different locations have started slowly deviating from the existing cultural belief on tooth bud practice in their community or what is seen is just an ice berg of the hidden problem: that can be due to the tooth bud banning campaign. Much of the true information got hidden in some locations hence responsible for this variation.

Significant relationship between the practice with birth places of respondents implies that all places of birth mentioned really do conduct the practice. The variation seen may

be explained by a possibility that in a birth place like Serengeti the cultural belief is strong than that existing in other birth places mentioned.

Insignificant relationship between the practice and age implies that the belief towards the practice is very strong since there is no difference among youth, middle aged and old generation as far as the practice is concerned. It is transmitted from generation to generation. Change in time so far has no effect to the trend of the cultural belief system.

A reason for tooth bud extraction given by most of respondents was cure of ill-health infant conditions. This result is in accordance with a fact that several Tanzanian communities believe that these teeth can cause fever, general body malaise and diarrhoea and eventually death if not removed Matee at al, 1997). Similar fact was documented in Sudan (Rassmusen et al, 1992). It further points to cultural reason/belief as responsible to persistence and continuity of the practice in this society.

From the study it was observed that parents and grand parents were responsible for decision making for a child to undergo the procedure.

This implies that educating parents and grand parents or to be more precise the whole community population with much emphasis on adolescents and youths who will become future parents through information, education, communication and in school will help enhancing behaviuoral change to the community which in turn may help to reduce the prevalence of the problem.

Most of the respondents were aware of the disadvantages associated with the practice. Arising from these results one may ask if knowledgeable of the disadvantages that much then why is the prevalence high? The possibilities are two fold: -

1. Respondents were just producing what they heard or told during a campaign on banning the practice, but it is not what they believe and practice.
2. They don't understand what they tell as disadvantages as compared to what they understand or believe to be advantages associated with the practice. This shows that majority of people have poor perceptions of what are the disadvantages associated with tooth bud extraction. More efforts is required in making people aware and abide to what they know by deeds on the prons and cons of tooth bud extraction and should be undertaken for a considerable period until the envisaged behaviour change takes place.

A small proportion of all respondents was aware of the action taken subsequent to worsening of the child's health condition after tooth bud extraction. This result still emphasizes a need of education among the community in question.

Evidence that the practice has its roots in cultural belief system is shown clearly by respondents' reasons for supporting tooth bud extraction. For instance those who had a supporting opinion to the practice said *"Bring us medicine for plastic teeth otherwise we shall continue with extraction to rescue our children. Children improves well on tooth bud practice helping much to reduce children's deaths; even if you say no, others will*

continue, dying or not dying is Gods will and if you do not extract your child others will never understand you, hospital services are expensive than a tooth extractor's fee and they are far from us". These views, point out clearly the importance of this culture in this community and these are the ones again who might have told the reality on the issue of the practice when taking into consideration how rampant is the practice within this community. (Prevalence by this study 64.9%). This answers why is the practice common and persistently practised in the district despite reported negative impact on health by health professionals. It also calls for more efforts to achieve awareness on the problem by the community and patience in applying intervention measures because, this is a cultural issue thus it fades out slowly.

Results showed that in this society tooth bud extraction procedure was done mostly by a tooth extractor than a traditional healer. These results therefore shows a slight difference from what Kikwilu et al 1997 found that the practice has been known to exist done by traditional healers. These results are similar to what Baba and Kay (1989) documented in Southern Sudan that the teeth in infants were often removed by tooth extractors.

Similarity was seen between the results of the study on instrument/s used for tooth bud extraction with findings in Sudan on the same issue (Rassmusen). From the study instruments mostly in use were sharpened nail, sharpened bicycle spoke Razor blade.

CHAPTER 9.0

CONCLUSIONS

In Serengeti, tooth bud extraction practice has cultural reasons. This socially constructed cultural belief is so strong that tooth bud extraction is seen as the only way of rescuing a child suffering from frequent feverish conditions, diarrhoea and vomiting.

This practice covers children as young as 0-6 months, which usually is not the teething age and may be highly traumatic.

Mothers and guardians held the perception that after extraction majority of children improve from fever, diarrhoea and or vomiting and dying or surviving is purely upon God's will.

The main reasons for the state of affair are: -

- Strong cultural construction that extraction is a saviour of children from infancy ailments/fever, diarrhoea, and vomiting.
- That there is no medicine for plastic teeth in health facilities and have developed perception that the only treatment is tooth bud extraction. Further more health facilities services are far from them than tooth extractor's/traditional healer's and whose services are cheap than that of health facilities.

RECOMMENDATIONS

Generally results show that prevalence of tooth bud extraction practice in Serengeti is 64.9% (the actual figure may be higher considering the limitations to this study); and culture is the main reason for the practice. Despite banning efforts by the government, the practice is going on.

These findings drive to the following recommendations: -

- Multisectoral collaboration is needed for addressing the effects of the practice through education to the community population generally; with much emphasis on school children and youths who are future parents.
- Tooth buds extractors and or traditional healers should also be targeted for education.
- There is need to ensure that health services are within the vicinity and available to the community.
- Fever, diarrhoea and occasionally vomiting are signs and symptoms which accompany the teething process, but these are self limiting conditions. Parents/guardians should be encouraged to send their children in ill-health conditions to any health facility for medical care.

CHAPTER 10.0.

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