

Prevalence of Primary Tooth Extraction and Its Associated Factors Among Under-Five-Year-Old Children in Debre Tabor Town, North-Central Ethiopia: Community-Based Cross-Sectional Study

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Introduction: In Ethiopia, primary tooth extraction is a process of pulling out of an infant's healthy primary teeth by traditional healers or family members. Traditional healers use unsterile equipment to perform teeth extraction blindly, as a result, the child is prone to different life-threatening complications such as anemia and infectious blood-borne diseases. Despite all of these consequences, it is one of the neglected health problems, especially for developing countries. Thus, this study aimed to assess the prevalence and associated factors of primary tooth extraction among under-five year's children in Debre Tabor Town, Northcentral Ethiopia.

Methods: A community-based cross-sectional study was conducted among 370 participants, from March 2020 to April 2020 in Debre Tabor town. A multistage sampling technique was employed to select study participants. The data were collected by using a semi-structured pretested questionnaire via face-to-face interviews. The data was exported to SPSS version 20 software for analysis. Both binary and multiple logistic regression have been used to observe the association between the outcome variable with each independent variable. Finally, a 95% confidence interval was computed and variables with P-value ≤ 0.05 were considered statistically significant.

Results: The prevalence of primary teeth extraction among under-five-year children in Debre Tabor town was found to be 11.1% [95% CI: 7.8–14.2]. Being able to read and write in educational status [AOR: 3.97 (1.20–13.09)], having a mother caregiver [AOR: 0.35 (0.15–0.82)], having poor awareness [AOR: 6.15 (1.56–27.56)], and having a previous history of using traditional medicines [AOR: 6.65 (3.09–14.34)] were significantly associated with primary tooth extraction.

Conclusion: The prevalence of primary tooth extraction was found to be high. Educational status, caregiver of the child, level of awareness, and previous history of using traditional medicines were factors associated with primary tooth extraction.

Keywords: prevalence, associated factor, primary tooth extraction, under-five, Debre-Tabor

Introduction

In Ethiopia, primary teeth extraction (PTE) is a harmful traditional practice that involves excavating out an infant's healthy primary teeth which embed the gum by traditional healers or family members using none sterile materials.¹ PTE is termed in different ways across different countries. Called Oral mutilation in the United States and the United Kingdom, fox teeth in Somaliland, milk or primary tooth extraction in Ethiopia, Sudan, and Uganda; but false teeth (oral mutilation) are widely agreed on the term.² PTE is a primitive practice that is widely accepted and worshipped among many communities in Africa. As a result, the magnitude and problems remain high in African countries. It is one of the malpractice that is accepted as an option of traditional treatment for sick children in African countries.^{3–5}

A study conducted in 36 African ethnic groups showed that (2.1%) of patients were missing one or more canines. The burden was higher in East African countries, of which, 20.8% experienced teeth loss due to primary teeth extraction. In East Africa, primary tooth extraction is performed to treat fever and diarrhea because a primary tooth is presumed to be

associated with diarrhea and fever, and it has been thought to increase infant mortality. However, infants who had undergone primary teeth extraction had significantly increased mortality than those without primary teeth extractions.⁶ Parents perceived teething as a cause of fever, rolling of saliva, diarrhea, loss of appetite, cold, irritability, rummy nose, and conjunctivitis.⁷ Studies on sign-symptom of teething and misconceptions revealed that although about 75% to 80% of mothers correctly knew the time of teething,⁸⁻¹⁰ the majority of mothers wrongly associated teething with other symptoms of infection.^{9,10}

Traditional healers used unsterile equipment and performed teeth extraction blindly, and as a result, the child was prone to different life-threatening complications such as anemia due to severe hemorrhage and additionally promoted transmission of infectious blood-borne diseases such as hepatitis B and HIV/AIDS.¹¹ Different factors like inadequate health services, health-care service inaccessibility, inadequate health education, socio-cultural and economic disparities insist people prefer harmful traditional medicines including primary teeth extraction.^{12,13}

However, the mechanism of primary teeth extraction, complications associated with primary teeth extraction, and the future intention of parents about PTE are poorly understood.¹⁴ Therefore, to tackle the problem, the government in different African countries thrives to raise awareness of the practice among governments, dental schools, health professionals, teachers, and charity workers in Africa and in countries in which immigrants settle. Health professionals gave due attention to provide education for parents about the dangers of primary teeth extraction, but still major parts of the communities adhere to traditional malpractice.^{2,15} In Ethiopia, the government is working on changing the health-seeking behaviors of the communities to promote modern medical treatments and to reduce harmful traditional malpractices (HTPs).¹⁶ Thus, health-promotion programs should be sensitive to local, cultural, and actual circumstances when providing training to community health promoters in transitional periods from traditional to modern medicine.¹⁷ However, despite the provision of health extension programs, dental health education, and delivery of modern medical care, the magnitude and consequences of primary tooth extraction persist. Therefore, this study is intended to find out the prevalence and associated features of PTE in Debre Tabor town.

Method

Study Design, Setting, and Period

A community-based cross-sectional study design was conducted from March 23/2020 to April 30/2020 at Debre Tabor town. Debre Tabor is 103 km far from Bahir Dar, the capital city of Amhara National Regional State, and 666 km away from Addis Ababa capital city of Ethiopia. The town is divided into 6 urban and 4 rural kebeles (ie, Kebele is a term used to describe the localized division of the town). Based on the census conducted in 2019 by the local Statistical Agency of Debre Tabor town, the town has a total population of 60,563, of which 31,863 (52.6%) are females and 28,700 (47.4%) are males. Among the total population, 11,607 (19.2%) are accounted for children <5 years in urban kebeles, and 3536 (12.7%) of children under five years are also found in the surrounding rural kebeles. Currently, the town has 1 general hospital, 3 health centers, 4 private clinics, and 7 drug shops that offer health services for the community of Debre Tabor town.

Sample Size Determination and Sampling Technique

The sample size was calculated using a single population proportion formula by considering the following assumptions: Prevalence (P) = 12.5% (prevalence of milk teeth extraction in Axum),¹⁸ confidence level (CL) = 95%, margin of error (d) = 5%, design effect = two and 10% non-response rate. Thus, the final calculated sample size was 370. Households having under-five children were taken from health extension workers' registration books. The sampled households were proportionally allocated to each selected kebele. A systematic sampling technique was used to select households from each kebele. The first household was selected using the lottery method among households.

Study Population

All under-five-year children along with their parents/guardians found in Debre Tabor town were the source population for this study. Those under-five-year children with their parents/caregivers who are found in randomly selected kebeles and

had lived for at least 6 months in the district were included in the study. Mothers or caregivers who were seriously ill, who are unable to speak and hear, and caregivers with a critically ill child were excluded from the study.

Data Collection Tools, Procedures, and Quality Control Measures

Data were collected using a pre-tested, semi-structured, and interviewer-administered questionnaire, which was adopted from the previous studies. The questionnaire was pre-tested on 5% of the sample size before the real data collection process at non-sampled kebeles, and modifications were made as needed. The questionnaire contains socio-demographic characteristics, history of primary tooth extraction among under-five children, reasons, level of awareness, and sources of information regarding milk tooth extraction. Data were collected through a face-to-face interview with five trained BSc holder nurses under the supervision of two MSc holder nurses. The training was given to data collectors on the objective, how to obtain consent, and keeping the confidentiality of the information. The completeness, accuracy, and consistency of the collected data were checked daily.

Data Management and Analysis

After checking data completeness, it was entered into EPI-info version 7.2.1 and then exported to SPSS version 20 statistical software for analysis. Descriptive statistics were carried out and summarized with tables, charts, and graphs. Both bivariable and multivariable logistic regression were used to identify associated variables. P-value ≤ 0.2 in the bivariable analysis was entered into the multivariable logistic regression model. Adjusted odds ratio (AOR) with a 95% confidence interval (CI) was calculated and P-value ≤ 0.05 in the multivariable logistic regression model was considered a statistically significant factor.

Result

Socio-Demographic Characteristics

Three hundred seventy (370) child-parents/caretakers pairs were included in the study. Of which, the majority of the study participants were males (59.7%) and about 64.9% of the study participants were found in the age category of 35 months and above. The mean age of the children was 29.98 ± 15.89 months with a range of 6 to 59 months. Most of the study participants (79.7%) live in urban areas. The majority (82.2%) of parents were married and more than one-third (39.7%) of them were in the category of primary educational levels. More than three fourth (77.8%) had a motherhood relationship with the index children (Table 1).

Table 1 Socio-Demographic Characteristics of Under-Five-Year Children and Caregivers in Debre Tabor Town, 2020 (n=370)

Variables	Frequency	Percent (%)
Age of the child (months)		
0–11	37	10.0
12–34	93	25.1
35+	240	64.9
Sex of the child		
Male	221	59.7
Female	149	40.3
Residence		
Urban	295	79.7
Rural	75	20.3
Age of parents/care takers in (years)		
< 20	142	38.4
20–29	129	34.9
30–39	60	16.2
> =40	39	10.5

(Continued)

Table 1 (Continued).

Variables	Frequency	Percent (%)
Care giver		
Mother	288	77.8
Father	82	22.2
Marital status		
Single	38	10.3
Married	304	82.2
Divorced	15	4.0
Widow	13	3.5
Level of education		
Illiterate	41	11.1
Able to read and write	36	9.7
Primary education	147	39.7
Secondary education	84	22.2
Tertiary and above	62	16.8
Job/Occupation		
House wife	101	27.1
Farmer	30	8.1
Merchant	85	23
Daily laborer	60	12.7
Private	47	12.7
Government	47	16.2
Religion		
Orthodox	320	86.5
Muslim	26	7
Protestant	24	6.4
Monthly income in ETB		
≤500	4	1.1
501–1000	26	7.0
>1000	340	91.9

Abbreviation: ETB, Ethiopian birr.

Awareness About Primary Teeth Extraction

The majority (81.4%) of parents have poor awareness about primary tooth extraction. The majority 86.2% of participants revealed that they heard about primary teeth, of which, more than one-third (37.6%) thought primary teeth as maggots. More than half (54.1%) of the participants believe that primary teeth can cause diarrhea. The majority of the respondents (52.4%) prefer to take their children to a local healer for primary teeth removal, while only 27.3% of them prefer to take their children to health facilities. About, 14.6% of the respondents claimed that the child would become thin if primary teeth were not removed (Table 2).

Table 2 Awareness of Parents About Primary Teeth Extraction Among Their Under-Five-Year Children, in Debre Tabor Town, 2020 (n=370)

Variables	Frequency	Percent (%)
Have you ever heard about MTE		
Yes	319	86.2
No	51	13.8
Milk teeth are maggots		
Yes	139	37.6
No	231	62.4

(Continued)

Table 2 (Continued).

Variables	Frequency	Percent (%)
Milk teeth Causes diarrhea		
Yes	221	54.1
No	170	45.9
Community's cultural practice for primary tooth		
Taken to a health facility	101	27.3
Taken to the local healer for removal	194	52.4
Rub the gum with garlic	75	20.3
A child will be thin if primary teeth are not removed.		
True	54	14.6
False	316	86.4
Modern medicine health workers know nothing about primary teeth.		
True	50	13.5
False	320	86.5
Primary teeth can only recognized by village elders.		
True	68	18.4
False	302	81.6
Primary teeth can best be treated by;		
Modern medicine	267	72.2
Traditional medicine	103	27.8

Abbreviation: PTE, primary tooth extraction.

Sources of Information and Other Related Factors

A majority (86.2%) of the participants have information about primary teeth extraction, while the remaining 13.8% have no information about it. Of those who have, information about primary teeth extraction 40.3% and 30.3% of study subjects get information from their relatives and local leaders, respectively. Most parents (35.7%) usually consult elders in the community when they suspect their child developed primary teeth. Diarrhea (7.6%) and high-grade fever (3.5%) are the main reasons mentioned for primary tooth extraction. Regarding the decision-making of caretakers for PTE, the majority of the decision was done by their biological parents (7.1%) (Table 3).

Table 3 Source of Information, Reasons and Other Factors About Primary Teeth Extraction Among Under-Five-Year Children, in Debre Tabor Town, 2020 G.C, (n=370)

Variables	Frequency	Percent (%)
Did you heard about PTE?		
Yes	319	86.2
No	51	13.8
Sources of information		
Relatives	149	40.3
Local leaders	112	30.3
Religious leaders	30	8.1
Health workers	40	10.8
Media	39	10.5
History of traditional medicines		
Yes	103	27.8
No	267	72.2

(Continued)

Table 3 (Continued).

Variables	Frequency	Percent (%)
Consultation		
Health-workers	90	24.3
Elders in the community	132	35.7
Their parents	93	25.1
Traditional healers	55	14.9
Reason for PTE		
Diarrhea	28	7.6
High grade fever	13	3.5
Decision makers		
Biological parents	26	7.1
Grandparent	12	3.2
Other relatives	3	0.8
Age in month of the child during PTE		
0–11	15	4.0
12–34	18	4.9
35+	8	2.2
Primary teeth extractor		
Parent/caretaker of the child	6	1.6
Local healer/traditional birth attendant	35	9.5
Materials used for PTE		
Metallic wires	26	7.1
Needles	9	2.4
Razor blade	6	1.6

Abbreviation: PTE, primary tooth extraction.

Prevalence of Primary Teeth Extraction Among Under-Five Children

The prevalence of primary teeth extraction among under-five-year children in Debre Tabor town was found to be 11.1% [95% CI: (7.8–14.2)] (Figure 1). The average age of a child while having primary teeth removal was 7.98±1.49 months.

Factors Associated with Primary Teeth Extraction

In multivariable analysis, being able to read and write, having a mother caregiver, having poor awareness, and having a previous history of using traditional medicines were factors, which are significantly associated with primary tooth extraction. Parents/caretakers who were able to read and write were 3.96 times [AOR: 3.96 (1.20–13.09)] more likely to experience primary teeth extraction on their children when compared with parents’ educational status of tertiary and

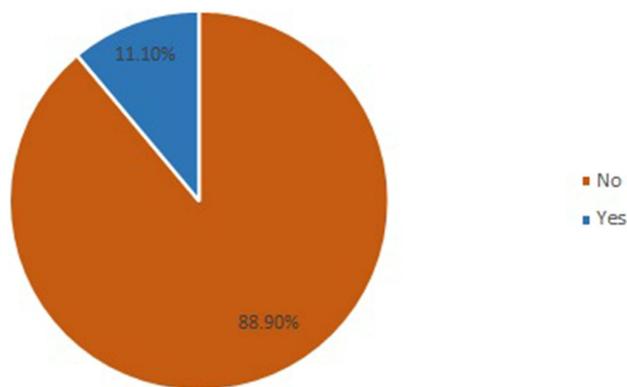


Figure 1 Prevalence of primary teeth extraction among under-five-year children and caregivers in Debre Tabor town, 2020 (n=370).

above. Being a mother of the child reduces the risk of primary teeth extraction by 65.4% [AOR: 0.34 (0.15–0.82)] when compared with the father of the child. On the other hand, parents who have poor awareness [AOR: 6.15 (1.56–27.56)] were 6.15 times more likely to practice primary teeth extraction as compared to parents who had good awareness. Last but not the least, the risk of primary tooth extraction was also higher in parents who have a previous history of using traditional medicines [AOR: 6.65 (3.09–14.34)] as compared to those who did not have a previous history (Table 4).

Discussion

Community traditional healers and elders extract primary teeth for various purposes including for the treatment of diarrhea and fever and prevention of stunting, death, and very severe illness. A traditional healer is defined as an educated or layperson who claims the ability or healing power to cure ailments. The finding of this study revealed that the overall prevalence of primary teeth extraction in Debre Tabor town among children under five years was 11.1% [95% CI: 7.8–14.2]. The result of this study is in line with a study conducted in Axum Ethiopia (12.5%)¹⁸ and Sudan (10.8%).¹⁹

On the other hand, the finding is lower than studies conducted on Israel descents of Ethiopia (87.5%),²⁰ in Uganda bungatira district (78%),²¹ and also another multicenter study in Uganda (29.3%).¹ This variation may be due to the

Table 4 Factors Associated with Primary Teeth Extraction Among Under-Five Children in Debre Tabor Town, 2020

Variables	Primary Teeth Extraction		COR (95% CI)	AOR (95%, CI)
	Yes	No		
Sex of the child				
Male	29	192	1.72(0.85–3.50)	2.17(0.63–3.53)
Female	12	137	1	1
Level of education				
Illiterate	8	33	2.26(0.72–7.090)	1.51(0.44–5.20)
Able to read and write	11	25	4.11(1.37–12.35)	3.97(1.20–13.09)*
Primary	7	140	1.12(0.38–3.33)	1.17(0.36–3.77)
Secondary	9	75	0.47(0.15–1.45)	0.88(0.26–3.02)
Tertiary and above	6	56	1	1
Caregiver				
Mother	41	247	2.60(0.67–9.96)	0.35(0.15–0.82)*
Father	25	57	1	1
Occupation				
House wife	11	90	0.43(0.14–1.38)	0.41(0.17–1.87)
Farmer	7	23	0.52(0.15–1.76)	0.44(0.18–1.99)
Merchant	6	79	0.69(0.25–1.93)	0.92(0.48–1.77)
Daily laborer	5	55	1.74(0.54–5.58)	1.91(0.83–3.23)
Private	5	42	0.82(0.22–3.05)	1
Government	7	40	1	1
Awareness				
Poor	39	262	4.98(1.17–21.18)	6.15(1.56–27.56)*
Good	2	67	1	1
History of traditional medicines				
Yes	29	74	8.32(4.05–17.12)]	6.65(3.09–14.34)*
No	12	255	1	1
Consultation				
Health-workers	3	87	0.29(0.08–1.04)	0.34(0.09–1.11)
Their parents	11	82	1.13(0.48–2.62)	1.31(0.67–5.71)
Traditional healers	13	42	2.61(1.13–6.00)	2.30(0.83–7.08)
Elders in the community	14	118	1	1

Note: *Statistically significant at p-value ≤ 0.05 .

disparity of perception of people regarding traditional medicines and having strong beliefs on the healing effects of primary teeth extraction. Even some people associated this milk teething process with previous ancestral cultural behaviors and tried to manage the symptoms (diarrhea and fever) at home by using garlic or local traditional healers. A study in Tanzania also revealed that primary teething was associated with varieties of childhood illnesses such as diarrhea, fever, crying, and irritability.²² It is also lower than the study conducted in Kenya (61%),²³ and Tanzania (19.3%).²⁴ The high proportion of primary teeth extraction in East and South African countries may be due to high misconceptions and false beliefs of parents regarding the teething process.²⁵ The high misconception of parents regarding the primary teething process was pushed by elders (grandparents) and uneducated parents. Even the educated ones are influenced by their parents and go to traditional healers under their parent pressure and the majority of the participants recommend traditional medicine for their families and the communities in their surroundings.²⁴

The odds of primary teeth extraction among parents who can read and write were about 4 times more likely than their counterparts. This finding is supported by the study conducted in Sudan. The strong linkage of the educational status of parents with primary teeth extraction in this study is possible because a lower level of education to a greater likelihood of unawareness about common childhood illnesses and consequently poorer health-seeking behaviors.¹⁸

Parents who have a previous history of using traditional medicines are 6.65 times more likely to experience primary teeth extraction as compared with the history of using modern medicine. This is in line with the study finding conducted in Uganda²¹ and other studies done in Ethiopia.¹⁸ The possible association may be due to the presence of many traditional healers around the study area and the experience of the communities.

The current study findings revealed that there is a positive association between primary teeth extraction and being a mother of a child. Being a mother of a child reduces the risk of primary teeth extraction by 65.4%. This finding is supported by the study conducted in Uganda.²¹ This might be related to mothers' emotional sensitivity to the primary teeth removal of their child as compared to other caregivers/guardians.

This study has a limitation. Since it is a cross-sectional study design, it does not show a cause-and-effect relationship between independent variables with the primary tooth extraction practice. Besides, the study was done with a quantitative approach and this makes it difficult to assess the perception and attitude of parents towards milk tooth extraction, so it was better if the researchers consider a mixed approach.

Conclusion

The prevalence of primary tooth extraction is found to be high. Parents who can read and write, mother caregivers, poor awareness, and having a previous history of using traditional medicines were the factors associated with primary teeth extraction.

Data Sharing Statement

All data generated or analyzed during this study are included in this article.

Ethical Consideration

Ethical clearance was obtained from the Ethical Review Committee of the School of Nursing on the behalf of the Institutional Review Board of the University of Gondar. The study was conducted in accordance with the Declaration of Helsinki. A letter of permission was obtained from South Gondar Zone and Debre Tabor kebele administrators. The data was collected after clearly explaining the purpose of the study and obtaining written informed consent from each study participant's parents/guardians. Respondents were given the option of not responding to any questions they did not want to answer, as well as assurances concerning the confidentiality of the data. At last, the complication related to traditional PTE was discussed with those who had done it previously.

Acknowledgment

Firstly, we would like to acknowledge the University of Gondar College of Medicine and Health Sciences for allowing us to conduct this study. Lastly, we would like to thank the data collectors, supervisors, and study participants.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis, and interpretation, or in all these areas; took part in drafting, revising, or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Disclosure

The authors declared no competing interests in this work.

References

1. Tirwomwe J, Agwu E, Ssamula M. The magnitude of tooth bud extraction in Uganda. *Int J Med Med Sci.* 2013;5(10):450–455.
2. Pope EA, Roberts MW, LaRee Johnson E, Morris CL. Infant oral mutilation. In: *Case Reports in Dentistry.* Hindawi; 2018:2018.
3. Kassebaum N, Bernabé E, Dahiya M, Bhandari B, Murray C, Marcenes W. Global burden of severe tooth loss: a systematic review and meta-analysis. *J Dent Res.* 2014;93(7_suppl):20S–8S. doi:10.1177/0022034514537828
4. Girgis S, Gollings J, Longhurst R, Cheng L. Infant oral mutilation—a child protection issue? *Br Dent J.* 2016;220(7):357–360. doi:10.1038/sj.bdj.2016.264
5. El Tantawi M, Hamza MA, Sabry MM. Dentists' perception of primary health care services in family health and mother and child health clinics in Alexandria, Egypt. *East Mediterr Health J.* 2017;23(2):73–79. doi:10.26719/2017.23.2.73
6. Husain A, Baker MD, Bisanzo MC, Stevens MW. The mortality of ill infants with a false tooth extraction in a rural Ugandan emergency department. *J Public Health Africa.* 2017;8(1). doi:10.4081/jphia.2017.582
7. AwadKamil M. Mothers' misconception and traditional practices towards infant teething symptoms in Khartoum. *IOSR J Pharm.* 2012;2(3):448–451.
8. Ispas RS, Mahoney EK, Whyman RA. Teething signs and symptoms: persisting misconceptions among health professionals in New Zealand. *N Z Dent J.* 2013;109(1):2–5.
9. Kumar S, Tadakamadla J, Idris A, Busaily IAA, Allbrahim AYI. Knowledge of teething and prevalence of teething myths in mothers of Saudi Arabia. *J Clin Pediatr Dent.* 2016;40(1):44–48. doi:10.17796/1053-4628-40.1.44
10. Azevedo MS, Portela AR, Romano AR, Cenci MS. Prevalence of teething symptoms in primary teeth and associated factors: a cross-sectional study in children aged 12–23 months in Pelotas, Brazil. *Pesqui Bras Odontopediatria Clin Integr.* 2015;15(1):217–225.
11. Abang J. *Knowledge, Attitude and Practices of Deciduous Canine Tooth-Bud, Extraction Among Mothers in Iceme Sub-County.* Oyam District-Uganda: International Health Sciences University; 2016.
12. Kassebaum NJ, Smith AG, Bernabé E, et al. Global, regional, and national prevalence, incidence, and disability-adjusted life years for oral conditions for 195 countries, 1990–2015: a systematic analysis for the global burden of diseases, injuries, and risk factors. *J Dent Res.* 2017;96(4):380–387. doi:10.1177/0022034517693566
13. Agbor AM, Naidoo S. A review of the role of African traditional medicine in the management of oral diseases. *Afr J Tradit Complement Altern Med.* 2016;13(2):133–142. doi:10.4314/ajtcam.v13i2.16
14. Sun Z, Herring SW, Tee BC, Gales J. Alveolar ridge reduction after tooth extraction in adolescents: an animal study. *Arch Oral Biol.* 2013;58(7):813–825. doi:10.1016/j.archoralbio.2012.12.013
15. Oyapero A, Oyapero O, Iwuala M, Areago I. Impact of health education on maternal perception and practices about teething at a pediatric outpatient clinic in Lagos state. *Edorium J Health Educ.* 2016;6:1–10.
16. Wordley V, Bedi R. The Addis Ababa declaration to end infant oral mutilation. *Br Dent J.* 2019;227(10):863–864. doi:10.1038/s41415-019-0891-5
17. Kamimura C. Milk teeth extraction and behavior changes in Rural Amhara, Northwest Ethiopia. *Nilo-Ethiop Stud.* 2015;2015(20):1–16.
18. Gebrekirstos K, Abebe M, Fantahun A. A cross-sectional study on factors associated with harmful traditional practices among children less than 5 years in Axum town, north Ethiopia, 2013. *Reprod Health.* 2014;11(1):1–7. doi:10.1186/1742-4755-11-46
19. Elgamri AI, Ahmed AT, Haj-Siddig OE, Chin JR. Infant oral mutilation (IOM) related to traditional practices among inner-city pre-school children in Sudan. *Afr Health Sci.* 2018;18(2):359–368. doi:10.4314/ahs.v18i2.21
20. Davidovich E, Kooby E, Shapira J, Ram D. The traditional practice of canine bud removal in the offspring of Ethiopian immigrants. *BMC Oral Health.* 2013;13(1):1–4. doi:10.1186/1472-6831-13-34
21. Atim WP. *Prevalence and Factors Associated with False Teeth Removal (INFANT Oral Mutilation) Among Children Under 5 Years.* Bungatira Sub-county, Gulu District: International Health Sciences University; 2018.
22. Owibingire SS, Kanya ER, Sohal KS. Beliefs about traditional uvulectomy and teething: awareness and perception among adults in Tanzania rural setting. *Ann Int Med Dent Res.* 2018;4(2):25.
23. Kipchumba PJ. Deciduous canine tooth bud extraction and nutritional status of children aged 2–5 years in Kajiado District, Kenya; 2013.
24. Kahabuka FK, Mugonzibwa EA, Mwalutambi S, Kikwilu EN. Diseases and conditions falsely linked with “nylon teeth” myth: a cross sectional study of Tanzanian adults. *Tanzan J Health Res.* 2015;17(2). doi:10.4314/thrb.v17i2.7
25. Kemoli A, Gjørup H, Norregaard M-LM, et al. Prevalence and impact of infant oral mutilation on dental occlusion and oral health-related quality of life among Kenyan adolescents from Maasai Mara. *BMC Oral Health.* 2018;18(1):1–11. doi:10.1186/s12903-018-0631-2

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