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Teething disturbances: a survey of a group of Nigerian mothers in Lagos metropolis

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Abstract
Background: The eruption of primary teeth is preceded by a number of signs and symptoms, often a source of concern to parents. Traditional information passed down over the years from generation to generation has produced extensive folklore of information and some misinformation on primary tooth eruption.
Objectives: The study investigated the perceptions of mothers on teething and the various measures used in the treatment of teething.
Methods: A cross sectional study was carried out on 421 mothers in Badagry local government, a peri-urban local government area in Lagos State Nigeria. Mothers with at least one child between the ages of 9 to 40 months participated in the study. Information on primary tooth eruption, associated symptoms and treatment was obtained from the mothers using a pre-tested questionnaire.
Results: The mean age of the mothers was 28.87years. A total of 48.0% of the mothers, were educated up to secondary school level. The mean age at eruption of the first primary tooth was 4.955months (SD=2.493). Diarrhoea and fever were the commonest symptoms mothers associated with eruption of primary teeth. However, 55.2% of the mothers were not certain on the exact reasons for symptoms experienced by their children during the eruption of the primary teeth. The commonest preventive measures used by the mothers were teething powder, antibiotics and native herbs.
Conclusion: Fever, diarrhoea, rash, ear tugging, or signs of any infection should never be attributed to teething. This assumption may delay necessary medical treatment. Scientific information on teething should be a part of oral health educational packages.

Keywords: *Teething, symptoms, perceptions, treatment, mothers*

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Résumé
Contexte : L'éruption des dents primaires est précédée d'un certain nombre de signes et de symptômes, souvent une source d'inquiétude pour les parents. Les informations traditionnelles transmises au fil des ans de génération en génération ont produit un vaste folklore d'informations et une certaine désinformation sur l'éruption des dents primaires.
Objectifs : L'étude a examiné les perceptions des mères sur la dentition et les différentes mesures utilisées dans le traitement de la dentition
Méthodes : Une étude transversale a été menée parmi 421 mères du gouvernement local de Badagry , une zone périurbaine du gouvernement local de l'État de Lagos au Nigeria. Les mères ayant au moins un enfant âgé de 9 à 40 mois ont participé à l'étude. Des informations sur l'éruption dentaire primaire, les symptômes associés et le traitement ont été obtenues auprès des mères à l'aide d'un questionnaire pré testé.
Résultats : L'âge moyen des mères était de 28,87 ans. Au total, 48,0% des mères ont été scolarisées jusqu'au niveau secondaire. L'âge moyen à l'éruption de la première dent primaire était de 4,955 mois (ET = 2,493). La diarrhée et la fièvre étaient les symptômes les plus courants que les mères associaient à l'éruption des dents primaires. Cependant, 55,2% des mères n'étaient pas certaines des raisons exactes des symptômes ressentis par leurs enfants lors de l'éruption des dents primaires. Les mesures préventives les plus courantes utilisées par les mères étaient la poudre de dentition, les antibiotiques et les herbes indigènes.
Conclusion : La fièvre, la diarrhée, les éruptions cutanées, les tiraillements d'oreille ou les signes d'infection ne doivent jamais être attribués à la dentition. Cette hypothèse peut retarder le traitement médical nécessaire. L'information scientifique sur la dentition devrait faire partie des trousses d'information sur la santé bucco-dentaire.

Mots -clés : *Dentition, symptômes, perceptions, traitement, mères*

Introduction

Teething describes the physiologic process of tooth eruption through the gingivae [1]. The average age

for tooth eruption is between 6 to 9 months [2]: but some normal 4-months –olds may have a tooth or teeth while some normal one-year olds may have none. The process occurs periodically until all 20 teeth of the primary dentition are in place, usually by 30 month of life [2-4]. In most children the eruption of primary teeth is preceded by increased salivation, and the child may want to put hands, fingers and objects into the mouth [5]. These observations may be the only indication that the teeth will soon erupt [2].

Some young children may also become restless and irritable during the time of tooth eruption. No matter when it begins or how long it lasts, tooth eruption causes every baby some discomfort. The period of eruption of the first primary tooth is a time of great parental excitement as the infant transitions from breast or bottle feeding and is gradually weaned and introduced to supplementary feeding/more solid foods. Teething has been described as an important milestone in an infant's first year [1,3] and has stirred much debate and interest over the years [3, 6-8], with the extensive amount of information and some misinformation passed down over the years across different cultures. Teething myths have existed in many cultures from early times. [9-14] Today, the view that teething is an ailment is still common especially among mothers [9-13] and the belief that it is the cause of high fever, delays the calls to the doctor [13]. Parents frequently comment when giving medical history on the child that the child has been well until the time of tooth eruption. To dentists and physicians, the eruption of teeth has long been a source of intrigue and controversy [6, 9]. There is considerable speculation regarding systemic symptoms associated with teething [6, 7, 9]. The inherent danger this poses is the false security developed when symptoms of actual disease occur coincidentally during the time of eruption of the primary teeth. [9 -11, 13]. As a result, prompt and appropriate measures may not be taken on the presenting systemic conditions.

This community-based study investigated the perceptions of mothers on teething and the various preventive measures used, so as to provide up to date information on the knowledge, attitude and practices of mothers on primary tooth eruption and determine whether international or regional differences do exist.

Materials and methods

Sample and sample method

A multi-stage random sampling method was adopted for the study and the sample size was obtained using the formula [14]

$$N = \frac{Z^2PQ}{D^2}$$

Where

N= minimum sample size required for the study
Z= 1.96 at 95% confidence interval
P= prevalence of malnutrition in Nigeria
Q= 1-P
D= acceptable error margin of 5% precision

Substituting

$$N = \frac{(1.96)^2 \times 0.4 \times 0.6}{(0.05)^2} = \frac{3.841 \times 0.4 \times 0.6}{0.0025} = 368.79$$

Minimum sample size was therefore 369.
The sample size was increased to 421 to accommodate for data loss and inconsistent data.

This cross-sectional study was carried out in Badagry, Badagry Local Government Area (which was randomly selected from the list of 20 Local Government Areas in Lagos State), peri-urban community in Lagos state of Nigeria. A list of all the wards in the LGA was obtained and 2 wards were randomly selected from the LGA. The 2 wards selected were similar in terms of geographic terrain, economic and social characteristics. A comprehensive list of the streets in the wards was made. A sampling interval was obtained based on the total number of houses in the selected wards and the approximate number of children for the study. The sampling interval obtained was used in the selection of the houses from which children were selected for the study. This was carried out in a systematically to get to the sample size required for the study.

Selection criteria: On getting to a house selected for the study, the mother to be interviewed must be a Nigerian mother resident in the area for at least 6 months prior to the time of the study and who met the inclusion criteria and consented to participate in the study. The inclusion criteria were mothers who had at least one child between 9 to 40months of age who gave informed consent to participate in the study. The selected children for the study were full term deliveries of their mothers and were within the expected normal birth weight ($\geq$2.5kg). The children who met the inclusion criteria displayed at least one tooth in the process of eruption. Eruption was determined if the clinical crown of the tooth was visible, but not exceeding 3 mm exposure above the gingival.

Exclusion criteria were mothers who declined to participate in the study, those with children younger than 9 months of age and children with birthweight >2.5kg. Mothers whose child/children had not erupted any primary tooth were excluded from the study. All the mothers were of the Yoruba tribe.

A pilot study was carried out on 50 mothers to assess ease of administration and correct any ambiguity. The pre-tested questionnaire was administered on 421 mothers. The mothers in the pilot study were not included in the final analysis. The questionnaire elicited the following information from the mothers: the age and educational status of the mothers, age of the child and age at eruption of the first primary tooth were also recorded, information on the problems experienced by the child and associated with eruption of the primary tooth, the preventive measures and treatment given or sought by the mother. The interviews were carried out on a one-to-one basis so as to reduce bias of a group response and it was carried out by the first author (OOO). Data for the present report was extracted from study of influence of infant feeding practices on nutritional status.

Ethical clearance was obtained from the Lagos University Teaching Hospital Health Research Ethics Board. Approval to carry out the study in the selected community was obtained from the local government chairman, ward councillors and community leaders.

Data was analysed using the Epi-info 6 version statistical software package. The data was validated visually and checked by using frequency tables and charts generated from excel tables. Associations were subjected to the Chi-square test and significance was defined as $p \leq 0.05$

Results

Majority of the mothers studied were between 25-29 years of age. The mean age was 28.87 years and Mode was 26 years. A total number of 48% of the mothers were educated up to secondary school level. This was the largest group recorded for the sample. Only 1% of the mothers had no formal education.

Majority of the children (73.6%), had their first primary tooth erupted by 6 months of age. Only 5.5% of the children erupted their first primary tooth after the age of 9 months. The mean age at eruption of first primary tooth was 4.955months (SD=$\pm$2.493). (Table 1)

Table 1: Socio-Demographic characteristics of Mothers Studied (N=421)

Characteristic	Description	No.	Percentage
Age Group	20-24	78	18.5
	25-29	171	40.7
	30-34	105	24.9
	35-39	67	15.9
Ethnicity	Yoruba	421	100
Educational Status of Mother	None		1.0
	Primary		26.0
	Secondary		48.0
	University		9.0
	Informal training		6.0
	Miscellaneous		10.0
Occupational Status of mother	Intermediate	22	5.2
	Residual	61	14.5
	Semi-skilled	281	66.7
	Pensioner	19	4.5
	Student/Apprentices	38	9.0
Child's age on eruption of 1st tooth	Up to 6 months	162	73.6
	6 to 9 moths	106	25.2
	3 Months	62	14.7
	4 Months	64	15.2
	5 Months	26	6.2
	6 Months	1	0.2

The symptoms mostly associated with teething by the mothers were fever and diarrhoea

(60.9% each). This was followed by weight loss in 40.2%. Figure 1

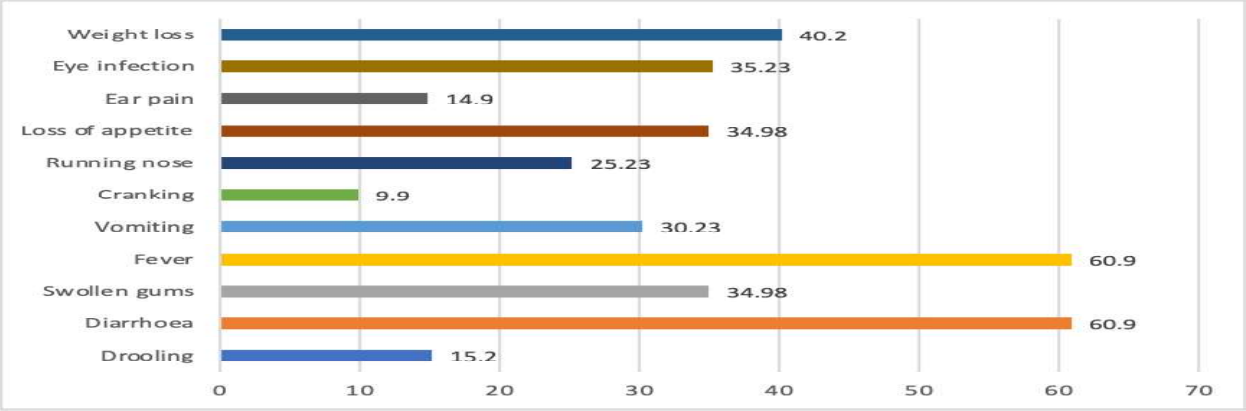

Fig.1: Distribution of symptoms associated with teething by mothers

Almost two-thirds of mothers, 279 (64.8%) claimed that symptoms were observed before the tooth erupted. However, about one -third, 127 (30.2%) and less than a tenth, 21 (5.0%) reported that the symptoms started during or after tooth eruption respectively. In addition, about two-thirds, 284 (67.6%) of the mothers reported that the symptoms stopped before the actual eruption of the first primary tooth. (Table 2)

A variety of measures were taken by the mothers for the treatment of the problems observed. The treatments most frequently used in almost half to more than half of the mothers were teething powder, antibiotics and native herbs in 80%, 59.9% and 44.9% respectively (Figure 2).

Mothers with primary education /no education often gave traditional remedies: teething powder, herbs for the treatment of symptoms. The more educated mothers more often did not give treatment and if necessary used analgesics to relieve the discomfort and calm the child.

Discussion

A review of the literature reveals considerable speculation regarding the systemic symptoms

Table 2: Occurrence of teething symptoms

Time	Symptoms started		Symptoms stopped	
	No.	%	No.	%
Before teething	279	64.80	284	67.60
During teething	127	30.20	68	16.20
After eruption of tooth	21	5.00	69	16.40
Total	421	100.00	421	100.00

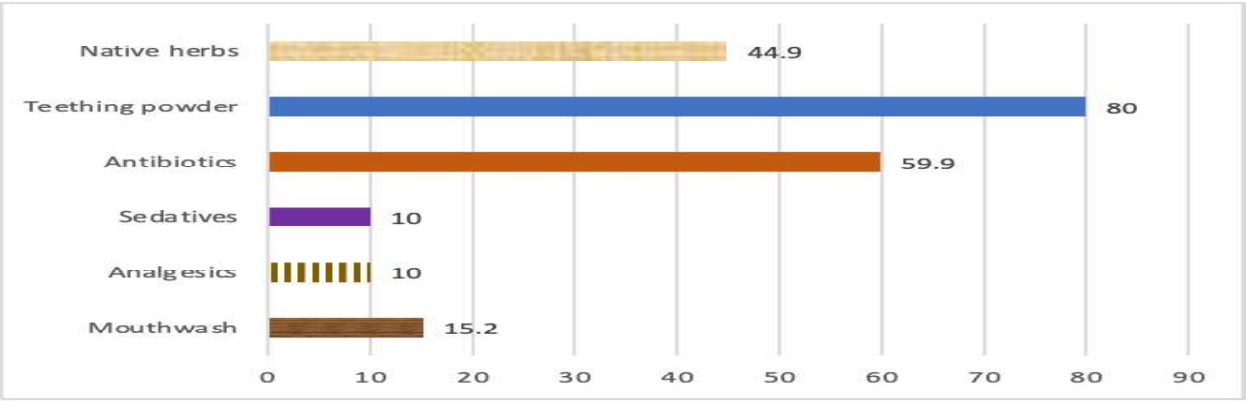

Fig. 2: Treatment given by mothers for symptoms associated with teething

associated with the eruption of primary teeth (teething) [6,8,15]. Most studies revealed that majority of parents believe that teething may be a cause of fever, diarrhoea, pain and irritability in infants [9-11,13,16].

A long-standing explanation for health problems observed during the time babies erupt their primary teeth states that passive immunity to a wide variety of infections begins to decrease by about the age of 6 months [17]. This period coincides with the time of eruption of primary teeth. Hence, systemic disturbances at this time are always attributed to teething [10, 13].

The findings of the present study reported a mean age of 4.955months for the children on eruption of first primary tooth. This differs from some studies from Nigeria. Isiekwe [4] and Uti [13] reported mean age of 6.8 and 6.3 months respectively and that the eruption of the primary tooth was earlier in females than males. Oziegbe and her co-workers [18] reported that boys erupted primary teeth earlier than girls in both arches except the first molars. The mean reported in studies on children from developed countries is higher, usually in the range of 7-9months, and females were found to be ahead of males in the eruption of teeth until the age of 11months [15,19,20]. Indira [21], also reported that eruption of primary tooth is delayed among children of Indian population when compared to standard eruption chart. Apart from the racial differences in time of eruption, recent studies have associated delayed eruption of primary teeth to nutritional status, masticatory forces and secretion of growth hormone, pre-maturity and HIV infection in the child [15, 19, 20]. A 7 to 14 months delay has been associated with the eruption of primary teeth in children with the HIV infection [19].

In the present study, the commonest symptoms mothers associated with eruption of primary teeth were fever and diarrhoea, 60.09% each. The study by Uti [13] reported fever (90.05%) and diarrhoea (87.3%) while that by Opeodu and Popoola [22] reported 80% for fever and 44.8% for diarrhoea. A study from Florida however recorded diarrhoea (35.4%) with no record of fever [23]. Another study has however reported redness and swelling of the gingivae to be the most striking feature of eruption of the primary teeth [20]. Noor-Mohammed [24] reported fever (16%), saliva drooling (12%), diarrhea (8%), fever-drooling (15%), fever-diarrhea (8%) and drooling-diarrhea (6%). These differences may be explained by variations in characteristics of the study sample, educational status, environmental factors, health literacy and health seeking behaviours of mothers and families. The common childhood diseases most often present with fever and diarrhoea. Fever is a common symptom in children. These diseases include upper respiratory tract infections, common cold, ear infections, viral infections (herpetic gingivostomatitis) and malaria fever (which is endemic in our environment). This may explain why fever and diarrhoea are reported as the commonest symptoms in the present study.

Most studies report that the symptoms were usually noticed before the actual eruption of the tooth and in most cases would have subsided by the time the tooth was erupting [6,13,20]. This observation is similar to findings in the present study. In the present study some mothers could not explain the reason for the symptoms.

A variety of preventive measures and treatment were instituted by the mothers to alleviate the problems associated with teething. This could be in form of teething powders, use of herbal preparations, analgesics and antibiotics. In the present study, the mothers often used teething powder (80%), antibiotics (59.9%) and native herbs (44.9%). This differs from other reports in the literature, where the use of analgesic was the highest reported; Uti (69.3%) and Wake (60.6%). Lancing [7] homeopathy [25] and traditional extraction of primary tooth buds [26] have also been reported as remedies used to alleviate the various disturbances of teething in babies. Teething powders were previously discouraged because they contained mercury, which was harmful to the child's health. The more recent preparations are however safe to soothe teething gums [13]. Self-medications and injudicious use of antibiotics should be discouraged as they may lead to hazardous effects. Establishment of dental home and collaborative consultations between paediatric dentists and primary health physicians should be encouraged. Self-medication and injudicious use of antibiotics should be discouraged. The active ingredients of the local herbs need to be extracted and investigated. This will allow for standardization and prevent abuse and misuse.

Conclusions and recommendations

The results from the present study show that there is a need for the understanding of the signs and symptoms of teething and the appropriate preventive measures to be administered. Discussions on oral health care and tooth eruption should be encouraged in antenatal and immunization clinics by paediatric dentists and paediatricians. The use of local traditional remedies such as local herbs, which may be harmful to the health of the child, should be discouraged until their efficacy and constituents have been established.

Injudicious and over the counter use of antibiotics should also be discouraged because it could mask serious severe systemic conditions.

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