



## Teething Beliefs and Traditional Practices towards Infant Teething Symptoms among Caretakers in Abha City, Saudi Arabia

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### ABSTRACT

**Objectives:** To investigate symptoms that are associated with teething as reported by caretakers and the related measures undertaken to relieve it. To study the relationship between caretaker, child-related factors and the reported teething symptoms. To correlate reported teething symptoms with clinical findings during the teething period. **Materials and methods:** The current study was a cross-sectional survey conducted among Saudi caretakers of children aged 6-36 months of age, following the survey, each child was clinically examined as well. The following survey was carried out at Mahala Maternal and child health Hospital, Abha city. A convenience sampling method was adopted for collecting the data. A total of 300 caretakers along with their children were approached who agreed to be part of the study. All the caretakers were asked to fill a structured-questionnaire, the questionnaire was asked to be completed using a face-to-face interview along with children's guardians and it was further followed by the clinical examination of the child. **Conclusion:** The present study showed that most caretakers reported their children to suffer from both local oral disturbances (gum rubbing 41% followed by redness and swelling 20%) and systemic manifestations (increased biting, drooling, fever, diarrhoea, and loss of appetite) during their teething period.

**Keywords:** Teething, Infants, Tooth eruption, Primary tooth, Saudi Arabia

### INTRODUCTION

“Teething” is defined as the process of tooth emergence. It consists of an 8-day window that starts 4 days before tooth eruption, the day of tooth eruption, and the three days that follow [1]. An eruption of teeth is a normal phenomenon that approximately begins at 6 months of age and ends when the child reaches three years old [2,3]. The initial emergence of teeth is the appearance of normal teeth is enthusiastically looked for by caretakers since it represents a key milestone in the child's development [4]. The association between the emergence of primary teeth and the overall wellbeing of an infant has been investigated for more than 5,000 years [5,6]. The period associated with the emergence of primary teeth in infants can be stressful and upsetting for both the child and their respective caretakers [5].

At approximately 6 months of age, when the primary teeth are about to erupt, maternal antibodies on which young children depend begins which are not yet sufficient to defend them against infections. Furthermore, the child starts to crawl at this age, can pick and place unclean objects in their mouths (oral sensory phase of development). This can introduce pathogens and may lead to gastrointestinal disturbances and the associated increase in body temperature.

A wide range of manifestations have been attributed to teething, however, no scientific basis is available to correlate any symptoms or signs to the teeth emergence [7]. The link between teething and minor manifestations like restlessness, drooling, loose stool and cold-like-symptoms were reported by many researchers [8]. However, studies failed to find links between severe manifestations like fever and the teething process [2]. Teething Management in the past was using aggressive methods in an attempt to relieve its associated systemic manifestation as it was presumed. Treatment included blistering, bleeding, placing leeches on gums and applying cautery to the back of the head. Nowadays conditions that were once attributed to teething became a well-defined identity such as cholera, meningitis, septicemia, etc. [5].

A variety of physical manifestations (anything from minor upsets to potentially fatal illnesses) have been attributed to teething; however, a number of recent publications have alluded to a clarification of some of the disputed features of teething. Lack of awareness is thought to be the issue behind the widespread misconceptions around teething. These misconceptions are actually trapped for our unsuspecting infants who are administered all kinds of teething remedies. Could it be that all health professionals hold to these dangerous beliefs concerning teething? This is important to find out because when a systemic problem is diagnosed as “the usual teething” and hence nothing is done about to address the on-going pathology, mortality becomes inevitable. This study was conducted to investigate symptoms that are associated with teething as reported by caretakers and the related measures undertaken to relieve it. To investigate the relationship between caretaker and child-related factors and the reported teething symptoms and to correlate reported teething symptoms with clinical findings during the teething period.

### MATERIALS AND METHODS

The current study was conducted as a cross-sectional survey among Saudi caretakers of children aged 6-36 months of age, following the survey, each child was also clinically examined. The following survey was carried out at Mahala Maternal and child health Hospital, Abha city. A convenience sampling method was adopted for collecting the data. A total of 300 caretakers along with their children were approached who agreed to be part of the study. All the caretakers were invited to fill a structured-questionnaire, the questionnaire was completed using a face-to-face interview along with children’s guardians and it was further followed by the clinical examination of the child.

The questionnaire included questions regarding children and their caretakers in terms of educational level and age of caretakers, breastfeeding status of the child (stopped, on-going), childbirth weight (normal >2500 g, low birth weight <2500 g) as classified by WHO in 2011 [9]. Moreover, caretakers were asked questions regarding local and systemic signs and symptoms associated with teething as reported by caretakers and measures undertaken to relieve those symptoms if any.

local symptoms which were asked in questionnaire included; gum swelling, gum irritation and redness of the gums, gum rubbing, none and others, whereas systemic disturbances included questions with regard to recurrent fevers, diarrhea/purging, runny nose, increased body temperature, loss of appetite, seizures, lack of sleep, excessive salivation/drooling, excessive crying, vomiting, eye diseases, coughing, boils, rashes and ear infections, convulsions, others or none. If any of the aforementioned signs and/or symptoms existed, then caretakers were asked about any measures and practices undertaken to alleviate their children’s manifestations. Thereafter, each child underwent a follow up clinical oral examination. Gingiva was examined carefully, it was palpated to observe any sign of tooth eruption, on that basis, child was classified as either being in Tooth-days (5 days prior to and including the eruption day and the 2 days that follow) or Non- tooth days (those days where the child is more than 28 days clear of any tooth eruption) [1].

If the child was categorized as being in tooth-days, then the local examination of eruption site was followed to disclose the presence of any possible local disturbance such as gingival swelling and/or redness, eruption cyst, etc. Child’s temperature was measured using digital axillary’s thermometer and it was further rated as having a low (<36.5°C), normal (36.5°C-37.5°C) or high (>37.5°C) temperature.

#### Data Analysis

Data were analyzed using SPSS software (ver. 16; SPSS, Inc., Chicago, USA). Descriptive statistics were used to describe all variables. Multivariate Logistic regression analysis was then be used to determine the most significant caretaker and child’s factors associated with the teething symptoms. A p-value <0.05 was considered statistically significant.

#### Ethical Approval

Ethical clearance will be granted by the Scientific Research Committee of King Khalid University, College of Dentistry. Caregivers had the right to take part in the study and allow their children to be examined or not, those who agreed were asked to sign a letter of informed consent. Besides, privacy was respected and all measures of confidentiality were strictly adopted.

### RESULTS

A total of 300 caretakers along with their children with the age group 6-36 months, were included in the study and asked to fill a structured-questionnaire. In Table 1 Most of the study population (75.9%) were aged >25 years and more than

half of the mothers (57%) were having educational levels up to secondary school and nearly half of the subjects (42%) were graduates. Out of 300 caretakers, 250 (83.3%) were mothers and 41 (13.7%) were fathers. The most prevalent local oral symptoms associated with teething as reported by their caretakers were gum rubbing (41%), thump sucking (21%), redness and swelling (20%), gingival swelling (9%), redness of gums (6%) and gum irritation (1%). Only 2% of caretakers reported no local symptoms associated with teething (Figure 1), the association between Breastfeeding with local and systemic disturbance shown in Tables 2 and 3. The most prevalent systemic disturbances associated with teething as reported by their caretakers were increased biting 275 (91.6%), fever 246 (82%), diarrhea 231 (77%), drooling 218 (72.6%), loss of appetite 212 (70.6%) and crying 205 (68.3%) (Figure 2). Only 4% of mothers did not give any treatment for teething problems. Analgesics/antipyretics, biting on chilled objects and hospital consultation were the most frequently given treatments (27%, 32% and 23% respectively) (Figure 3). The relationship between childbirth weight with local and systemic disturbances was shown in Tables 4 and 5.

**Table 1 Demographic data of the study population**

Demographic Characteristics	Frequency	Percentage (%)
<b>Interviewed Caretakers</b>		
Mother	250	83.30%
Father	41	13.70%
Other	9	3%
<b>Education Level</b>		
Illiterate	36	12%
Up to secondary school Education	173	57%
University graduate	126	42%
Postgraduate	12	4%
<b>Age Group</b>		
16-25 yrs	55	18.30%
>25yrs	245	81.70%

**Table 2 Association between breastfeeding with systemic disturbances**

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.726 <sup>a</sup>	2	0.021
Likelihood Ratio	8.088	2	0.018
Linear-by-Linear Association	6.485	1	0.011
N of Valid Cases	300		

a: 1 cells (16.7%) have expected count less than 5. The minimum expected count is 3.51

**Table 3 Association between breastfeeding with local disturbances**

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.221 <sup>a</sup>	3	0.239
Likelihood Ratio	4.587	3	0.205
Linear-by-Linear Association	2.244	1	0.134
N of Valid Cases	300		

a: 4 cells (50.0%) have expected count less than 5. The minimum expected count is 0.13

**Table 4 Association between childbirth weight and systemic disturbances**

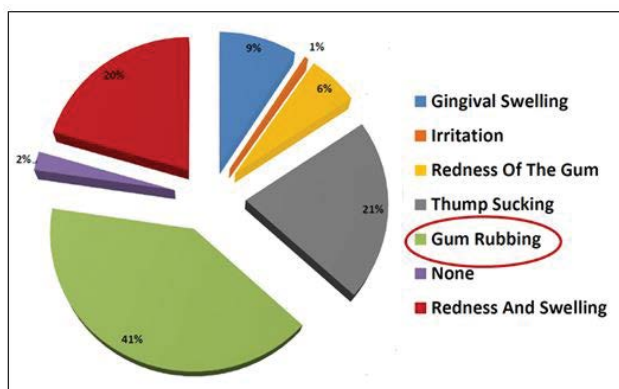
Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.700 <sup>a</sup>	2	0.259
Likelihood Ratio	2.676	2	0.262
Linear-by-Linear Association	2.665	1	0.103
N of Valid Cases	300		

a: 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.08

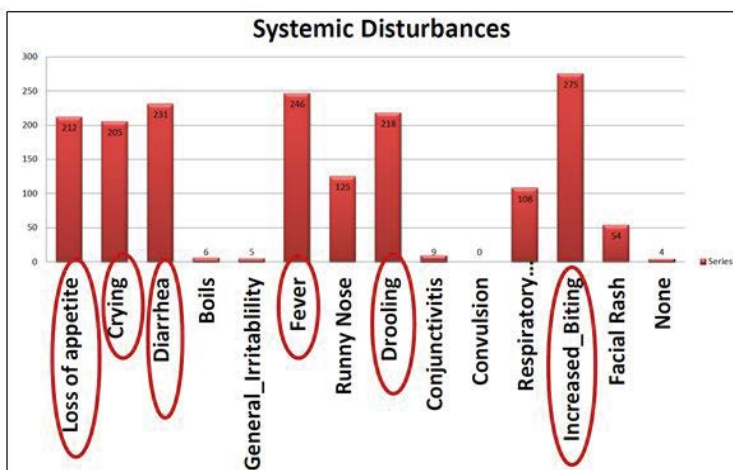
**Table 5 Association between childbirth weight and local disturbances**

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.029 <sup>a</sup>	3	0.258
Likelihood Ratio	5.037	3	0.169
Linear-by-Linear Association	0.672	1	0.412
N of Valid Cases	300		

a: 4 cells (50.0%) have expected count less than 5. The minimum expected count is 0.37



**Figure 1 Local oral disturbance as reported by caretakers**



**Figure 2 Child's systemic disturbances as reported by caretakers**

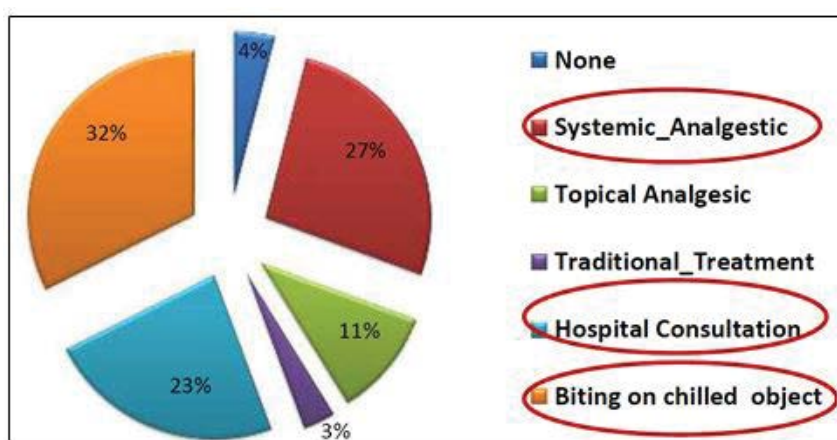


Figure 3 Measures undertaken by parents to alleviate their children's symptoms

## DISCUSSION

Teething is one of the common concerns among caretakers of the children aged between 6-36 months. In previous studies, it has been observed that low birth weight and preterm birth have its effect on tooth eruption time. It has been found delayed [10], as per the previous studies, it has been quite a common issue among all caretakers, as teething and various symptoms are related to each other. In our study, it was also found that children who were still breastfed showed more signs of systemic disturbances as compared to the children who were weaned off during the time of tooth eruption. In fact, they also studied that the children born underweight were more prevalent in the gingival swelling as compared to the children born with normal weight [11,12]. Well, as per the study published in Blackwell Publishing Ltd, Child: Care, Health and Development by Wake and Hesketh, they shared the views of medical professionals also who believed the same as the parents; that there is an association between teething and its symptoms. They did the cross-sectional survey, where it was reported that the majority of the professionals presume and believe that the infants do have symptoms during teething [13].

Then, there was one more study in which pediatricians of Florida filled a survey, results showed that 35% of them believed the positive association of tooth eruption and diarrhoea, this particular study was carried by Coriel, et al. [14]. One of the studies was carried out by Hulland, et al., where soft tissue changes were observed during the time of teething which was supported by the observation of redness of the gingival tissues [15].

As per the study which was done by Jaber, et al., a significant temperature rise was observed on the day of tooth eruption. Whereas, on the other hand, a cohort study was performed by Wake, et al. on 21 infants where no correlation was observed between tooth eruption and symptoms [16,17].

The study conducted by Fadavi, 31 children who were born prematurely with Low-birth-weight were included in the study and was observed delayed tooth eruption pattern on the first 24 months of life [18]. Also, in their study, Haddad and Correa also reported no statistically significant correlation was found between the number of erupted primary teeth, and birth weight and length [19,20]. Studies carried out by Figen revealed that growth parameters like a pre-term baby or normal baby and feeding pattern breastfed or wean of during the time of tooth eruption may be determinants of the timing of teeth eruption in healthy infants [21].

In our study, 21% of mothers reported no local symptoms at the time of teething, this finding comes in accordance with a study conducted in a nearby country, Sudan, where less than 5% of mothers thought that babies experience no medical problems as a result of teething [22]. Previous studies in Nigeria reported that 4.8% and about 10% of mothers stated that teething is not associated with symptoms [23,24]. An unusual finding was reported from India, as 88% of parents agreed that teething is a normal process that does not cause severe complications [25]. In the current study, the majority of mothers agreed that gum rubbing (41%) and, redness and swelling (20.0%) were associated with

local oral symptoms. These misconceptions are not only prevalent in Saudi Arabia but also in other parts of the world. Previous studies documented that mothers consider fever and diarrhea as normal with teething [23]. This may result in misdiagnosis and delayed management of more serious conditions. A variety of practices exist in different parts of the world, based on culture, religion, and myths that prevail in the community [26].

Only 4% of mothers did not give any treatment for teething problems. Analgesics/antipyretics, biting on chilled objects and hospital consultation were the most frequently given treatments (27%, 32%, and 23% respectively). In Sudan 16% of mothers took the baby to doctor, 9% gave oral rehydration solution, 23% just wait and 11% apply topical herbs [22]. In India, 61% of parents agreed that a child must be given systemic treatment for teething symptoms whereby syrups of analgesics, antibiotics, home remedies, topical gels were the commonly used medicaments [25,26].

Literature review reveals that care should be taken regarding excess salivation drooling out onto the infant's skin, as it should be wiped away or else skin rash may develop and is considered pathognomic of teething [5]. The present study reports that though the majority of parents were educated and aware of teething symptoms, the accurate knowledge regarding teething was required so as to enable them to make critical and important decisions for the best interest of their children. A great percentage had a belief that most of the systemic symptoms during teething are a normal physiologic process, therefore, more emphasis in the form of oral health education is required to disregard any misunderstanding that people may have with concerns to teething symptoms in general.

### CONCLUSION

The present study shows that most caretakers reported their children to suffer from both local oral disturbances (gum rubbing 41% followed by redness and swelling 20%) and systemic manifestations (increased biting, drooling, fever, diarrhoea, and loss of appetite) during the teething period. Children's symptoms were managed by either allowing the child bite on a chilled object (32%), giving the child over-the-counter systemic analgesics (27%) or taking the child to the nearest hospital for management (23%). The study did not find an association between childbirth weight (low, normal or high), breastfeeding status (stopped, on-going) on one hand and the intensity of local disturbances (gingival swelling) and systemic disturbances (fever) on the other hand.

### DECLARATIONS

#### Conflicts of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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