

Exploring Parental Knowledge and Indigenous Practices for Infant Teething in Indian Population: A Cross-sectional Study

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ABSTRACT

To assess the parental knowledge and practices regarding infant teething and attitude towards infant oral health among parents of infants aged 6 months to 3-years.

Materials and methods: A cross-sectional study was conducted among 400 parents who met the inclusion criteria. A self-designed, validated questionnaire comprising 13 questions was used. Questionnaire comprised of sociodemographic details, knowledge and experience of teething symptoms, practices used to relieve it and overall attitude towards infant oral health. Descriptive statistics and Chi-square test was applied.

Results: Parents attributed fever (87%), diarrhea (65%), gum irritation (71%) and desire to bite (78%) as common teething symptoms. Ninety-eight percent of the participants did not know that delayed tooth eruption could be an indicator for systemic disease. In case of first born child, parental knowledge was poor as compared to 2nd or 3rd born child ($p = 0.023$). Parents had a positive attitude regarding consulting a physician for teething problems and visiting a dentist for issues related to infant oral health. *Tilisi* necklaces (67%) and homeopathic tablets (25.8%) were two unique remedies identified in this population. Parents also reported over-the-counter use of systemic analgesics (58.2%). Emergence of upper teeth before lower teeth was considered as a bad omen by few parents.

Conclusion: Parents wrongly attributed several systemic illnesses as teething symptoms. Though parents had a positive attitude towards infant oral care, it was not inculcated into practice.

Clinical significance: Parents should be advised against self-medication and to report systemic illness in children to pediatricians and pediatric dentists for correct diagnosis and appropriate treatment. This study also highlights the need for educating parents about infant teething and oral care practices related to primary dentition for eruption of healthy permanent dentition.

Keywords: Infant health, Parental knowledge, Tooth eruption.

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INTRODUCTION

Tooth eruption is a developmental process responsible for moving a tooth from its crypt position through the alveolar process into the oral cavity to its final position of occlusion with its antagonist.¹ Most parents consider primary tooth eruption as an important landmark in the development of their child.² The timing of teeth eruption varies, although most children get their first primary tooth around 6 months of age and their last tooth between 24 months and 30 months.³

Primary tooth eruption, more commonly known as “teething”, is associated with local symptoms such as gum irritation and desire to bite. Since time immemorial, parents have also ascribed various systemic signs and symptoms such as fever, diarrhea, sleep disturbances, drooling, running nose, red cheeks, and decreased food intake to this process.^{1,4} The existence of these beliefs has been reported in communities worldwide as well as in India.⁵⁻⁷ Teething symptoms have tended to alleviate parental anxieties. An array of over-the-counter pharmacological and non-pharmacological remedies have been used by parents without giving due importance to the underlying etiology of these symptoms.⁴

However, there is a scarcity of literature concerning the parental knowledge and practices concerning the process of infant teething in the Indian population. Thus, there is a need to explore teething myths and remedies in the Indian population. Hence, the present study assesses the parental knowledge, experience, and practices for infant teething, and attitude toward overall infant oral health.

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MATERIALS AND METHODS

Study Setting and Population

The present study was a cross-sectional survey conducted in Belagavi city during a period of 1 month (February 2016). Ethical approval obtained from Ethics Committee of KAHE's KLE VK Institute of Dental Sciences prior to start of the study. Written informed consent was obtained from the participants of the study. Parents of infants aged 6 months to 3 years, those who gave a written informed consent and were permanent residents of Belagavi city, were included in the study. Parents who were mentally incapable to communicate were excluded from the study.

On the basis of previous literature, the prevalence of teething symptoms was taken as 90% and a sample size of 400 was obtained. Belagavi city was divided into four zones and houses, *anganwadis*, and playgroups were randomly selected from the zones in order to achieve the sample size. Parents of infants fulfilling the inclusion criteria were interviewed through the questionnaire.

Questionnaire

A tailor-made questionnaire was prepared for the purpose of the study. The questionnaire focused on four domains, that is, knowledge of the parents regarding teething process and associated symptoms (five questions); symptoms experienced by their child (one question); various remedies/practices for relieving the symptoms (three questions); and overall attitude toward infant oral health (four questions). Sociodemographic details of the parent and child were also recorded. After pilot testing this questionnaire among ten parents, few options were added, which were found to be common remedies used by the parents. The final questionnaire is comprised of 13 questions (12 closed-ended and one open-ended). Face and content validity of the questionnaire was assessed by

five subject experts (content validity ratio was 0.19). Reliability of the questionnaire was assessed by testing on five participants by test-retest (correlation coefficient = 0.7).

Statistical Analysis

Data obtained were entered in a Microsoft Excel spreadsheet, and the statistical analysis of the same was done using SPSS software version 20.0 (IBM, Chicago, IL). Data were summarized using descriptive statistics. Chi-squared test was used to find the association between variables. In all the statistical tests, p -value <0.05 was considered statistically significant.

RESULTS

Sociodemographic details of the study participants are shown in Table 1. Out of the total participants, 83.3% reported that their babies had experienced teething symptoms. The most common symptoms attributed to teething by parents included fever (87%), diarrhea (65%), gum irritation (71%), and desire to bite (78%) (Fig. 1). Parents reported fever, diarrhea, gum irritation, and desire to bite as the frequently experienced symptoms by their child during teething.

Table 1: Demographic data of the study population

Characteristics	Percentage	
Age of the parent	<25 years	64.8
	>25 years	35.2
Gender of the parent	Males	30
	Females	70
Socioeconomic status of the parent	Upper	0
	Upper middle	11.8
	Lower middle	47.4
	Upper lower	40.8
Age of the child	6 months to <1 year	19.3
	1 year to <2 years	29.5
	2 years to 3 years	51.3
Gender of the child	Males	52
	Females	48
Chronologic order of the child	1st	40.8
	2nd	56
	3rd	3.3

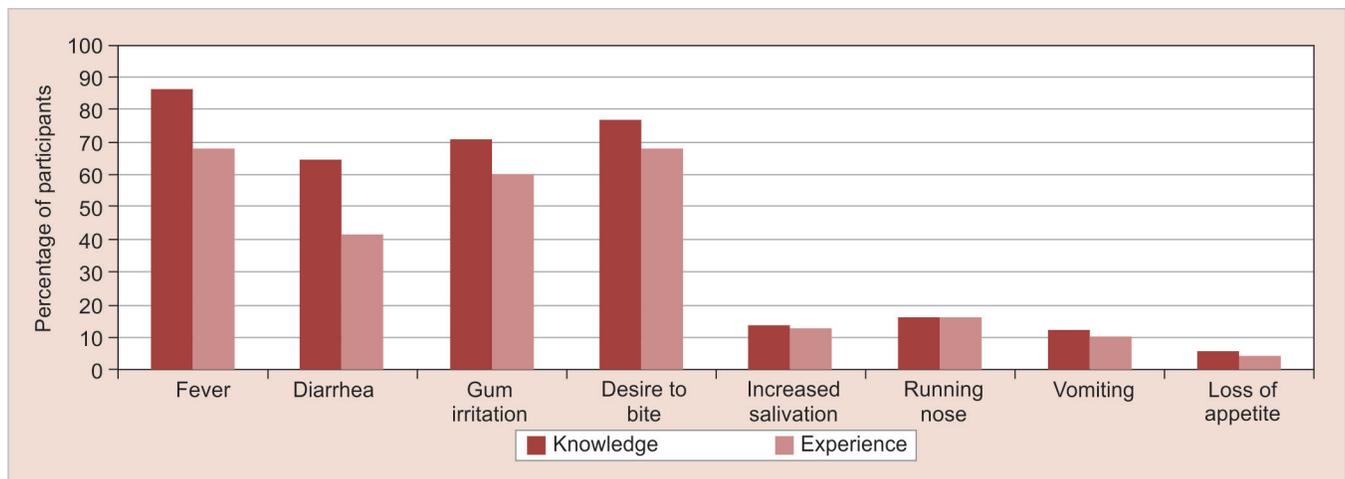


Fig. 1: Parental knowledge and experience of their child of teething symptoms (%)

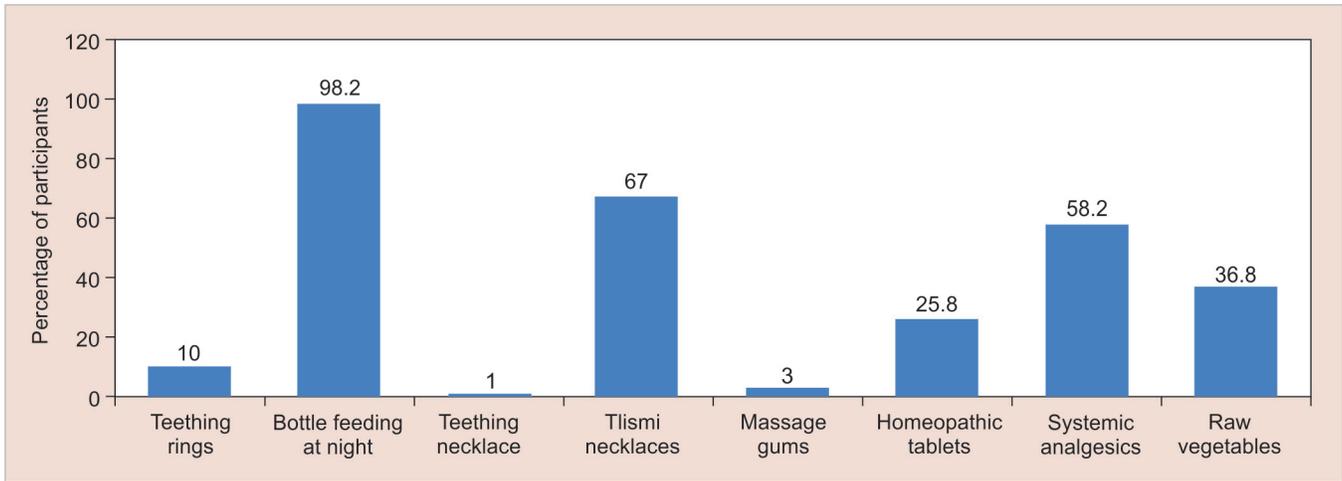


Fig. 2: Remedies used to relieve teething pain (practice)

Table 2: Parental knowledge regarding teething process and overall attitude toward infant oral health

Knowledge	Correct answer (%)	Incorrect answer (%)
When do babies get their first teeth?	87 (6–9 months)	13
Which teeth do you think are the first to come in the mouth?	91.2 (lower front)	8.7
By what time do you think eruption of milk teeth is complete?	35.8 (2½ years)	64.2
Is delayed eruption of teeth an indicator of presence of systemic disease?	2 (years)	98
Attitude	Agree (%)	Disagree (%)
Do you think it is necessary to consult a physician for teething problems?	93	7
Do you think you should take care of milk teeth?	95.5	4.5
Do you think you should consult a dentist when there is tooth decay?	97.2	2.8
If upper teeth erupt first, do you think it is a bad sign?	5.5	94.5
Do you clean your child’s teeth?	40	60

Table 3: Association of parental knowledge with birth order of the child and socioeconomic status

Order of the child	Knowledge (%)				Total	p-value
	V poor	Poor	Fair	Good		
1st	1.1	20.0	11.1	0.0	32.2	
2nd	3.3	22.2	27.8	8.9	62.2	
3rd	0.0	3.3	0.0	2.2	5.5	
Total	4.4	45.5	38.9	11.1	100	0.023*
Socioeconomic status	Knowledge (%)				Total	p-value
Upper	0	0	0	0		
Upper middle	0.0	5.6	4.4	1.8	11.8	
Lower middle	3.2	21.1	21	2.1	47.4	
Upper lower	1.1	18.7	13.2	7.8	40.8	
Total	4.3	45.4	38.6	11.7	100	

*Significant according to Chi-square test

The present study revealed that bottle feeding/nursing at night (98.2%) and using *Tlismi* necklaces (67%), homeopathic tablets (25.8%), and systemic analgesics (58.2%), and giving raw vegetables to bite on (36.8%) were commonly employed remedies by the parents for relieving teething symptoms (Fig. 2).

Maximum parents knew the age of initiation of primary tooth eruption (87%) and “lower anteriors are the first teeth to erupt in the oral cavity” (91.2%). Ninety-three percent of the parents had a

positive attitude toward visiting a physician for systemic symptoms attributed to teething (Table 2).

A significant association was found between the birth order of the child and the level of parental knowledge about teething process ($p = 0.023$). Participants who had two or three children had better knowledge of infant teething than others. No significant association was found between parental knowledge and socioeconomic status (Table 3).

DISCUSSION

Tooth eruption is a normal physiological process. It takes place during an 8-day window that includes 4 days before tooth eruption, the day of eruption, and the three subsequent days.³ Prior to eruption, the tooth is covered by enamel epithelium and as the tooth erupts, the epithelium breaks down. During this process, eicosanoids, cytokines, and growth factors are produced by the dental follicle, which results in inflammation and pain.^{1,8} Thus, teething leads to localized symptoms, which are irritating in nature.

Through various prospective studies, it is now confirmed that severe systemic illness such as fever, drooling, rashes, diarrhea, and vomiting are not reported to teething.^{5–11} Another fact that has to be understood is that the passive immunity acquired by infants through maternal antibodies diminishes after 6 months of life. This makes them susceptible to a wide range of infections and systemic illnesses.¹²

The present study revealed that parents believed fever, diarrhea, gum irritation, and desire to bite were the major symptoms of teething. Many parents also reported that their child experienced fever, diarrhea, running nose, vomiting, and loss of appetite during primary tooth eruption. Various other studies have reported that parents had attributed fever (71.7%, 83%), loose stools (58.3%, 51%), and vomiting (35%, 14.7%) to infant teething.^{4,13} Similar findings were also reported by various other authors.^{7,14–16} The findings of an Australian study indicated that few parents did not think of teething as a cause of systemic illness.¹² Hence, in the Indian population, knowledge about teething process is greatly influenced by experience rather than true scientific facts.

Since historical times, the management of teething is comprised of pharmacological and nonpharmacological remedies. Lancing, blistering, applying leeches on gums, and administering opiates and compounds containing lead, mercury, and bromide were some of the barbaric and aggressive remedies used in the past.²

The present study showed that the nonpharmacological treatment modalities included bottle feeding the baby at night (98.2%), giving raw vegetables to babies to bite upon (36.8%), while systemic analgesics (58.2%) were the pharmacological remedies practiced. The use of remedies such as systemic analgesics and feeding the baby at night has also been reported by Owais et al.¹⁷ and Kumar et al.⁶

A significant number of parents had used *Tlismi* necklaces and homeopathy medicine. These are essentially based on folk remedies and traditional beliefs practiced over the ages. Another reason could be that these treatment modalities are commonly available in the Indian market. *Tlismi* necklace is a black thread having a single bead containing various metals. The use of copper-containing coins tied around the neck of teething infants has also been reported as a folk remedy by Smittherman et al.¹⁸ The copper content is known to relieve the inflammatory mediators associated with teething and could have a role in reducing the body temperature in case of pyrexia.

Another remedy that was commonly used in this population was homeopathy medicine. These medicines contain Chamomilla, which reduces fever and diarrhea. Parents may have opted for these remedies as they are readily available at local pharmacies without a prescription. However, there have been various reports stating the inconsistent levels of belladonna in homeopathic preparations, which are not evaluated and approved by the Food and Drug Administration (United States).^{19,20} In a study conducted

among Nigerian population, the use of remedies such as powders containing aspirin, carbonate, and herbal concoctions was reported.⁴

Parents have numerous myths regarding primary tooth eruption. One such belief thought by parents in the present study was that the eruption of maxillary teeth before mandibular teeth was a bad omen.

The present study revealed that most of the parents were aware of the period of initiation of primary tooth eruption and lower anteriors as the first teeth erupting in the oral cavity. Knowledge of the parents was not found to be associated with the socioeconomic status. Similar findings were reported by Elbur et al.¹⁴ However, another Indian study reported contrasting results.⁷ Knowledge regarding infant care is influenced by the advice of elderly and the level of education does not necessarily influence knowledge. There was a significant association of birth order of the child and parental knowledge about the teething. Other studies reported contrasting finding.¹⁴

An alarming fact showed by the present study was that the parents were unaware that delayed eruption could be the sign of underlying systemic disease. Certain nutritional deficiencies, hypopituitarism and hypothyroidism, can result in delayed tooth eruption. It can also be indicative of HIV infections and certain syndromes such as cleidocranial dysplasia and Down's syndrome.^{16,21,22} A considerable number of participants also believed in the myth that the eruption of upper teeth before lower teeth was a bad omen.

The general attitude of parents toward oral care was positive, and they thought that it was important to consult a dentist for dental problems. In practice, however, most of the parents failed to clean their child's teeth. Many parents also bottle-fed their children at night. Thus, a positive attitude did not result into practice. This shows a lack of awareness and reinforcement about healthy infant oral care practices.

A limitation of the present study could be that the source of information for these teething remedies and the influence of friends and relatives on the knowledge were not taken into account.

CONCLUSION

This study highlights the prevalent myths about infant teething in the Indian population. There is a clear indication of the need to include scientific information on teething to parents and expectant mothers through educational programs. Such programs can also pave the way for improving the overall oral health in permanent dentition of children.

CLINICAL SIGNIFICANCE

This study stresses the need for advising parents of infants and expectant mothers regarding the harms of self-medication as teething remedies, reporting to pediatric clinics and dental practitioners. Also, awareness should be created for seeking physicians in case of delayed tooth eruption.

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