



## ORIGINAL ARTICLE

# Mothers' teething beliefs and treatment practices in Mansoura, Egypt



Abdel-Hady El-Gilany<sup>a,\*</sup>, Fawzia El Sayed Abusaad<sup>b</sup>

<sup>a</sup> Department Public Health, Faculty of Medicine, Mansoura University, Egypt

<sup>b</sup> Department of Pediatrics Nursing, Faculty of Nursing, Mansoura University, Egypt

Received 20 February 2017; accepted 1 May 2017

Available online 2 August 2017

## KEYWORDS

Teething;  
Teething signs;  
Teething symptoms;  
Misconception;  
Mothers' knowledge;  
Egypt

**Abstract Objectives:** To reveal mothers' beliefs about signs and symptoms associated with teething and their treatment practices.

**Population and methods:** A cross-sectional study done in Mansoura District on 457 mothers and their children with one or more erupted teeth. Mothers were interviewed during vaccination session at 25 chosen health facilities. Mothers were asked whether they agree or disagree about 24 signs and symptoms claimed to be associated with teething.

**Results:** Only 1.8% reported no symptoms at the time of teething. Majority had correct knowledge related to bite fingers/objects (70.5%) and drooling (60.0%). Inaccurate knowledge was reported as gum rubbing (42.0%), gum swelling (47.0%), diarrhea (51.0%), fever (83.2%) and weight loss (46.0%). Only 16.8% of mothers have good knowledge about teething problems. Logistic regression analysis revealed that the independent predictors of good knowledge are higher education (AOR = 3.7), urban residence (AOR = 2.5) and having a first-born child (AOR = 5.5). Only 13.4% of mothers did not give any treatment for teething problems. Antipyretics and antibiotics were the most frequently given treatments (71.3%, and 24.3%; respectively).

**Conclusions:** The majorities of mothers had low knowledge about teething problems and gave unnecessary treatments.

© 2017 The Authors. Production and hosting by Elsevier B.V. on behalf of King Saud University. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 1. Introduction

Eruption of primary teeth is associated with child health problems (Leung, 1989; McIntyre and McIntyre, 2002). However; little evidence to supports this association (Wake et al., 2001).

Signs and symptoms associated with teething vary from baby to baby. These may be local or systemic (Meer and Meer, 2011). The local symptoms include gum swelling, irritation, redness and rubbing, drooling, thumb sucking biting and

\* Corresponding author.

E-mail addresses: [ahgilany@gmail.com](mailto:ahgilany@gmail.com), [ahgilany@hotmail.co.uk](mailto:ahgilany@hotmail.co.uk) (A.-H. El-Gilany).

Peer review under responsibility of King Saud University.



Production and hosting by Elsevier

gnawing with variation between children (Hulland et al., 2000; Jones, 2002; Cunha et al., 2004; Uti et al., 2005; Ramos-Jorge et al., 2011). The systemic effects include loss of appetite, crying, diarrhea, boils, general irritability, fever, runny nose, conjunctivitis, restlessness, ear rubbing and facial rash (Macknin et al., 2000; Perez et al., 2003; Ramos-Jorge et al., 2011). Studies revealed that most of these effects are due to other causes (McIntyre and McIntyre, 2002; Dentplan, 2012).

Misconceptions about teething and their remedies are still prevalent (Markman, 2009). Treatment strategies for teething aim to achieve analgesia, anesthesia or sedation (Cranswick, 2001). Analgesics and antibiotics syrups were the commonly used medications (Bhavneet, 2012).

Teething health problems are frequent presentations in primary health care settings, furthermore, mother's false beliefs may interfere with the prompt diagnosis and management of serious illnesses (Kakatkar et al., 2012). Despite this, a search of literature revealed a lack of studies in Egypt about mothers' conceptions about teething problems and their treatments. This study aims to reveal mothers' beliefs about signs and symptoms associated with teething and their treatment as well as factors associated with good knowledge.

## 2. Population and methods

This is a cross-sectional study done in Mansoura District during a period of 4 months (from 1st January to end of April 2014). The target population is mothers and their children with one or more erupted teeth. Mothers were interviewed during vaccination session at the chosen health facilities.

Sample size calculation: Sample size was calculated online (<https://www.dssresearch.com/KnowledgeCenter/toolkitcalculators/samplesizecalculators.aspx>). A pilot study on 40 mothers and their children (Not included in the full-scale study) revealed that at about 15% of mothers had good knowledge about teething symptoms, with level of precision of 4%, alpha error of 5% and study power of 80%, the sample size was calculated to be 452 mothers at least. Ten per cent was added to compensate for non-responders, thus 500 mothers were invited to participate in the study and 457 completed the interview (response rate of 91.4%). Non-responders were either non-interested in the study or had no time to complete the questionnaire.

In the urban area 6 out of 11 health offices were selected. In the rural areas 19 out of 38 rural health units/family health units were selected by systematic random sample from the list of health facilities. The sample was distributed proportionally according to the number of registered births in each of the chosen facility during the previous year.

An Arabic questionnaire was developed by the researchers based on the extensive review of relevant literatures. Its contents and clarity were validated by a jury of 15 academic staffs (5 public health, 5 pediatric nursing and 5 to pediatric dentists). It was divided into three sections. The first section covered the socio-demographic data of the mother and her child (7 items: age, education, occupation and residence of the mothers; and age, sex and birth order of the child). The second section included a list of common manifestations and problems associated with teething (24 items). These were statements with two options: agree and disagree. The third part lists the possible remedies and interventions that are usually

applied by mothers or caregivers, and their source of information (16 items).

The participants were enrolled consecutively as they presented to the study setting with their children. The questionnaire was completed by researchers during the interview with mothers in the chosen health facilities.

Ethical consideration: the study was approved by both the ethical committee of Faculty of Nursing, Mansoura University, and the local Health Directorate. Mothers gave informed verbal consent to participate in the study, before the interview. The ethical committee requires the written consent in cases of clinical examination or invasive procedures, otherwise verbal consent is sufficient.

Data analysis: data was analyzed using SPSS version 16. Mothers who correctly answered 16 (66.7%, an arbitrary cut off point) questions or more were considered to have good knowledge. Variables were described as number and percent. In categorical variables  $\chi^2$  test and unadjusted odds ratio (OR) were used for comparison between groups. Significant predictors of good knowledge in bivariate analysis were entered into a logistic regression using the forwards Wald methods and adjusted OR (AOR) was calculated.  $P \leq 0.05$  was considered statistically significant.

## 3. Results

This study included 457 mothers (mean age 26.2 years  $\pm$  5.6) and their children (mean age 12.5 months  $\pm$  5.2). Table 1 summarizes the mothers' knowledge about teething problems. Only 1.8% reported no symptoms at the time of teething. Majority had correct knowledge related to bite fingers/objects (70.5%) and drooling (60.0%). Inaccurate knowledge was reported include gum rubbing (42.0%), gum swelling (47.0%), diarrhea (51.0%), fever (83.2%) and weight loss (46.0).

Table 2 shows that 16.8% of mothers have good knowledge about teething problems. Good knowledge is significantly lower among mothers of ages 35 years or more than mother of <20 years age (OR = 0.1). Highly educated mothers are more knowledgeable than less educated mothers (OR = 4.0), mothers of urban residence are more knowledgeable than those of rural residence (OR = 2.2) and more mothers first-born child have good knowledge than those of the last-born child (OR = 4.6).

Logistic regression analysis revealed that the independent predictors of good knowledge are higher education (AOR = 3.7), urban residence (AOR = 2.5) and being the first born child (AOR = 5.5) (Table 3).

Table 4 shows that 13.6% of mothers did not give any treatment for teething problems. Analgesics/antipyretics, pacifiers and antibiotics were the most frequently given treatments (71.3%, 31.3% and 24.3%; respectively). Relatives/friends and health care workers were most frequent source of mothers' information about teething problems and their treatments.

## 4. Discussion

Although teething do not cause severe complications, much debate still exists as to influence of teething has on the child health. The present study provides the first information on

**Table 1** Mothers' knowledge about teething signs and symptoms.

	Agree N (%)	Disagree N (%)
<i>Oral and facial symptoms</i>		
Bite fingers/objects	322 (70.5) <sup>a</sup>	135 (29.5)
Drooling	274 (60.0) <sup>a</sup>	183 (40.0)
Gum rubbing	265 (58.0) <sup>a</sup>	192 (42.0)
Gum swelling	242 (53.0) <sup>a</sup>	215 (47.0)
Finger sucking	234 (51.2) <sup>a</sup>	223 (48.8)
Gnawing	176 (38.5) <sup>a</sup>	281 (61.5)
Red eyes	69 (15.1)	388 (84.9) <sup>a</sup>
Red face	48 (10.5)	409 (89.5) <sup>a</sup>
Gum bleeding	18 (3.9)	439 (96.1) <sup>a</sup>
<i>Mood and nervous symptoms</i>		
Sleep disturbance	163 (35.7)	294 (64.3) <sup>a</sup>
Crying	156 (34.1)	301 (65.9) <sup>a</sup>
Irritability	98 (21.4) <sup>a</sup>	359 (78.6)
Convulsion/fits	8 (1.8)	449 (98.2) <sup>a</sup>
<i>Gastrointestinal symptoms</i>		
Diarrhea	233 (51.0)	224 (49.0) <sup>a</sup>
Loss of appetite/refuse breastfeeding	206 (45.1) <sup>a</sup>	251 (54.9)
Vomiting	67 (14.7)	390 (85.3) <sup>a</sup>
Constipation	51 (11.2)	406 (88.8) <sup>a</sup>
<i>Respiratory symptoms</i>		
Running nose	26 (5.7)	431 (94.3) <sup>a</sup>
Cough	18 (3.9)	439 (96.1) <sup>a</sup>
Ear problems	9 (2.0)	448 (98.0) <sup>a</sup>
<i>General symptoms</i>		
Fever	380 (83.2)	77 (16.8) <sup>a</sup>
Weight loss	210 (46.0)	247 (54.0) <sup>a</sup>
Body rash	123 (26.9)	334 (73.1) <sup>a</sup>
None	8 (1.8) <sup>a</sup>	449 (98.2)

Categories are not mutually exclusive.

<sup>a</sup> Correct response according to literature.

beliefs of Egyptian mothers about teething problems and their treatment.

Only 1.8% of mothers reported no symptoms at the time of teething. In a nearby country, Sudan, less than 5% of mothers thought that babies experience no medical problems as a result of teething (Awadkamil, 2012). Previous studies in Nigeria reported that 4.8% and about 10% of mothers stated that teething is not associated with symptoms (Uti et al., 2005; Adimorah et al., 2011). Two Australian studies showed that only 1.1% of parents and 2% of mothers believed that teething causes no problems (Wake et al., 2001; Plutzer et al., 2012). An unusual finding was reported from India as 88% of parents agreed that teething is a normal process which does not cause severe complications (Bhavneet, 2012).

The majority of mothers agreed that bite fingers/objects (70.5%) and drooling (60.0%) were associated symptoms. False beliefs prevail regarding gum rubbing, gum swelling, diarrhea, fever and weight loss and to lesser extent regarding convulsions. These misconceptions are not only prevalent in Egypt but also in other parts of the world. Similar results were reported by other studies in Sudan (Awadkamil, 2012), Nigeria

(Ige and Olubukola, 2013), India (Bhavneet, 2012; Fernandes et al., 2013), Australia (Wake et al., 2001; Plutzer et al., 2012) and Brazil (Paiano et al., 2013). Although mild fever is associated with teething (Macknin et al., 2000), high fever should be investigated (Wake et al., 2001; McIntyre and McIntyre, 2002, Wilson and Mason, 2002). Previous studies documented that mothers consider fever and diarrhea as normal with teething (Uti et al., 2005). This may result in misdiagnosis and delayed management of more serious conditions.

The study null hypothesis was rejected. Only 16.8% of mothers have good knowledge about teething problems. An Indian study revealed that 26.3% of mothers had good knowledge about teething problems (Fernandes et al., 2013). However, the definition of good knowledge was not mentioned and this may make the comparison inappropriate. The logistic regression analysis revealed that the independent predictors of good knowledge are higher education (AOR = 3.7), urban residence (AOR = 2.5) and being the first born child (AOR = 5.5). This emphasizes the role of education on enhancement of awareness and knowledge. These three predictors are interactive together in a synergistic pattern. Highly educated mothers are usually of urban residence with few numbers of children.

A Nigerian study found no statistical association between mother's education and age and perception of teething problems (Uti et al., 2005). Another Nigerian study reported that greater percentage of younger mothers and those of low socioeconomic status tend to ascribe the symptoms in their children to teething (Ige and Olubukola, 2013). An Indian study showed a significant association between mothers' knowledge and their educational level, but no association with mothers' age and employment status and number of children (Fernandes et al., 2013). This variation can be attributed to differences in culture and contents of educational curricula.

A variety of practices exist in different parts of the world, based on culture, religion and myths that prevail in the community (Fernandes et al., 2013).

Only 13.6% of mothers did not give any treatment for teething problems. Analgesics/antipyretics, pacifiers and antibiotics were the most frequently given treatments (71.3%, 31.3% and 24.3%; respectively). In Sudan 16% of mother took baby to doctor, 9% gave oral rehydration solution, 23% just wait and 11% apply topical herbs (Awadkamil, 2012). 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 (Bhavneet, 2012; Fernandes et al., 2013). In South Australia 88% of mothers have used over-the counter medicine, 73% had used topical medications and 66% had used systemic medications, mainly paracetamol (Plutzer et al., 2012).

It is interesting to note that gum incision, also known as gum lancing, is still practiced as a treatment for teething problems by 4.6% of women. The other historical remedies such as blistering, bleeding, placing leeches on the gum and applying cauterium to the back of the head are not reported by mothers in our study.

Although mothers' education is an independent predictor of good knowledge, only 6.8% of them obtained their information from educational curricula. However, relatives/friends

**Table 2** Association between knowledge level and sociodemographic features.

	N (%)	Good knowledge N (%)	Significance	OR (95%CI)
Overall	457	77 (16.8)		(13.7–20.6)
Mother's age (years)				
< 20	50	12 (24.0)		1 (r)
20	359	63 (17.5)	$\chi^2 = 1.2, P = 0.3$	0.7 (0.3–1.5)
35 & more	48	2 (4.2)	$\chi^2 = 7.9, P = 0.005$	0.1 (0.02–0.7)
Mother's education				
< Secondary	52	5 (9.6)		1 (r)
Secondary	292	31 (11.6)	$\chi^2 = 0.2, P = 0.7$	1.2 (0.4–3.8)
> Secondary	113	41 (29.7)	$\chi^2 = 8.3, P = 0.004$	4.0 (1.4–12.5)
Mother's occupation				
Working	149	31 (20.8)	$\chi^2 = 2.5, P = 0.12$	1 (r)
House wife	308	46 (14.9)		0.7 (0.4–1.1)
Residence				
Rural	321	43 (13.4)	$\chi^2 = 9.2, P = 0.002$	1 (r)
Urban	136	34 (25.0)		2.2 (1.3–3.7)
Child birth order				
First	180	49 (27.3)	$\chi^2 = 20.8, P \leq 0.001$	4.6 (2.2–9.8)
In-between	118	17 (13.0)	$\chi^2 = 2.3, P = 0.14$	1.8 (0.8–4.4)
Last	159	11 (7.5)		1 (r)
Child's sex				
Male	226	39 (17.3)	$\chi^2 = 0.1, P = 0.8$	1 (r)
Female	231	38 (16.5)		0.9 (0.6–1.6)
Child's age (months)				
6	234	42 (17.9)		1 (r)
12	128	23 (18.0)	$\chi^2 = 0.0, P = 1.0$	1.0 (0.6–1.8)
18–24	95	12 (12.6)	$\chi^2 = 1.4, P = 0.2$	0.7 (0.3–1.4)

OR = Odds ratio, CI = Confidence Interval.

**Table 3** Multivariate logistic regression analysis of independent predictors of good knowledge of teething signs and symptoms.

	$\beta$	P	AOR (95%CI)
Mother's education			
< Secondary	–		1 (r)
Secondary	0.02	0.97	1.0(0.4–2.9)
> Secondary	1.3	0.013	3.7 (1.3–10.4)
Residence			
Rural	–		1 (r)
Urban	0.9	0.001	2.5 (1.4–4.3)
Child birth order			
First	1.7	0.001	5.5 (2.5–11.4)
In-between	0.6	0.2	1.8 (0.8–4.0)
Last	–		1 (r)
Constant	–3.4		
Model $\chi^2$	58.6, P $\leq$ 0.001		
Percent correctly predicted	86.0		

AOR = Adjusted Odds ratio, CI = Confidence Interval.

**Table 4** Treatment practices and information about teething.

	N (%)
<i>Treatment practices<sup>a</sup></i>	
None	62 (13.6)
Analgesics/antipyretics	326 (71.3)
Pacifiers	143 (31.3)
Antibiotics	111 (24.3)
Vitamins	76 (16.6)
Local cream/antiseptics	71 (15.5)
Consultation	69 (15.1)
Herbs/traditional remedies	41 (9.0)
Gum incision	21 (4.6)
<i>Source of information<sup>a</sup></i>	
Relative/friends	254 (55.6)
Health care workers	202 (44.2)
Mass media	88 (19.3)
Educational curricula	31 (6.8)
<i>Needs more information about teething</i>	392 (85.6)

<sup>a</sup> Categories are not mutually exclusive.

and health care workers were the most frequent sources of mothers' information about teething problems and their treatments. An Indian study revealed that 97% of parents knew about teething from either friends, family or from their own

children's experience (Bhavneet, 2012). The majority of mothers need more information about teething. This reflects the lack of adequate health education in both educational curricula and mass media about teething.

## 5. Conclusions

In conclusion mothers still ascribe many signs and symptoms to teething despite the lack of evidence to support this. This could have implications with respect to management of childhood illness. Fever and diarrhea are viewed as teething signs and not interpreted as serious enough to warrant medical attention.

To counteract the mothers' misconceptions about teething health education is recommended during the antenatal visits and vaccination sessions.

Our findings may establish a baseline from which to monitor the clinical situation.

A nationwide community-based prospective cohort studies are recommended to investigate in depth the erroneous beliefs and practices associated with teething.

## Conflict of interest

The authors declared that there is no conflict of interest.

## Authors' contribution

Abdel-Hady El-Gilany: Conception of the research idea – data analysis – writing the manuscript – submitting the manuscript for publication.

Fawzia El Sayed Abusaad: Data collection – literature search – contributed substantially to the discussion – Proof read the manuscript.

## References

- Adimorah, G.N., Ubesie, A.C., Chinawa, J.M., 2011. Mothers' beliefs about infant teething in Enugu, South-East Nigeria: a cross-sectional study. *BMC Res. Notes* 4, 228.
- Awadkamil, M., 2012. Mothers' misconception and traditional practices towards infant teething' symptoms in Khartoum. *IOSR J. Pharmacy* 2 (3), 448–451.
- Bhavneet, K., 2012. Awareness of parents towards teething. *Bangladesh J. Med. Sci.* 11 (1), 40–43.
- Cranswick, N., 2001. Over-the-counter medication in children: friends of foe? *Aust. Prescriber* 24 (6), 149–151.
- Cunha, R.F., Garcia, L.D., Ougliesi, D.M., Murata, S.S., 2004. Systemic and local teething disturbances: prevalence in a clinic for infants. *J. Dentistry for Children* 71 (1), 24–26.
- Dentplan, 2012. Teething: myths versus oral care. *Dental Surgeons*. Available at: <<http://www.dentplan.org/teething.html>> (date accessed: May 24, 2014).
- Fernandes, S., Goud, R., Potdar, S., Pujari, S., 2013. Teething beliefs and practices among a sub-urban population in India – a cross-sectional study. *Adv. Hum. Biol.* 3, 19–25.
- Hulland, S., Lacus, J., Wake, M., Hesketh, K., 2000. Eruption of primary dentition in human infants: a prospective descriptive study. *Pediatr. Dent.* 22 (5), 415–421.
- Ige, O.O., Olubukola, P.B., 2013. Teething myths among nursing mothers in a Nigerian community. *Nigerian Med. J.* 54 (2), 107–110.
- Jones, M., 2002. Teething in children and the alleviation of symptoms. *J. Fam. Health Care* 12 (1), 12–13.
- Kakatkar, G., Nagarajappa, R., Bhat, N., Prasad, V., Sharda, A., Asawa, K., 2012. Parental beliefs about children's teething in Udaipur, India: a preliminary study. *Braz. Oral Res.* 26 (2), 151–157.
- Leung, A., 1989. Teething. *Am. Fam. Physic.* 39 (2), 131–134.
- Macknin, M.L., Piedmonte, M., Jacobs, J., Skibinski, C., 2000. Symptoms associated with infant teething: a prospective study. *Pediatrics* 105 (4), 747–752.
- Markman, L., 2009. Teething facts and fiction. *Pediatr. Rev.* 30 (8), 59–64.
- McIntyre, G.T., McIntyre, G.M., 2002. Teething troubles. *Br. Dent. J.* 192 (5), 251–255.
- Meer, Z., Meer, A., 2011. Teething trouble and its management in children. *Int. J. Dent. Clin.* 3 (2), 75–77.
- Paiano, H.M., Vizzotto, D., Lopes, C., Quadros, D., Machado, G., 2013. Parents' perception towards the signs and symptoms of infant teething. *R.S.B.O.* 10 (4), 362–368.
- Perez, B., Ram, D., Laura, B., Maria Otero, M.M., 2003. Systemic manifestations during eruption of primary teeth in infants. *J. Dent. Child.* 70 (2), 170–173.
- Plutzer, K., Spencer, A.J., Keirse, M.J., 2012. How first-time mothers perceive and deal with teething symptoms: a randomized controlled trial. *Child Care Health Dev.* 38 (2), 292–299.
- Ramos-Jorge, J., Pordeus, L.A., Ramos-Jorge, M.L., Paiva, S.M., 2011. Prospective longitudinal study of signs and symptoms associated with primary tooth eruption. *Pediatrics* 128 (3), 471–476.
- Uti, O.G., Savage, K.O., Ekanem, E.E., 2005. Maternal beliefs about infant teething. *J. Commun. Med. Prim. Health Care* 17 (1), 61–64.
- Wake, M., Hesketh, K., Lacus, J., 2001. Teething and tooth eruption in infants: a cohort study. *Pediatrics* 106, 1374–1379.
- Wilson, P.H.R., Mason, C., 2002. The trouble with teething: misdiagnosis and misuse of a topical medicament. *Int. J. Pediatr. Dent.* 12, 215–218.