Available online freely at www.isisn.org

Bioscience Research

Print ISSN: 1811-9506 Online ISSN: 2218-3973

Journal by Innovative Scientific Information & Services Network

RESEARCH ARTICLE BIOSCIENCE RESEARCH, 2023 20(3): 756-770. **OPEN ACCESS**

Sudanese mothers Unhealthy Practices and Mis-concepts undertaken to relief teething symptoms among young teething infants

Hala Shamseldin Mohmamad[1], Suheir A. M. Sayed[2], Mohammed Ahmad[3], Saeed Mohammed Omer Idris[3], Somia Jadalla Ali Frag[4], Rabia A. Eltayeb[2] and Mysara Alfaki[2]

[1]Faculty of Nursing - University of Gedarif. **Sudan**
[2]Department of Nursing, Collage of Applied Medical Sciences, Taif University, **Saudi Arabia**
[3]Faculty of Medicine, University of Gedarif. **Sudan**
[4]Nursing Collage, Jazan University **Saudi Arabia**

***Correspondence: sososayed@gmail.com** **Received: 30-05-2023, Revised: 29-07-2023, Accepted: 02-08-2023 e-Published: 05-08-2023**

The assumption of a link between common symptoms such as febrile illness, diarrhea and the eruption of primary teeth has been established over many centuries. According to traditional beliefs in some parts of Sudan, diarrhea and fever at the time of milk teeth eruption may be due to a worm in the child's gums. To investigate women's knowledge and practice undertaken to relief teething symptoms among young infants teething presenting at Algadarif community. This was descriptive cross-sectional, community based study, conducted during the period from May2021 to May 2023 at Algadarif State. The study sample was 857 mothers of children aged 6 months to 3 years and fulfilled the inclusion criteria of the study. Data was collected using a questionnaire which filled with the mothers after informed consent. The mean value of knowledge of the mothers about teething symptoms was 2.33±2.29, and rated as poor by 430(50.2%), average by 218(25.4%) and good by 209(24.4%). The mean value of belief of the mothers about teething symptoms was 2.33±2.29, and rated as poor by 430(50.2%), average by 218(25.4%) and good by 209(24.4%). The study showed that the mean value of practice of the mother was 12.81±10.88. Unhealthy practice found in 451(52.6%) of the mothers, relatively healthy practice reported by 206(24%) and healthy practice reported by 200(23.4%) of the mothers. The study revealed that mother's higher education, age group 20 – 29 years, housewife occupation and number of children 3 – 6 were significantly associated with good knowledge, believes and practices. On the other hand, age of the last child and gender of the child were independently predictors of knowledge, believes and practices of mothers about teething in children aged 6 months to 3 years.

Keywords: Unhealthy Practices, teething symptoms, infants teething presenting and Mis-concepts

INTRODUCTION

Teething is a physiological phenomenon which involves eruption of teeth in the oral cavity from its intra osseous position in the jaw Eruption of teeth (teething) is defined as the movement of the teeth from their pre-eruptive position in the alveolar bone through the mucosa into the oral The crown, which is made of enamel, lies above the gum line and covers the sensitive root, which lies below the gum line (Ahmed et al. 2021). The root makes up two thirds of the tooth's total length, goes through the periodontal ligament, and attaches into a socket in the alveolar bone of the jaw (Faheem et al. 2022). The four tissues that make up a tooth are: -Enamel: durable white covering of a tooth, Dentin: soft bonelike material that supports the enamel and carries some nerve fibers Pulp: center of the tooth that contains blood, lymph vessels, and nerves (Kreiborg et al. 2018). Cementum: covers the root of the tooth; the periodontal ligament sits between the cementum and the jaw bone and helps connect the two Teeth form embryologically from neuroectoderm, which is the portion of embryonic ectoderm that develops into the central and peripheral nervous systems (Alkhozaim et al. 2022). During the 18th century almost half ofall deaths in infancy in France were ascribed to teething problems Modern observations and research have not confirmed this belief. Only minor symptoms, like local irritation of gums, some restlessness, sleep disturbances and drooling seem to be caused by teething (Aliabad et al. 2016).

Hippocrates proposed that children who have gone through painful teething period are likely to overcome other childhood diseases. The relationship between the

eruption of deciduous teeth and infants general health has been documented for more than 5000 years. Introduction Since ancient times it has been believed in some countries that the eruption of primary teeth may cause severe health problems and even death of children. During the 18th century almost half ofall deaths in infancy in France were ascribed to teething problems Modern observations and research have not confirmed this belief. Only minor symptoms, like local irritation of gums, some restlessness, sleep disturbances and drooling seem to be caused by teething (Macknin et al. 2017).

However, severe signs and symptoms such as fever were not documented. The incidence of mild symptoms that are temporally associated with primary tooth eruption may be in part a consequence of the change from a passive to an active immune system .Parents have false beliefs about signs and symptoms associated with teething. The commonest medical problems ascribed by parents were fever and diarrhea. The consequence of such misconceptions is that the incidence of such symptoms may be signs of an underlying serious condition which may endanger the life of the child In parts of Sudan and some other countries, teething is thought to be the cause of severe health problems in infants, and a traditional treatment involves lancing the alveolar process over the erupting canines with a heated needle, a procedure known as 'Haifat' (Wake et al. 2018).

The removal of the incipient canine teeth (`germectomy') insmall babies is a practice carried out in many parts of easternAfrica Old remedies for teething include "blistering, bleeding, placing leeches on the gums, and applying cautery to the back of the head. Some traditional medicine used to treat teething pain has been found to be harmful due high lead content, with effects including toxic encephalopathy (Kakatkar et al. 2012).

Problem of teething among mother in Gadarif community it has observed

Lead to severe complication to their children.

In developing countries A descriptive cross-sectional study was conducted among 393 adults in Igbo Ora using a 33-item, semistructured questionnaire. Symptoms such as diarrhea (80.7%), fever (69.2%), and boils (64.4%) were still considered as a must to accompany teething. Teething powder, teething syrup, and traditional concoctions were commonly recommended by (42.0%), (31.6%), and (48.1%) of the respondents, respectively, to treat and prevent teething symptoms. This study revealed that misconceptions about teething are still highly prevalent among the populace in Igbo Ora, and a structured oral health education intervention at the community level is urgently needed (Bankole et al. 2017).

Studies done in Sudan. One study done was conducted in primary health care paediatric unit in Khartoum in 2000. All mothers with children aged 6 months to 3 years, were surveyed. The total sample size was 300 mothers. Most mothers (95%) reported that their children had suffered from at least one of the symptoms that were mentioned in the questionnaire, while only 5% did not figure (1). Eighty two (82%) of the mothers reported that they was worried during their babies teeth eruption. 75% of them reported that they received the information of how to handle their babies teething's symptoms from their grandmothers. 65% reported that; they are warned that teething may lead to death. Second study In parts of Sudan and some other countries, teething is thought to be the cause of severe health problems in infants, and a traditional treatment involves lancing the alveolar process over the unerupted canines with a heated needle, a procedure known as 'haifat'. Three hundred and ninety-eight children aged 4-8 years were examined for the presence of enamel defects on primary canines, and their parents or guardians were questioned regarding past teething problems and their treatment. Two hundred and fifty-eight (65%) of the children had experienced health problems that had been attributed to teething, and 89 (22%) had been subjected to 'haifat'. 'Haifat' had been practised by all socio-economic groups, but was most prevalent in the lower groups. Enamel defects on the buccal surface of the primary canines were found in 25 (28%) of the children in the 'haifat' group and in 25 (8Vo) of the other children. Introduction Since ancient times it has been believed in some countries that the eruption of primary teeth may cause severe health problems and even death of children. During the 18th century almost half ofall deaths in infancy in France were ascribed to teething problems. Modern observations and research have not confirmed this belief. Only minor symptoms, like local irritation of gums (Elbur, et al. 2019).At Gedarif community it has been observed Cases of infants presenting with complications following practices and ritual performed by the family. Wrong practices like (removal of palate, use of traditional methods that can lead to severe complications and even death) & lack of knowledge on how to treat symptoms and consequences of eruption of teeth among infants. With this study we would like to investigate wrong believes and practices related to teething among women presenting with their children to the Gadarif community. And there is no previous research done in to illustrate the scope of this problem in Gedarif..

MATERIALS AND METHODS

Study design

A descriptive cross-sectional community-based study.

Study area

The study was conducted at Gedarif State. Algadarif state is located in eastern Sudan with an area of 75,000 square kilometers. It is between Khartoum state in the north, Ethiopia in the east, Gazira in the west and Sinnar in the south. Has an estimated population of 1.7 million, is divided into ten localities. Majority of population in the

state living in a rural area setting the largest urban settlement in algadarif locality. Arabic speaking constitutes 64% of population, the other ethnic group includes western Darfur tribes and Nigerian tribe accounting 4.18% and 15% respectively. Agriculture accounts for over 80% employment, it produce millions of sorghum oil seeds (sesame seeds and ground nuts) depends on cereal markets in the country. This is in Addison to a small business transaction with Ethiopia, lack of transportation and constructed roads hinder rainy season.

Study duration

The study was conducted during the period between May2021 to May 2023.

Study population

The study population included Mother of child aged between (6 monthto-3years) agree to participate in the study.

Inclusion criteria

1-Any mother have only one child less than 6 month or more than3 years

2- Mother have more than one child who's younger than 6month or more than 3 Years

3- Mother not agree

4- Mentally not able to communicate.

Exclusion criteria

Mothers who are not willing to participate in the study.

Sample size and sampling technique

Study sample

Participation to the study was to all mothers of children aged 6 months to 3years presenting to community and fulfilled the inclusion criteria of the study.

Sample size

The sample size was determined using the following formula:

n= (Z2×(p×q))÷d2

n= sample size

Z=1.96

d= 0.05

P = the prevalence, q = 1 – p.

For the study Misconceptions and unhealthy practices among Sudanese women in Gedarif eastern Sudan 2021, that conducted at in Gedarif community.

The prevalence is unknown so the researcher used 50% as the prevalence, accordingly q = 1 – 0.50 = 0.973

n= (1.962×0.27×0.973)) ÷0.0025

= (3.8416×0.26271) ÷ 0.0025

= 1.009226736/0.0025 = 857

The sample size was 857 mothers fulfilled the inclusion criteria of the study.

Sampling technique

Convenience sampling technique was used to select the sample size. For the study Misconceptions and unhealthy practices among Sudanese women in Gedarif eastern Sudan 2021 -2023, which was conducted at community level in Gedarif.

Data collection tools and methods:

Data was collected using an interview pre-designed questionnaire. The questionnaire was prepared by the researcher after reviewing the related literature and edited by the supervisor in its final format.

The questionnaire consisted of three parts: part one about the socio demographic information of the mother age, education, tribe, number of children. Part two about the knowledge of the mothers regarding teething processes. Part three about the mother's believes on teething process. Part four about mothers' practices regarding teething in children aged 6 months to 3 years.

Rating of knowledge section:

The knowledge section consisted of 3 questions, which represented 6 points, considering the answer (Yes) in case of the questions that indicate correct answer given (2) points, Do not know given (1) point and (No) given (0). Accordingly the total number of correct points was 6, so the level of mother's knowledge about teething symptoms rated as follow:

- Poor knowledge (0 – 1 points).
- Average knowledge (2 – 4 points).
- Good knowledge (5 – 6 points).

Rating of believes section:

The believes section consisted of 20 questions, which represented 40 points, considering the answer (Yes) in case of the questions that indicate correct believes given (2) points, Do not know given (1) (indicates relatively correct believes) point and (No) given (0) (indicates wrong believes). Accordingly the total number of positive points was 40, so the level of mother's believes about relief teething symptoms rated as follow:

- Wrong believes (0 – 13 points).
- Relatively correct believes (14 – 26 points).
- Correct believes (27 – 40 points).

Rating of practice section:

The perception section consisted of 18 questions, which represented 32 points, considering the answer (Yes) in case of the questions that indicate healthy practice given (2) points, Do not know given (1) (indicates relatively healthy practice) point and (No) given (0) (indicates unhealthy practice). Accordingly the total number of positive points was 32, so the level of mother's practice about relief of teething symptoms rated as follow:

- Poor practice (0 – 11 points).

- Medium practice (12 – 19 points).
- Good practice (20 – 432oints).

For descriptive statistics the frequency and percentage tables and figures were used to describe the general characteristics of the study sample and the percentage and frequency of levels of knowledge, believes and practice of the women towards relief of teething symptoms. One sample T-Test was used to calculate the mean and standard deviations of knowledge; believes and practice of the women towards relief of teething symptoms.

Study variables

Dependent variables:

Mothers' knowledge believes and practice of teething

Independent variables:

These include the sociodemographic data of the mothers including age of the mother, education, and occupation of the mother, in addition to number of the children, age of the youngest child and gender of the child

Statistical analysis:

Data was tabulated and analyzed using the Statistical Package for Social Sciences (SPSS) version 25. For descriptive statistics the frequency and percentage tables and figures were used to describe the general characteristics of the study sample and the percentage and frequency of levels of knowledge, believes and practice of the women towards relief of teething symptoms. One sample T-Test was used to calculate the mean and standard deviations of knowledge; believes and practice of the women towards relief of teething symptoms.

Chi-squire test was used to test the differences and associations of levels of knowledge, believes and practice of the women towards teething and the sociodemographic characteristics of the study sample. All the statistics were performed using Statistical Packages for Social Sciences (SPSS) version 26.0. Firstly and after revising the questionnaires to insure that all women answered for all questions and after rating the sections of knowledge, believes and practice of the women towards relief of teething symptoms, the data was coded and entered in Excel Sheet (Microsoft Office 2016). Then transferred to SPSS sheet for processing the required statistics mentioned above. One sample T test was used to calculate the mean values of total knowledge and believes of the mothers regarding teething symptoms and practices to relief teething symptoms. Chi squire test was used to measure the effect of sociodemographic characteristics of the mothers on their total knowledge and believes of the mothers regarding teething symptoms and practices to relief teething symptoms (Chi squire < 3.0 and P value > 0.05 indicated no significant association and Chi squire > 3.0 and P value < 0.05 indicated significant association.

Ethical considerations

Written ethical clearance and approval for conduction of the research was obtained from Faculty of Graduate Studies at Gedarif University No (56-564).written permission was obtained from the administrative authority of Gedarif locality No (34 – 412) and written informed, clear and appropriate consent was obtained from the mothers. Study data and information were insured to be used only for research purpose. Privacy of data collected was considered (No names, data was coded; data was interpreted in form of statement tables & figures).

RESULTS

The women who mentioned the correct answer about the age of first teeth (6-7 months) were 208(24.3%), the first teeth are the central lower 2012(24.7%) and complete teeth development by age 3 years 197(23%) (Table 1).

Table 1: Distribution of the mothers according to general knowledge regarding relief of teething symptoms

Items	No		Do not know		Yes		Total	
	F	%	F	%	F	%	F	%
The age of first teeth 6 - 7 months	384	44.8	265	30.9	208	24.3	857	100.0
The first teeth are central lower	402	46.9	243	28.4	212	24.7	857	100.0
Complete teeth development by age 3 years	404	47.1	256	29.9	197	23.0	857	100.0

Table 2: Distribution of the mothers according to total knowledge regarding relief of teething symptoms

Total knowledge	Frequency	Percentage	Mean	SD
Poor 0 - 1	430	50.2	2.33	2.29
Average 2 - 4	218	25.4		
Good 5 - 6	209	24.4		
Total	857	100.0		

The mean value of knowledge of the mothers about teething symptoms was 2.33±2.29, and rated as poor by 430(50.2%), average by 218(25.4%) and good by 209(24.4%) (Table 2).

The most common correct believes regarding teething symptoms of infants that mentioned by the mothers were fever 233(27.2%), diarrhea 227(26.5%), sucking fingers 230(26.8%), desire to bite 209(24.4%) and excessive salivary secretion 217(25.3%). The most common wrong believes about symptoms of teething that mentioned by mothers were convulsions 225(26.3%), ear problems 205(23.9%), skin rash 199(23.2%), and face redness 208(24.3%) (Table3).

The mean value of total believes of the mothers regarding teething symptoms was 15.79±14.46. The wrong believes were reported by 426(49.7%) of the mothers, relatively correct believes by 228(26.6%) and correct believes by 203(23.7%) (Table 4).

Table 3: Distribution of the mothers according to believes regarding teething symptoms

Items	No		Do not know		Yes		Total	
	N	%	N	%	N	%	N	%
Fever	403	47.0	221	25.8	233	27.2	857	100.0
Diarrhea	413	48.2	217	25.3	227	26.5	857	100.0
Convulsions	386	45.0	246	28.7	225	26.3	857	100.0
Loss of appetite	349	40.7	296	34.5	212	24.7	857	100.0
Constipation	347	40.5	294	34.3	216	25.2	857	100.0
Sleep disturbances	378	44.1	276	32.2	203	23.7	857	100.0
Mouth infection	354	41.3	280	32.7	223	26.0	857	100.0
Sucking fingers	355	41.4	272	31.7	230	26.8	857	100.0
Gingivitis	404	47.1	244	28.5	209	24.4	857	100.0
Desire to bite	413	48.2	235	27.4	209	24.4	857	100.0
Nasal discharge	401	46.8	229	26.7	227	26.5	857	100.0
Vomiting	391	45.6	235	27.4	231	27.0	857	100.0
Excessive salivary secretion	407	47.5	233	27.2	217	25.3	857	100.0
Ear problems	416	48.5	236	27.5	205	23.9	857	100.0
Excessive saliva	427	49.8	242	28.2	188	21.9	857	100.0
Ability to got other infections	420	49.0	226	26.4	211	24.6	857	100.0
Skin rash	404	47.1	254	29.6	199	23.2	857	100.0
Face redness	431	50.3	218	25.4	208	24.3	857	100.0
Discomfortable	399	46.6	218	25.4	240	28.0	857	100.0
Pain	440	51.3	204	23.8	213	24.9	857	100.0

Table 4: Distribution of the mothers according to total believes regarding teething symptoms

Range of believes	Frequency	Percentage	Mean	SD
0 - 13 wrong	426	49.7	15.79	14.46
14 - 26 relatively correct	228	26.6		
27 - 40 correct	203	23.7		
Total	857	100.0		

Table 5: Distribution of the mothers according to practices regarding relief of teething symptoms

Items	Yes		Do not know		No		Total	
	N	%	N	%	N	%	N	%
Consult mother	473	55.2	186	21.7	198	23.1	857	100.0
Consult grandmother	456	53.2	207	24.2	194	22.6	857	100.0
Consult more expert neighbor	398	46.4	277	32.3	182	21.2	857	100.0
Enable the child to bite something	309	36.1	314	36.6	234	27.3	857	100.0
Bottle feeding / night breastfeeding	317	37.0	278	32.4	262	30.6	857	100.0
Use localized analgesia	317	37.0	299	34.9	241	28.1	857	100.0
Giving fluids to avoid dehydration	368	42.9	258	30.1	231	27.0	857	100.0
Hyphate removal	356	41.5	288	33.6	213	24.9	857	100.0
Dental incisors removal	367	42.8	283	33.0	207	24.2	857	100.0
Using ironing behind the head	365	42.6	259	30.2	233	27.2	857	100.0
Removal of the epiglottis	377	44.0	263	30.7	217	25.3	857	100.0
Use tradition dokhan	418	48.8	250	29.2	189	22.1	857	100.0
Use mahlab	413	48.2	242	28.2	202	23.6	857	100.0
Consult doctor	398	46.4	232	27.1	227	26.5	857	100.0
Giving the child antibiotics	416	48.5	225	26.3	216	25.2	857	100.0
Enable the child to use the tether	418	48.8	219	25.6	220	25.7	857	100.0

Table 6: Distribution of the mothers according to total practice regarding relief of teething symptoms

Range of practice	Frequency	Percentage	Mean	SD
0 - 11 unhealthy	451	52.6	12.81	10.88
12 - 19 Relatively healthy	206	24.0		
20 - 32 Healthy practice	200	23.4		
Total	857	100.0		

The most common healthy practices regarding relief of teething symptoms which mentioned by the mothers in this study were consult doctor 398(46.4%), giving fluids to avoid dehydration 368(42.9%), consult mother 473(55.2%), consult grandmother 456(53.2%) and consult expert neighbor 398(46.4%). The most common unhealthy practices regarding relief of teething symptoms that mentioned by the women were use of traditional dockan 418(48.8%), enable the child to use tether 418(48.8%), giving the child antibiotics 416(48.5%), use ironing behind the head 365(42.6%), bottle feeding 317(37%), hyphate removal 356(42.8%), and removal of epiglottis 377(44%). The mean value of practice of the mother was 12.81±10.88. Unhealthy practice found in 451(52.6%) of the mothers, relatively healthy practice reported by 206(24%) and healthy practice reported by 200(23.4%) of the mothers (Table 6).

As shown in Table (7), the sociodemographic characteristics which were significantly associated with good level of knowledge about teething were age group 20 – 29 years, secondary and university level of education, housewife occupation and number of children 3 – 6 (Chi Squire > 3.0 and P value < 0.05). On the other hand, age of the last child and gender of the child were independently predictors of knowledge of mothers about teething in children aged 6 months to 3 years years.

As shown in Table (8, the sociodemographic characteristics which were significantly associated with correct believes regarding teething were age group 20 – 29 years, secondary and university level of education, and housewife occupation (Chi Squire > 3.0 and P value < 0.05). On the other hand, number of children, age of the last child and gender of the child were independently predictors of correct believes of mothers about teething in children aged 6 months to 3 years years.

Table 7: Distribution of the mothers according to Total knowledge regarding teething in relation to sociodemographic characteristics of the mothers

Characteristics	Total knowledge about teething						Chi	P value
	Poor 0 - 1		Average 2 - 4		Good 5 - 6			
Age group	F	%	F	%	F	%		
< 20 years	24	5.6	12	5.5	3	1.4	18.26	0.015*
20 - 29 years	148	34.4	139	63.8	134	64.1		
30 - 39 years	250	58.1	67	30.7	72	34.4		
40 years and above	8	1.9	0	0.0	0	0.0		
Total	430	100.0	218	100.0	209	100.0		
Education of the mother								
Illiterate	332	77.2	45	20.6	29	13.9	14.52	0.017*
Primary	75	17.4	90	41.3	20	9.6		
Secondary	13	3.0	68	31.2	95	45.5		
University	10	2.3	15	6.9	65	31.1		
Total	430	100.0	218	100.0	209	100.0		
Occupation of the mother								
Housewife	418	97.2	206	94.5	152	72.7	22.3	0.001*
Employee	9	2.1	3	1.4	45	21.5		
Worker	3	0.7	9	4.1	12	5.7		
Total	430	100.0	218	100.0	209	100.0		
Number of children								
< 3	105	24.6	75	34.4	60	28.7	16.33	0.016*
3 to 6	247	57.8	118	54.1	129	61.7		
> 6	75	17.6	25	11.5	20	9.6		
Total	427	100.0	218	100.0	209	100.0		
Age of youngest child								
11 months	90	20.9	74	33.9	60	28.7	2.01	0.64**
12 - 23 months	159	37.0	88	40.4	82	39.2		
24 - 36 months	181	42.1	56	25.7	67	32.1		
Total	430	100.0	218	100.0	209	100.0		
Gender of the youngest child								
Male	262	60.9	121	55.5	97	46.4	1.19	0.75**
Female	168	39.1	97	44.5	112	53.6		
Total	430	100.0	218	100.0	209	100.0		

* Significant (Chi > 3.0 and P value < 0.05)
** Not significant (Chi < 3.0 and P value > 0.05)

Table 8: Distribution of the mothers according to Total believes regarding teething symptoms in relation to sociodemographic characteristics of the mothers

Characteristics	Range of believes						Chi	P value
	0 - 13 incorrect		14 - 26 relatively correct		27 - 40 correct			
Age group	**F**	**%**	**F**	**%**	**F**	**%**		
< 20 years	24	5.6	12	5.3	3	1.5	19.47	0.014*
20 - 29 years	146	34.3	147	64.5	128	63.1		
30 - 39 years	248	58.2	69	30.3	72	35.5		
40 years and above	8	1.9	0	0.0	0	0.0		
Total	426	100.0	228	100.0	203	100.0		
Education of the mother								
Illiterate	333	78.2	44	19.3	29	14.3	15.36	0.017*
Primary	70	16.4	95	41.7	20	9.9		
Secondary	13	3.1	71	31.1	92	45.3		
University	10	2.3	18	7.9	62	30.5		
Total	426	100.0	228	100.0	203	100.0		
Occupation of the mother								
Housewife	411	96.5	213	93.4	152	74.9	23.14	0.001*
Employee	9	2.1	6	2.6	42	20.7		
Worker	6	1.4	9	3.9	9	4.4		
Total	426	100.0	228	100.0	203	100.0		
Number of children								
< 3	102	24.1	84	36.8	54	26.6	18.89	0.015*
3 to 6	241	57.0	124	54.4	129	63.5		
> 6	80	18.9	20	8.8	20	9.9		
Total	423	100.0	228	100.0	203	100.0		
Age of youngest child								
11 months	84	19.7	83	36.4	57	28.1	1.59	0.69**
12 - 23 months	165	38.7	85	37.3	79	38.9		
24 - 36 months	177	41.5	60	26.3	67	33.0		
Total	426	100.0	228	100.0	203	100.0		
Gender of the youngest child								
Male	259	60.8	121	53.1	100	49.3	1.28	0.74**
Female	167	39.2	107	46.9	103	50.7		
Total	426	100.0	228	100.0	203	100.0		

* Significant (Chi > 3.0 and P value < 0.05)
** Not significant (Chi < 3.0 and P value > 0.05)

Table 9: Distribution of the mothers according to Total practice regarding relief of teething symptoms in relation to socio-demographic characteristics of the mothers

Characteristics	Range of practice						Chi	P value
	0 - 11 Unhealthy		12 - 19 Relatively healthy		20 - 32 Healthy practice			
Age group	F	%	F	%	F	%		
< 20 years	24	5.3	12	5.8	3	1.5	17.38	0.013*
20 - 29 years	170	37.7	126	61.2	125	62.5		
30 - 39 years	249	55.2	68	33.0	72	36.0		
40 years and above	8	1.8	0	0.0	0	0.0		
Total	451	100.0	206	100.0	200	100.0		
Education of the mother								
Illiterate	340	75.4	37	18.0	29	14.5	13.21	0.019*
Primary	85	18.8	83	40.3	17	8.5		
Secondary	19	4.2	67	32.5	90	45.0		
University	7	1.6	19	9.2	64	32.0		
Total	451	100.0	206	100.0	200	100.0		
Occupation of the mother								
Housewife	439	97.3	191	92.7	146	73.0	20.41	0.001*
Employee	6	1.3	9	4.4	42	21.0		
Worker	6	1.3	6	2.9	12	6.0		
Total	451	100.0	206	100.0	200	100.0		
Number of children								
< 3	102	22.8	84	40.8	54	27.0	16.33	0.014*
3 to 6	266	59.4	102	49.5	126	63.0		
> 6	80	17.9	20	9.7	20	10.0		
Total	448	100.0	206	100.0	200	100.0		
Age of youngest child								
11 months	93	20.6	74	35.9	57	28.5	2.11	0.61**
12 - 23 months	171	37.9	79	38.3	79	39.5		
24 - 36 months	187	41.5	53	25.7	64	32.0		
Total	451	100.0	206	100.0	200	100.0		
Gender of the youngest child								
Male	271	60.1	115	55.8	94	47.0	1.85	0.65**
Female	180	39.9	91	44.2	106	53.0		
Total	451	100.0	206	100.0	200	100.0		

* Significant (Chi > 3.0 and P value < 0.05)

** Not significant (Chi < 3.0 and P value > 0.05)

As shown in Table (6), the sociodemographic characteristics which were significantly associated with correct believes regarding teething were age group 20 – 29 years, secondary and university level of education, and housewife occupation (Chi Squire > 3.0 and P value < 0.05). On the other hand, number of children, age of the last child and gender of the child were independently predictors of healthy practice of mothers about teething in children aged 6 months to 3 years years.

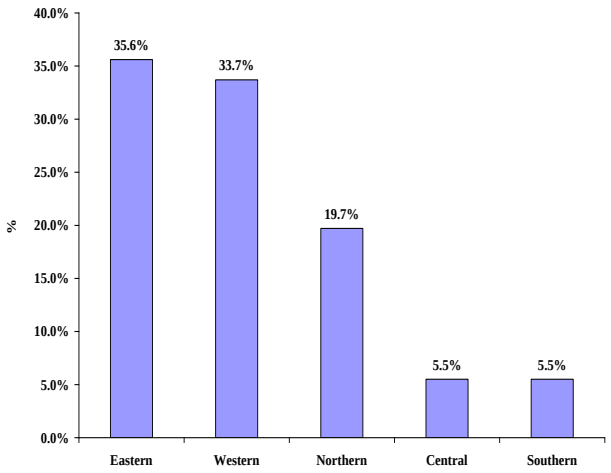

Figure 1: Distribution of the mothers according to tribal origin

The most common tribal origins of the mothers were from Eastern Sudan tribes 305(35.6%), Waster Sudan tribes 289(33.7%) and Northern Sudan tribes 169(19.7%) (Figure 1).

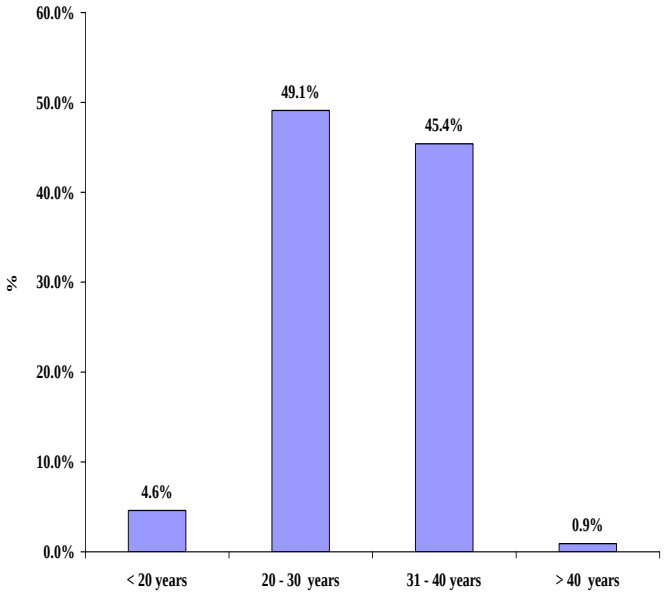

Figure 2: Distribution of the mothers according to age

The mothers aged 20 – 29 years were 421(49.1%), followed by mothers aged 30 – 39 years 389(49.1%), less than 20 years 39(4.6%) and 40 years or above 8(0.9%) (Figure 2).

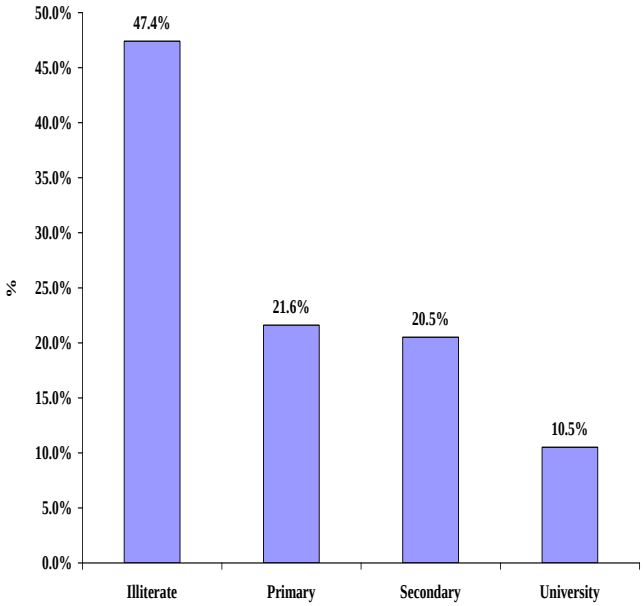

Figure 3: Distribution of the mothers according to educational level

Highest percentage of the mothers 406(47.4%) were illiterates, 185(21.6%) had primary level of education, 176(20.5%) had secondary level of education and 90(10.5%) had university level of education (Figure 3).

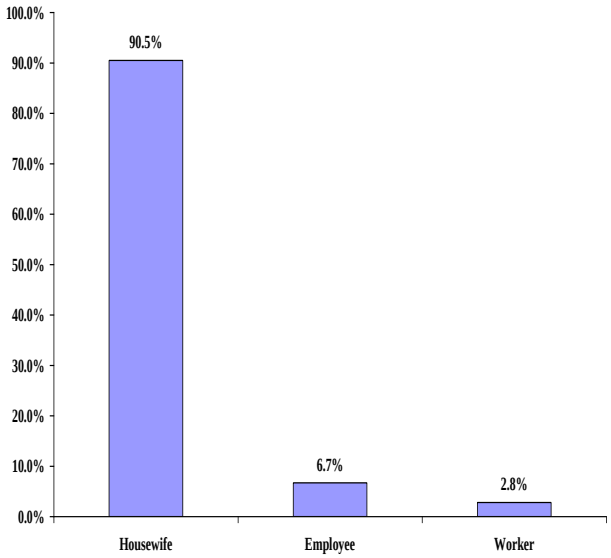

Figure 4: Distribution of the mothers according to occupation

The majority of the women 776(90.5%) were housewives, 57(6.7%) were employees and 24(2.8%) were workers (Figure 4).

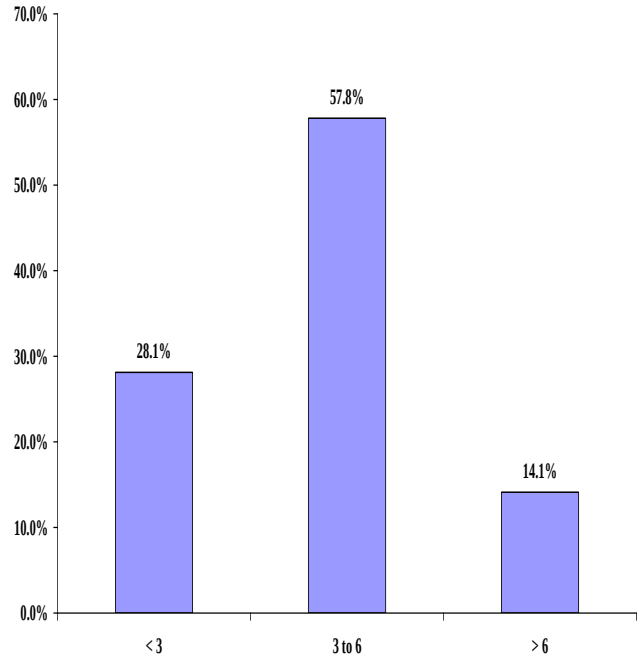

Figure 5: Distribution of the mothers according to number of children

The number of children was 3 – 6 children 494(57.8%), less than 3 children 240(28.1%) and more than 6 children 120(14.1%) (Figure 5).

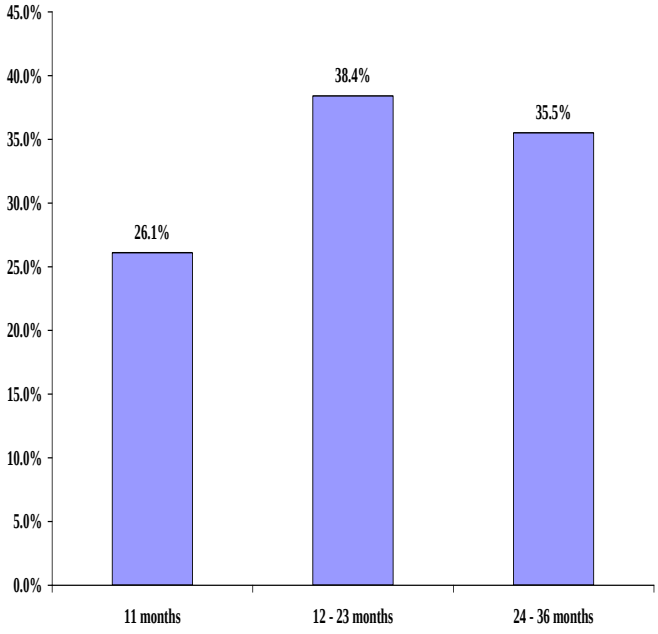

Figure 6: Distribution of the mothers according to age of the child

The age of the current child was 12 – 23 months 329(38.4%), between 24 – 36 months 304(35.5%) and 11 months 224(26.1%) (Figure 6)

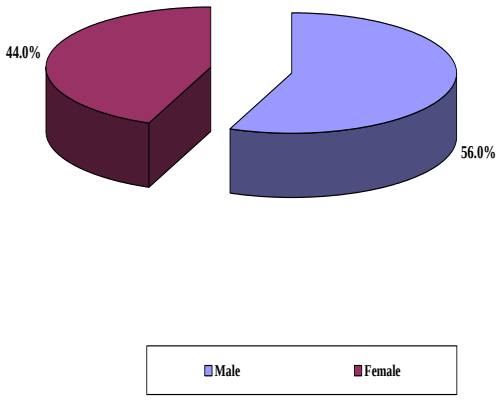

Figure 7: Distribution of the mothers according to gender of the child

The gender of the current child was male 480(56%) and female 377(44%) (Figure7).

DISCUSSION

The historical management of teething could, for the most part, be defined as barbaric according to contemporary clinical standards. There were many and varied historical remedies used to relieve teething associated signs and symptoms in the past, including lancing the overlying gingival tissue, putting leeches on the gums, applying necklaces, blistering, bleeding, cautery on the back of the head, rubbing the gingiva with different animal extracts, and prescribing or using heavy metal, salts or opiates Kreiborg et al.2018). Others suggested hanging viper or wolf teeth around the child's neck. Alternatively, others encourage children to chew on hard stuff like roots or silver spoons if they were wealthy (Bankole et al. 2017). To highlight these issues among the local community in Gedarif State, a total of 857 mothers were included with main aim to investigate women‘s knowledge and practice undertaken to relief teething symptoms among young infants teething presenting at Gadarif community. The women included in this study from different tribes of Sudan with dominance of women from Eastern Sudan as a result of location of the State and consequently be dominated by Eastern Sudanese tribes in addition to other tribes from different parts of Sudan. The common age group was 20 – 30 years. Illiteracy and low level of education were dominated among the mothers in this study as the area is one of the marginalized states in Sudan and had low human

development index with prevalence of poverty among broad sector of the population the State.

Regarding the knowledge of the mothers about teething practice, the study showed that the mean value of knowledge of the mothers about teething symptoms was 2.33±2.29, and rated as poor by 430(50.2%), average by 218(25.4%) and good by 209(24.4%). This indicates that poor knowledge about teething was common among the mothers in this study. Moreover, the mother s who mentioned the correct answer about the age of first teeth (6-7 months) were 208(24.3%), the first teeth are the central lower 2012(24.7%) and complete teeth development by age 3 years 197(23%). Additionally, this study concluded that the sociodemographic characteristics which were significantly associated with good level of knowledge about teething were age group 20 – 29 years, secondary and university level of education, housewife occupation and number of children 3 – 6 (Chi Squire > 3.0 and P value < 0.05). On the other hand, age of the last child and gender of the child were independently predictors of knowledge of mothers about teething in children aged 6 months to 3 years years. Similar to our stud, a study by Nishana et al assessed mother's knowledge and beliefs about teething signs and symptoms, to evaluate their experience during the teething of their youngest child and to assess the practices undertaken by mothers to relieve the teething symptoms. The majorities of the respondents were in the age group of 28 – 37 years of age and had only primary level of education. Almost about 93% of the mothers knew that the tooth eruption starts around 6 – 7 months of age and the first tooth to erupt is the lower central incisors. About 85 % of the mothers said that the primary tooth eruption gets completed by 2 years of age. Almost 90 % parents attributed fever and diarrhea to teething. Almost 55 % of the parents consulted a doctor for fever and diarrhea. Savy et al determined the knowledge and beliefs about teething among mothers in selected hospital at Mangalore. The result shows that most (77%) of the mothers had average knowledge about teething, 15.9% had poor knowledge and 7.1% had good knowledge regarding teething (Kimbonguila et al. 2019). Allam evaluated the knowledge of Egyptian mothers about teething, to determine how they used to manage its problems, and to investigate the association between the education status of mothers and their management of teething problems. The needed sample size was derived to be 120 mothers. All mothers revealed that their children had at least one of the symptoms that were presented in the questionnaire. Response to teething was wrongly accompanied with fever (76%), diarrhea (80%), and sleep disturbances (86%). The mothers in the age-group 20–24 years showed significantly higher level of knowledge than those in other age-groups. Regarding mother's education, university and diploma groups had significantly higher level of knowledge than others (Macknin et al .2017). Aliyu et al determined common teething complaints reported by Nigerian mothers. Two hundred and three (90.62%) of them believed teething caused symptoms; common complaints that were attributed to teething by mothers were diarrhea, vomiting, increased salivation; however, fever was the predominant complaint, and their parents were the most common source of information on teething in 50% of them, while only a mother (0.4%) was informed on the process of teething at the hospital. Furthermore, the number of children did not affect the desire to seek for medical care for teething symptoms. Common remedies used were as follows: 59 (26.3%) nursing mothers used teething syrup, 43 (19.2%) nursing mothers used teething powder, 16 (7.2%) of them used traditional herbs while 8(3.6%) of them used multiple preparations; however 91 (40.6%) of them did not use any remedy. One hundred and seven (47.8%) of the mothers believed that these remedies worked, 67 (29.9%) of them disagreed while 50 (22.3%) were not sure of their efficacy (Elbur et al. 2019).

The study concluded that the mean value of believes of the mothers about teething symptoms was 2.33±2.29, and rated as poor by 430(50.2%), average by 218(25.4%) and good by 209(24.4%). Here the women who had wrong knowledge more than the women who had correct knowledge about signs of teething among children aged 6 months to 3 years. This further confirmed by the results showed that most common wrong believes about symptoms of teething that mentioned by mothers were convulsions 225(26.3%), ear problems 205(23.9%), skin rash 199(23.2%), and face redness 208(24.3%). Moreover, the mean value of total believes of the mothers regarding teething symptoms was 15.79±14.46. The wrong believes were reported by 426(49.7%) of the mothers, relatively correct believes by 228(26.6%) and correct believes by 203(23.7%). In addition, the study showed that the sociodemographic characteristics which were significantly associated with correct believes regarding teething were age group 20 – 29 years, secondary and university level of education, and housewife occupation (Chi Squire > 3.0 and P value < 0.05). On the other hand, number of children, age of the last child and gender of the child were independently predictors of correct believes of mothers about teething in children aged 6 months to 3 years. This is similar to Kakatkar et al. 2012 in India assessed parents' knowledge and beliefs about teething signs and symptoms and to investigate the practices used to alleviate teething troubles. Response to teething was incorrectly attributed to fever (70%), diarrhea (87.5%), and sleep disturbances (48.2%). Only 33.2% of parents allowed their children to bite on chilled objects to relieve symptoms associated with teething. A common lack of knowledge about teething among parents should encourage dental healthcare providers to educate them regarding the teething process and its management (Kakatkar et al. 2012). Yousif in Iraq evaluated mothers' beliefs toward teething and to

investigate the practices preferred by mothers to alleviate symptoms that might accompany the teething process. All (100%) participants attributed at least one symptom or sign to the teething process. The most common symptoms reported were fever (70%), diarrhea (68.5%), and sleep disturbance (63.5%). Sixty-eight percent of mothers believed teething remedies were effective; only 10 (5%) did not give any treatment. Over half (62%) gave medications, such as antipyretics, antibiotics, and antidiarrheal agents. Some used teething gels (29%), pacifiers (50%), gum massage (22%), and hard foods such as biscuits and carrots (43.5%). Mothers of various educational levels reported attributed symptoms, and the result was statistically significant ($p < 0.05$). Mothers of a firstborn child were found to have a higher tendency to attribute symptoms to teething than those who had previous experience with children ($p < 0.05$)[63]. Faheem et al 2022 in Pakistan studied mothers' awareness of the teething process in children, their associated symptoms, adopted cultural practices, and medicines given to relieve these symptoms. Out of 115, half of the mothers knew the completion dates of deciduous dentition, that is, approximately 3 years that was statistically significant with education. Fifty-two percent of the mothers expressed their concern when their children started teething which was correlated with education. Ninety percent of the mothers reported that teething was associated with different symptoms. Fever was the most reported symptom during teething followed by diarrhea and poor appetite. On worsening of teething symptoms, 61 (53%) mothers took their children to the hospital. Paracetamol was the most common medicament given by 59 (51.3%) mothers which was associated with their education and occupation. The majority of mothers did not associate teething symptoms with their older children and siblings and this was correlated with mothers' education (Aliabad et al .2016) Getaneh, et al. 2018 assessed Ethiopian mothers' traditional beliefs and practices towards teething symptoms. A total of 107 mothers were interviewed. Ninety-eight (91.6%) claimed that teething was associated with various symptoms. Ninety-seven (90.7%) attributed diarrhea to teething. Only one mother said she would give her child Paracetamol to relieve the teething symptoms. Five (4.7%) mothers said they would allow their children to bite on a pacifier. Ten mothers (9.3%) said that they would prefer the child's milk tooth to be extracted. Some of the practices by mothers to relieve the symptoms include rubbing the gum of the child with garlic (12.1%) or rubbing the gum with herbs (6.5%) (Getaneh et al. 2018)

Regarding the practice of mothers towards teething among the children aged 6 months to 3 years, the study showed that the mean value of practice of the mother was 12.81±10.88. Unhealthy practice found in 451(52.6%) of the mothers, relatively healthy practice reported by 206(24%) and healthy practice reported by 200(23.4%) of the mothers. Which indicates dominant of unhealthy practice of mothers to relief teething symptoms among their children. Furthermore, most common unhealthy practices regarding relief of teething symptoms that mentioned by the women were use of traditional dockan 418(48.8%), enable the child to use tether 418(48.8%), giving the child antibiotics 416(48.5%), use ironing behind the head 365(42.6%), bottle feeding 317(37%), hyphate removal 356(42.8%), and removal of epiglottis 377(44%). Moreover, the study concluded that the sociodemographic characteristics which were significantly associated with correct believes regarding teething were age group 20 – 29 years, secondary and university level of education, and housewife occupation (Chi Squire > 3.0 and P value < 0.05). On the other hand, number of children, age of the last child and gender of the child were independently predictors of healthy practice of mothers about teething in children aged 6 months to 3 years. Similar to Amjad, et al in Pakistan investigated parental beliefs, myths and awareness that exists regarding teething and to find out parental practices to alleviate teething troubles in their children. According to 87.5% of the parents it was problematic for them to manage their child during teething. Most frequent sign and symptom reported by parents was general irritability (80%), followed by diarrhea (74.2%) and desire to chew / bite on something (70.8%). To alleviate their child's teething troubles, 43.3% of them used homeopathic medicine and 26.7% allowed bottle feeding at night. Almost one-third parents regarded delayed eruption as an abnormality and indication of presence of underlying systemic disease, hence, 2.5% of them wanted to take the child to a faith healer while, 4.2% were in favor of getting a gum incision. Interestingly, 17.5% and 6.7% parents thought that early eruption is a sign of intelligence of the child and sign of a cursed family respectively (El-Gilany et al. 2017). Allam evaluated the knowledge of Egyptian mothers about teething, to determine how they used to manage its problems, and to investigate the association between the education status of mothers and their management of teething problems. The needed sample size was derived to be 120 mothers. All mothers revealed that their children had at least one of the symptoms that were presented in the questionnaire. Response to teething was wrongly accompanied with fever (76%), diarrhea (80%), and sleep disturbances (86%). The mothers in the age-group 20–24 years showed significantly higher level of knowledge than those in other age-groups. Regarding mother's education, university and diploma groups had significantly higher level of knowledge than others Olatunya et al assessed the opinions and practices of mothers attending a tertiary health facility in Nigeria on teething. Five hundred and sixteen mothers were studied. The leading symptoms attributed to teething were fever 420 (81.4%), reduced food intake / appetite 320 (62.0%), diarrhoea 314 (60.9%) and vomiting 294 (57.0%). Some believed that teething is associated with convulsion 102 (19.8%), mouth ulcers 69 (13.4%), ear

discharge 68 (13.2%), and no symptoms 41 (7.9%). Majority of the mothers 374 (72.5%) believed that teething requires treatment. Two hundred and four (39.5%) mothers had given their children oral analgesics for teething while 194 (37.6%) administered teething mixtures. These medications were more likely to be prescribed at the hospital or purchased over the counter ($p < 0.05$). Other treatments given included herbal concoction 46 (8.9%), local tooth extraction 22 (4.3%), enema 17 (3.3%), body scarifications 14 (2.7%), gum fomentation 14 (2.7%) and gum incision 12 (2.3%). Responders who attributed convulsion to teething were more likely to have incised their children's gums ($p < 0.05$) (El-Gilany & Abusaad, 2017)

CONCLUSION

Generally the mothers had poor knowledge regarding teething among children aged 6 months to 3 years in terms of giving wrong answers about the onset of teething, the first teeth appeared and the age of completing teeth development. Some women had good to moderate knowledge about teething process. The general tendency of the mother's believes about the signs of teething was poor, as most of them mentioned wrong signs such as convulsions, ear problems, skin rash, and face redness. On the other hand some had good believes about signs of teething for example they mentioned correct signs such as fever, diarrhea, sucking fingers and desire to bite things. As the general direction was poor knowledge and believes among mothers regarding teething among children aged 6 months to 3 years, poor practice was common in terms of use of traditional dockan, enable the child to use tether, giving the child antibiotics and use ironing behind the head. The mother's higher education, age group 20 – 29 years, housewife occupation and number of children 3 – 6 were significantly associated with good knowledge, believes and practices. On the other hand, age of the last child and gender of the child were independently predictors of knowledge, believes and practices of mothers about teething in children aged 6 months to 3 years.

CONFLICT OF INTEREST

The authors declared that present study was performed in absence of any conflict of interest.

ACKNOWLEDGEMENT

We thank all the participants in this research

AUTHOR CONTRIBUTIONS

Hala Shamseldin Mohmamad: designed and also wrote the manuscript. Somia Jadalla Ali Frag , Rabia A .Eltayeb and Mysara Alfaki:collected and interpretation of data for the article ,Suheir.A.M.Sayed: performed the analysis,Mohammmed Ahmad and Saeed Mohammed Omer Idris :drafted the article All authors read and approved the final version.. All authors read and approved the final version.

REFERENCES

Ahmed, M. A. A., Salih, K. M., Al-Nafeesah, A., Adam, I., & Hassan, B. A. (2021). Misconceptions and traditional practices toward infant teething symptoms among mothers in eastern Sudan: a cross-sectional study. *Brazilian Journal of Oral Sciences*, *20*(February), 1–9. https://doi.org/10.20396/bjos.v20i00.8660967

Ahmed, M. A. A., Salih, K. M., Al-Nafeesah, A., Adam, I., & Hassan, B. A. (2021). Misconceptions and traditional practices toward infant teething symptoms among mothers in eastern Sudan: a cross-sectional study. *Brazilian Journal of Oral Sciences*, *20*(February), 1–9. https://doi.org/10.20396/bjos.v20i00.8660967

Aliabad GM, Teimouri A, Noori N, Khajeh A. Beliefs of physicians and nurses toward infant teething: A cross sectional survey. Jentashapir j health res. 2016;7(4).

Alkhozaim DA, Al-Haj Ali SN, Farah RI. Levels and correlates of knowledge of teething among Saudi Arabian families. PeerJ. 2022 Aug 18;10:e13948. doi: 10.7717/peerj.13948. PMID: 35999852; PMCID: PMC9393006.

Bankole OO, Lawal FB. Teething: Misconceptions and Unhealthy Practices Among Residents of a Rural Community in Nigeria. International Quarterly of Community Health Education. 2017;37(2):99-106.

Elbur, A.I., Yousif, M.A., Albarraq, A.A. et al. Parental knowledge and practices on infant teething, Taif, Saudi Arabia 2019. BMC Res Notes 8, 699 .

El-Gilany, A. H., & Abusaad, F. E. S. (2017). Mothers' teething beliefs and treatment practices in Mansoura, Egypt. *Saudi Dental Journal*, *29*(4), 144–148. https://doi.org/10.1016/j.sdentj.2017.05.003

El-Gilany, A. H., & Abusaad, F. E. S. (2017). Mothers' teething beliefs and treatment practices in Mansoura, Egypt. *Saudi Dental Journal*, *29*(4), 144–148. https://doi.org/10.1016/j.sdentj.2017.05.003

Faheem, S., Qasim, R., Zaidi, S. J. A., & Maqsood, S. (2022). Misconceptions and Cultural Practices toward Infant Teething among Mothers Visiting a Public Dental Hospital. *World Journal of Dentistry*,

13(4), 406–411. https://doi.org/10.5005/jp-journals-10015-2089

Faheem, S., Qasim, R., Zaidi, S. J. A., & Maqsood, S. (2022). Misconceptions and Cultural Practices toward Infant Teething among Mothers Visiting a Public Dental Hospital. *World Journal of Dentistry*, *13*(4), 406–411. https://doi.org/10.5005/jp-journals-10015-2089

Kakatkar G, Nagarajappa R, Bhat N, Prasad V, Sharda A, Asawa K. Parental beliefs about children's teething in Udaipur, India: a preliminary study. Braz Oral Res. 2012;26(2):151-7.

Kimbonguila, A., Matos, L., Petit, J., Scher, J., & Nzikou, J.-M. (2019). Effect of Physical Treatment on the Physicochemical, Rheological and Functional Properties of Yam Meal of the Cultivar “Ngumvu” From Dioscorea Alata L. of Congo. *International Journal of Recent Scientific Research*, *10*, 30693–30695. https://doi.org/10.24327/IJRSR

Kimbonguila, A., Matos, L., Petit, J., Scher, J., & Nzikou, J.-M. (2019). Effect of Physical Treatment on the Physicochemical, Rheological and Functional Properties of Yam Meal of the Cultivar “Ngumvu” From Dioscorea Alata L. of Congo. *International Journal of Recent Scientific Research*, *10*, 30693–30695. https://doi.org/10.24327/IJRSR

Kreiborg S, Jensen BL. Tooth formation and eruption - lessons learnt from cleidocranial dysplasia. Eur J Oral Sci. 2018;126 Suppl 1:72-80.

Macknin M, Piedmonte M, Jacobs J, Skibinski C. Symptoms associated with infant teething: a prospective study. Pediatrics. 2017;105:747–752.

Wake M, Hesketh K, Lucas S. Teething and tooth eruption in infants: a cohort study. Pediatrics. 2018;106:1374 –1378.