

Evaluation of the Knowledge Level and Attitude of Mothers About Infantile Colic

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Abstract

Introduction: This study aims to evaluate the sources of information of mothers about infantile colic, the factors that may affect colic attacks and their perception about behavioral soothing techniques, their attitudes regarding supplementary and alternative vegetable supplements and medicine treatments.

Methods: This prospective, descriptive cross-sectional study was conducted with the mothers of 0-6 month old babies followed in the Newborn Polyclinic. One hundred fifty volunteering mothers were included in this study. The data were collected using a questionnaire. The questionnaire in this study, including 26 questions, was prepared by the researchers. In the questionnaire, the participants were asked questions face to face.

Results: The findings obtained in this study showed that 106 mothers (70,7%) had a story about an infantile colic baby. 45% of the mothers received information from health professionals, 18% from the internet and social media, 13% from family elders. They were thinking that colic attacks would increase because of the food the mothers ate due to the mothers not keeping themselves warm and formula feeding. The behavioral soothing techniques most widely used were giving a massage to the baby, washing the baby and putting a warm towel on the baby's belly. Fifty-four mothers (36%) said that the babies could be given herbal tea and (61.3%) said that they would prefer fennel tea. The most common treatments administered by physicians were probiotic drops and simethicone drops. Fifty-nine of the mothers (39%) indicated that colic attacks would do harm to the baby in the future and 122 of them (81.3%) indicated that the same could be harmful to the mothers' psychology.

Discussion and Conclusion: Parents should be informed that infantile colic is a self-limiting and benign condition, will not harm their babies. They also should be conscious of the side of supplementary and alternative vegetable supplements. The mothers should be supported by other family elders in baby-care, motivated by health professionals, and mothers should receive psychological counseling support when necessary.

Keywords: Infant; infantile colic; newborn; treatment.

Crying is the earliest and most powerful communication method for newborn babies. The amount and form of crying is age dependent and will vary during the first month of life. Crying episodes are defined as infantile colic or excessive crying in well-nourished and healthy babies when they are persistent, uncomfortable, excessive and in-

explicable^[1]. Although infantile colic is often a benign condition, it is one of the most common reasons for consulting a doctor in this age group. In studies, it has been reported that the global prevalence of infantile colic in healthy children is around 20%, and in recent meta-analysis studies, the frequency was reported to increase to 25% in the first

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six weeks of life, and even to 40% in some publications^[2-3]. This situation, which ends spontaneously in the first four-sixth months of life, is an important source of stress for families and causes frequent doctor referrals and puts a significant burden on the health system.

Although there are different definitions for diagnosing infantile colic, the most commonly used are the Wessel's criteria or Rome III criteria in clinical studies^[4-5]. Wessel's criteria, or the "Rule of Three", was established in 1954. In this definition, intermittent irritability and episodes of uncontrollable crying that last more than three hours a day, more than three days a week, and continue for at least three weeks in healthy babies of two to four weeks old, are defined as "Infantile Colic". In 2016, Rome criteria were updated and Rome IV clinical diagnosis criteria were established. In this updated classification, infantile colic is defined as repetitive and prolonged episodes of crying, fuss and restlessness that start and end in the first five months of life in healthy babies without any signs of growth retardation, fever or disease, occur without any reason and that cannot be soothed by caregivers^[6].

Prolonged and repetitive episodes of crying, restlessness and fuss in babies often begin in the afternoon and evening. During these attacks, unlike signs of more severe clinical diseases, facial rash, abdominal distension, clenching fists and pulling the legs to the abdomen are characteristic of infantile colic^[1]. The important additional clinical finding in infantile colic is the prolonged, unrelieved and unexplained character of these episodes of crying and fuss^[6]. The pathophysiology of infantile colic has not been clearly established. Infantile colic is a diagnosis of exclusion and an underlying organic cause was found in only 5% of patients^[7]. It is assumed that various factors such as imbalances in the pathways of the central nervous system, microbiota changes, psychosocial causes (such as deficiencies in baby-family attachment, anxiety in parents), increased motilin, cow's milk protein allergy, intestinal motility changes and gastroesophageal reflux disease (GERD) may cause this situation^[1,8]. Since the cause of infantile colic is not known, many different treatment models (complementary and alternative herbal supplements, behavioral sedative methods and medications) are applied in babies with colic.

In this study, it was aimed to evaluate the level of mothers' knowledge on sources of information about infantile colic, factors that decrease and increase infantile colic, the effectiveness of behavioral sedative methods and the herbal complementary and alternative treatment methods and drug therapies given to babies.

Materials and Methods

This prospective cross-sectional descriptive study was conducted with the mothers of babies whose chronological age was between zero-six months who were followed in the Sisli Hamidiye Etfal Training and Research Hospital Neonatal Outpatient Clinic between January and March 2020. A total of 150 mothers were included in the study. A written informed consent form was received from all mothers. Ethics committee approval was obtained from the Sisli Hamidiye Etfal Training and Research Hospital Ethics Committee for the study (2020-1534). A questionnaire was prepared by two physicians specialized in infantile colic, based on the latest literature. Face to face questionnaires, which include twenty-six questions, were conducted by the physicians with mothers. The questionnaire form included questions evaluating maternal and infant demographic characteristics, history of infantile colic, sources of information about infantile colic, factors that could increase or decrease colic attacks and behavioral sedative methods, attitudes towards complementary and alternative treatment methods and drug therapies.

Statistical Analysis

R vers 2.15.3 program (R Core Team 2013) was used for statistical analysis. Mean, standard deviation, minimum and maximum values were used to evaluate the quantitative data. Frequency and percentage values were used to evaluate qualitative data.

Results

150 mothers who applied to the newborn polyclinics were included in the study. The demographic characteristics of the mothers and babies included in the study are given in Table 1. The ages of the mothers ranged from 17 to 41 years, with an average of 29.8 ± 5.7 years. The ages of the babies varied between one and six months, with an average of 2.5 ± 1.7 months. It was found that 106 of the mothers (70.7%) had a baby with previous infantile colic attacks.

123 (82%) of the mothers included in the study stated that they had received information about infantile colic before. 45% of mothers received information from healthcare professionals, 18% from internet and social media, 13% from family elders, 13% from maternity school (Fig 1).

When mothers were asked about the factors that could cause infantile colic, 89.3% thought that foods the mother ate caused infantile colic attacks, 65.3% thought it's because of mother's not keeping herself warm and getting

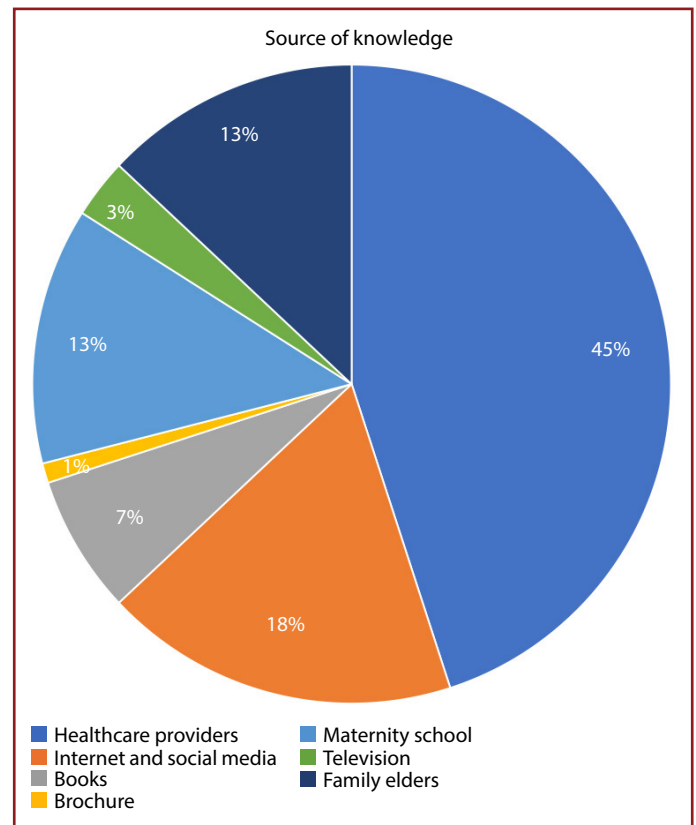
Table 1. Demographic characteristics of mothers and babies included in the study

	Minimum-Maximum	Mean±SD
Mother's age (year)	17-41	29.8±5.7
Baby's age (month)	1-6	2.4±1.7
	n	%
Education of mother		
Literate	7	4.7
Primary education	49	32.7
High school	51	34.0
University	43	28.7
Smoking		
Yes	21	14.0
No	129	86.0
Gestational week		
<37	19	12.7
37-41	119	79.3
>41	12	8.0
Type of delivery		
NSD	67	44.7
Cesarean	83	55.3
Nutritional status		
Only breast milk	85	56.7
Breast milk and formula	52	34.7
Formula only	7	4.7
Breast milk/Formula+ nutritional supplement	6	4.0
Feeding bottle use		
Yes	83	55.3
No	67	44.7
History of baby with colic		
Yes	106	70.7
No	44	29.3

NSD: Normal spontaneous delivery.

cold, 60% the formula feeding, 53.3% the feeding bottle use, 42.7% the mother's milk, 40% thought that it's because of the mother being tense, unhappy and depressed, 28.7% cow's milk allergy and 18.7% thought it's because of the mother's smoking (Table 2).

Factors that can reduce infantile colic attacks and behavioral sedative methods were asked to the mothers. It was found that the most common behavioral sedative methods used by mothers were massaging the abdomen with a rate of 89.3%, bathing the second most frequently with a rate of 51.3%, and placing a warmed towel on the abdomen at the third frequency with a rate of 46.7%. 5.3% of the mothers stated that they did not know (Table 3).

**Figure 1.** Source of knowledge about infantile colic.**Table 2.** Factors that mothers think may cause colic attacks*.

Feature	n	%
The food the mother eats	134	89.3
Mother not keeping herself warm (getting cold)	98	65.3
Formula Feeding	90	60.0
Feeding bottle use	80	53.3
Breastfeeding	64	42.7
Depression in the mother	60	40.0
Cow's milk protein allergy	43	28.7
Smoking	28	18.7
I don't know	2	1.3

*More than one option can be marked.

The mothers who participated in the study were asked whether to use herbal tea and drug therapy in the treatment of infantile colic, which herbal tea they would prefer and the drug treatment applied. 66% of the mothers stated that they could or would use drops for colic attacks, 29.3% would not use it, and 4.7% did not know if they would use it. The rate of using probiotic drops was 36%, the rate of using drops containing simethicone was 26.3%, and the rate of using herbal drops was 19.3%. 22.2% of the mothers stated that they did not remember the drops they used

Table 3. Behavioral sedative methods that mothers think can reduce colic attacks*

Feature	n	%
Massaging the abdomen	134	89.3
Bathing the baby	77	51.3
Putting a warmed towel on the baby's stomach	70	46.7
Wrapping the baby	47	31.3
Taking the baby around by car	40	26.7
Swinging (Standing or in the baby bouncer)	32	21.3
Play the baby light, repetitive sounds (hair dryer, vacuum cleaner, etc.)	31	20.7
Play music	28	18.7
Give pacifier	17	11.3
I don't know	8	5.3

*More than one option can be marked.

for colic attacks. When the mothers were asked whether to give herbal tea to babies in the treatment of colic, 36% of the mothers stated that herbal tea could be given for gas pains, 55.3% stated it could not be given, and 8.7% stated that they did not know. Mothers stated that if the babies were given herbal tea, they would most often prefer fennel

Table 4. Knowledge levels of mothers about complementary and alternative herbal supplements in babies with colic and drug therapies given

Feature	n	%
Can drops be used for colic?		
Yes	99	66.0
No	44	29.3
I don't know	7	4.7
Drops used		
Probiotic	36	36.3
Simethicone	26	26.3
Don't remember	22	22.2
Herbal drops	19	19.3
Simethicone+Probiotic	2	2.0
Is herbal tea used?		
No	83	55.3
Yes	54	36.0
I don't know	13	8.7
Preferred herbal tea*		
Fennel	92	61.3
Anise	51	12.7
Chamomile tea	9	3.3
Cumin	2	1.3
Linden	1	0.7

*More than one option can be marked.

tea (61.3%) and secondly anise tea (12.7%) (Table 4).

The mothers who participated in the study were asked whether the infantile colic would harm their babies in the future, whether it would affect the maternal psychology and from whom they received help during colic attacks (Table 5). 39.3% of the mothers stated that colic attacks would harm the baby in the future, 34% stated they would not have any harm, and 26.7% stated that they did not know. When asked about the effect of infantile colic on maternal psychology, 81.3% of the mothers stated that it would affect maternal psychology, and 18.7% stated that it would not affect maternal psychology. 52% of the mothers stated that they received help from their spouses during colic attacks, 50% from their family elders and 9.3% from their friends who gave birth before.

Discussion

In infantile colic, there is no evidence-based treatment yet, as the underlying functional gastrointestinal tract disease is unclear. Informing, comforting and guiding families is the cornerstone of the primary care approach in infantile colic. In our study, it was determined that 70.7% of the mothers had a baby with colic previously and 82% of them had received information about colic before. It was determined that mothers obtained information from healthcare professionals most frequently, and secondly from internet and social media. Nowadays, we believe that internet and social media are important for families to get accurate information, as mothers use the internet and social media

Table 5. Mothers' thoughts about the possible harm of infantile colic and the people they get help from

Questions	n	%
Will infantile colic harm the baby in the future?		
Yes	59	39.3
No	51	34.0
I don't know	40	26.7
Does infantile colic affect maternal psychology?		
Yes	122	81.3
No	28	18.7
Who helps the mother in infantile colic attacks?*		
Spouse	78	52.0
Family elders	75	50.0
Friend who gave birth	14	9.3
Other children and caregiver	3	2
Neighbour	2	1.3
Caregiver	1	0.7

*More than one option can be marked.

tools more in baby care.

Many factors such as deficiencies in mother-infant attachment, mother's depression, central nervous system immaturity (serotonin-melatonin theory), lactose intolerance, intestinal microbiota changes, intestinal nervous system immaturity, cow's milk protein allergy, increase in motilin receptors, enteral feeding pattern were blamed for infantile colic etiology^[8]. In a recent study by Mutlu et al.^[9] conducted in our country, it was determined that 89.5% of mothers avoided gassing foods in reducing colic attacks and 35.4% kept their feet warm. It has been reported that cruciferous vegetables (such as cauliflower, cabbage, cress, Chinese cabbage, broccoli and Brussels sprouts), cow's milk, chocolate and onion in the maternal diet increase gas production and cause colic attacks^[10]. Although most physicians recommend removing gas-producing foods from the diet of mothers, the benefit has not been clearly demonstrated^[11]. In our study, it was seen that most of the mothers thought that the foods that mothers ate were effective in the development of infantile colic.

Studies have reported that breastfeeding or formula feeding does not increase colic attacks^[8,12]. In Karacı's study, which included 400 babies and the colic incidence was found to be 22%, it was reported that breast milk was not protective or risk factor for infantile colic, and babies with infantile colic were switched to additional food earlier than the healthy control group^[13]. Approximately half of the mothers thought that their own milk could cause colic attacks, resulting in unnecessary formulas given and in thinking that breast milk was insufficient, leading to early start of additional food. We believe that it is extremely important to inform mothers that their own milk will not cause colic attacks and to support breastfeeding. In babies with infantile colic, cow's milk protein allergy is also blamed in the etiology, but this is not clear^[14]. One-third of the mothers participating in the study were aware that cow milk protein allergy could cause colic attacks, suggesting that both physicians and the public thought that cow's milk allergy was considered as the pre-diagnosis and diagnosed more.

It has been shown in studies that anxiety in the mother, stress in the family, mother-to-baby tension can be involved in the etiology of infantile colic^[15-16]. It was found that mothers with a high anxiety score had a 2-fold higher risk of having a baby with colic compared to those with a low anxiety score^[17]. The causal relationship between family stress and colic in the etiology is still unclear^[1]. In our study, we found that approximately half of the mothers were informed that the mother's depression may cause colic attacks.

In infants with colic, methods such as massaging, giving a pacifier, wrapping the baby, placing a warmed towel on the abdomen, swinging on the lap or on the baby bouncer, playing light repetitive sounds (vacuum cleaner, hair dryer, etc.) to the baby, driving around with a car and playing music are called behavioral sedation methods. Massage is the most common behavioral sedative method. Although the positive effects of massaging babies (chiropractic or abdominal massage) on sleep, stress, and crying time have been reported, its effectiveness in reducing symptoms is still controversial^[18]. However, it is recommended that mothers massage their babies to strengthen the mother-baby bonding^[19]. In our study, the most widely adopted behavioral sedative method was massaging the baby's abdomen. Mutlu et al.^[9] reported that 89.5% of mothers of babies with colic preferred to massage and 95.7% of them stated that they benefited from massage treatment. Studies conducted in our country report that 74% to 80.9% of mothers prefer massage to reduce colic attacks^[20-22]. Other sedative methods in our study were bathing the baby and hot application to the baby's stomach.

The opinion is increasing that a decrease in the diversity and stabilization of intestinal microbiota in the first two weeks of life may affect central and enteric neuronal functions, leading to excessive gas formation and inflammation in the intestine, causing infantile colic^[23-25]. Although probiotic supplementation has been reported to regulate the intestinal bacterial pattern through beneficial bacteria (*Bifidobacterium*, *Lactobacillus* etc.), the effectiveness of probiotics in the treatment of infantile colic is controversial^[26-28]. In our study, it was determined that the drug most frequently preferred by physicians and families was probiotic drop. Another well known drug that has been used for years in the treatment of infantile colic is simethicone. Simethicone reduces the surface tension of mucus, prevents the gas bubbles from coalescing by changing the surface tension, and provides easy excretion of intestinal gases. In our study, it was reported that the second most commonly used simethicone did not reduce colic attacks in randomized controlled studies^[29]. Other drugs used in treatment are herbal supplements. It is reported that mixtures such as fennel, chamomile, licorice root, lemon balm found in herbal medicines can reduce colic attacks with antispasmodic activity^[30-32]. Herbal medicines should be used by families under the control of a physician due to the sugar and alcohol they may contain^[33-34]. In a study published in our country in 2009, physicians most frequently preferred drugs containing zinc and vegetable oil, simethicone drops secondly and syrup containing vegetable oil, fennel tea and

apple oil less frequently^[35]. The study recently published in our country reported that the first choice of physicians in the treatment of infantile colic was herbal medicines, the second preference was probiotic drops and the third preference was simethicone-containing drops^[13]. The finding that probiotics being the most preferred drug in the treatment of colic in our study is related to the increasing importance of microbiota changes in infantile colic etiology among physicians today.

The effectiveness of herbal tea in the treatment of infantile colic is controversial^[36]. Karabel et al.^[35] reported that 29% of mothers and 12% of physicians in our country recommend fennel tea to families. Herbal teas should be approached with caution due to the side effects (such as convulsions, pneumonia, hypotonia) of the essential oils they contain^[37]. Herbal teas to be given to babies in the first six months will have negative effects on infant nutrition by reducing breastfeeding. In our study, half of the mothers were aware that herbal tea should not be given to babies. In our study, it was seen that if the infants were given herbal tea, more than half of the mothers would have preferred fennel tea, and less of them would have preferred anise tea.

Families of babies with infantile colic have stress, anxiety, fatigue and a decrease in tolerance due to excessive crying and fuss attacks. This condition can affect mother-infant attachment, and may cause mother's lack of self-confidence, a sense of inadequacy and depression, shaken baby syndrome and even infant death^[38]. Abacı et al.^[39] found that the frequency rate of 30.8% of depression in mothers of babies with infantile colic was significantly higher than in the control group. Mothers should not be left alone in baby care during this difficult period. In our study, it was found that mothers frequently received support from their spouses and family elders in baby care during colic attacks. In a study, 19.6% of the mothers in our country were reported to think that the infantile colic would harm the baby^[13]. In our study, it was seen that most of the mothers thought that infantile colic could significantly impair maternal psychology, and about half of them thought that it could harm the baby.

Conclusion

It was observed that half of the mothers did not adopt complementary and alternative herbal supplements, and the mothers who applied it mostly preferred fennel tea. For infantile colic, probiotic drops (36.3%) and simethicone drops (26.3%) were given to the baby as medication. Most

of the mothers thought that the mother's psychology could be impaired in the presence of infantile colic (81.3%), and the infantile colic could harm the baby (39.3%). In this difficult period, it would be appropriate for mothers to be supported by the family elders in baby care, motivated by healthcare professionals and receive psychological counseling support when necessary.

Ethics Committee Approval: Study was approved by the Ethics Committee of University of Health Sciences, Sisli Hamidiye Etfal Training and Research Hospital Health Practice and Research Center Clinical Research (12/05/2020 decision number 2020-1534).

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