

Evaluation of the Knowledge and Behavior of Indonesian Mothers About Infantile Colic

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ABSTRACT

Introduction: Infantile colic is a functional gastrointestinal disorder found in 20%-30% of infants aged <5 months which is characterized by recurrent prolonged periods of infant irritability, fussing, or crying without obvious cause and cannot be prevented or resolved by parents. Infantile colic is often associated with higher mothers' depression and lower quality of life. Mothers' knowledge and behavior of infantile colic varies greatly. This research investigates the knowledge and behavior of Indonesian mothers regarding infantile colic and related factor

Methods: A cross-sectional analytic observational study with a target of 100 mothers with babies aged 0-12 months was performed using an electronic questionnaire in Google Forms. The questionnaire consists of multiple-choice questions regarding the mothers' knowledge and behavior of infantile colic.

Results: As many as 82% of mothers understand that infantile colic is recurrent prolonged periods of crying that occur without obvious cause and cannot be prevented or resolved by parents, however only 12% of mothers know that most infantile colic will disappear by the age of 5 months. Forty percent of mothers had babies with infantile colic; 97.5% of them were worried about their baby's condition and 7.5% of the mothers gave them medication. There was no significant difference between mothers' age and the number of children with inadequate mother-infant interaction ($P = 0.770$ and $P = 0.647$)

Conclusion: The knowledge and behavior of mothers in Indonesia regarding infantile colic is quite good, however, parental reassurance still needs to be improved, especially to reduce maternal anxiety.

Keywords: infantile colic, infant, mother, Rome criteria

ABSTRAK

Pendahuluan: Kolik infantil merupakan gangguan saluran cerna fungsional (GSCF) yang didapatkan pada 20-30% bayi berusia <5 bulan yang ditandai dengan mudah iritabel, rewel, atau menangis dalam jangka waktu lama dan berulang, tanpa sebab yang jelas dan tidak dapat dicegah atau diatasi oleh orang tua. Kolik infantil seing dikaitkan dengan depresi dan kualitas hidup yang rendah dari ibu. Pengetahuan dan perilaku ibu dalam menangani bayi yang mengalami kolik infantil sangat bervariasi. Penelitian ini bertujuan untuk mengetahui pengetahuan dan perilaku ibu Indonesia terhadap kolik infantil dan faktor faktor yang mempengaruhinya.

Metode: Penelitian observasional analitik cross-sectional dengan target 100 ibu dengan bayinya berumur 0-12 bulan menggunakan kuesioner elektronik google forms. Kuesioner berisi pertanyaan pilihan ganda terkait pengetahuan dan perilaku ibu terhadap kolik infantil.

Hasil: Sebanyak 82% ibu memahami kolik infantil sebagai tangisan berulang dalam waktu lama yang terjadi tanpa sebab jelas dan tidak dapat dicegah atau diatasi oleh orang tua, dan hanya 12% ibu yang mengetahui bahwa sebagian besar kolik infantil akan hilang pada usia 5 bulan. Sebanyak 40% ibu memiliki bayi dengan kolik infantil; 97,5% diantaranya khawatir dengan kondisi bayinya dan 7,5% ibu memberikan obat. Tidak ada perbedaan yang signifikan antara usia ibu dan jumlah anak dengan interaksi ibu-bayi yang tidak adekuati ($P = 0,770$ dan $P = 0,647$)

Kesimpulan: Pengetahuan dan perilaku ibu-ibu di Indonesia mengenai kolik infantil sudah cukup baik, walaupun demikian parental reassurance tetap perlu ditingkatkan terutama untuk mengurangi kecemasan ibu

Keywords : kolik infantil, bayi, ibu, kriteria Rome

INTRODUCTION

Infantile colic is a functional gastrointestinal disorder (FGID) in infants aged less than 5 months, presenting as recurrent prolonged periods of infant irritability, fussing, or crying reported by parents occurring without obvious cause and cannot be prevented or resolved by parents. There is no evidence of failure to thrive, fever, or any disease.¹ A global prevalence of 21 % of infantile colic was reported.² Although functional, infantile colic is a cause of distress to infants and parents, and a reason for frequent and repetitive consultations of health care professionals (HCPs).^{3,4} Parents seek help from family, friends, or social media. The parent also requests information on the cause of the symptoms from the HCP. It is often difficult for the HCP to reassure the parents, who often do not accept the explanation that “everything is normal; that the symptoms are functional, transient, and often auto-resolving”.⁵⁻⁷ It is not uncommon for parents to urge the HCP to prescribe medications.

Parental reassurance, recognizing contributing factors, appropriate support, and reducing the symptoms become cornerstones of the management of infantile colic which will release parents from the feeling of inadequacy and fear of disease.⁸ Behavior hypotheses such as inadequate parent-infant interaction, maternal anxiety, and difficult infant temperament and gastrointestinal hypotheses such as the immaturity of gut function are contributing factors for infantile colic.⁹ Parents often become frustrated and hopeless because they cannot calm their baby.^{10,11} They also worry about growth and development.¹² Mother’s age, education, and number of children, reportedly influence the mother’s interaction with the distressed baby. Not infrequently, psychological support is needed for the parents.¹³ A study in France showed that the knowledge and attitudes of parents

towards infantile colic are limited.¹¹ Our research aims to investigate the knowledge and behavior of Indonesian mothers regarding infantile colic and related factors.

METHODS

A cross-sectional analytic observational study with the target of 100 mothers with babies aged 0-12 months frequenting Hospital Polyclinic was performed using an electronic questionnaire in Google Forms. The questionnaire consists of multiple-choice questions regarding demographic data, such as the mother's age, mother's education, number of children, infants' age, symptoms, and the knowledge and behavior of the mother to infantile colic. The questionnaire was reviewed by 2 pediatric gastroenterology consultants to make sure that the questions reflected the appropriate knowledge and behavior that mothers need to understand. The form also contained informed consent explaining the purpose and usefulness of the research, as well as a statement of willingness to participate in the research voluntarily.

Inclusion criteria included babies born at term according to gestational age, with normal growth and development. Mothers of acute or chronic sick infants, or with congenital abnormalities were not included in the study. The definition of infantile colic in this study according to the Rome IV criteria: "recurrent prolonged periods of infant irritability, fussing, or crying reported by parents that occur without obvious cause and cannot be prevented or resolved by parents".^[1] Educational status was categorized as middle (minimum of senior high school graduate) and high (undergraduate and above). The study protocol was approved by the Medical Research Ethics Committee of the Faculty of Medicine of Universitas Indonesia (KET-009/UN2.F1.D1.2/PDP/01/Riset-2/2020). Data analysis was performed

using SPSS version 22.0 software. The relationship between the mother’s characteristics with mother-baby interaction is analyzed with a chi-square test.

RESULTS

Of the 100 mothers who took part in this study, 38% had babies aged < 5 months, 40% under 30 years of age, 96% with high education, and 50% had one child (Table 1). A total of 40 infants suffered from infantile colic; 80% of them started showing symptoms at the age of ≤ 2 months. As many as 70% of infants showed symptoms at 6.00 pm - 06.00 am. Most infantile colic (87.5%) stopped before 5 months of age (Table 2).

Table 1. Demographic characteristics of mothers and infants

Variable	N	%	
Infant's age	≤ 2 months	11	11
	> 2 – 3 months	11	11
	> 3 – 4 months	9	9
	> 4 - 5 months	7	7
	> 5 months	62	62
Mother's age	< 30 years	40	40
	≥ 30 years	60	60
Mother's education	Middle	4	4
	High	96	96
Number of children	1	50	50
	≥2	50	50

Table 2: Infantile colic symptoms

Total number of infants with infantile colic	Total (N = 40)	
	n	%
The Prevalence infantile colic by age		
≤ 2 months	32	80
>2 – 3 months	31	77.5
>3 – 4 months	23	57.5
>4 – 5 months	13	32.5
>5 months	0	0
The age of symptoms appear		
≤ 2 months	32	80
>2 – 3 months	6	15
>3 – 4 months	1	2.5
>4 – 5 months	1	2.5
>5 months	0	0
The onset of the symptom		
6.00 p.m - 00.00 a.m	18	45
00.00 a.m - 06.00 a.m	10	25
06.00 a.m - 10.00 a.m	1	2.5
10.00 a.m - 2.00 p.m	4	10
2.00 p.m - 6.00 p.m	7	17.5
The age of symptoms disappear		
≤ 2 months	7	17.5
>2 – 3 months	8	20
>3 – 4 months	9	22.5
>4 – 5 months	11	27.5
>5 months	8	20
Infant still with infantile colic at > 5 months	5	12.5

As many as 82% of mothers understand that infantile colic is recurrent prolonged periods of crying that occur without an obvious cause and cannot be prevented or resolved by parents. However, only 12% of mothers know that infantile colic will disappear by the age of 5 months. Half of mothers (52%) consider inadequate parent-baby interaction as a contributing factor to infantile colic. Statements related to behavior were filled out by 40 mothers who had babies with a history of infantile colic. Almost all mothers (97.5%) worried about their baby’s condition, however only 7.5% of mothers gave medication. Swinging is the most frequently used effort by mothers (97.5%) to calm their babies. (Table 3) There was no significant difference between mothers' age and number of children with inadequate mother-baby interaction (Table 4).

Table 3: Mother's knowledge and behavior on infantile colic

Mothers' knowledge	n = 100	%
Recurrent prolonged periods of crying occur without obvious cause and cannot be prevented or resolved by parents.	82	82
Immaturity of the gastrointestinal function	76	76
Infantile colic usually disappears at 5 months of age	12	12
Inadequate mother-baby interaction	52	52
This could be a symptom of cow's milk protein allergy	65	65
Baby unable to tolerate milk	69	69
Mothers' behavior	n = 40	%
Worried about the baby's condition	39	97.5
Swinging the baby	39	97.5
Swaddling the baby	18	45
Massaging the baby's stomach	29	72.5
Stop breast milk	10	25
Give medication to reduce the symptoms	3	7.5
Replace the formula milk that is being consumed by the baby	1	2.5

Table 4: Correlation Of Inadequate Mother-Baby Interaction With Mother's Age And Number Of Children

Characteristics of mothers	Inadequate mother-baby interaction		P*
	Yes (%)	No (%)	
Mothers' age			
<30 years old	10 (25%)	30 (75%)	0.770
≥30 years old	20 (33.3%)	40 (66.6%)	
Number of children			
1	14 (28%)	36 (72%)	0.647
≥2	16 (32%)	34 (68%)	

*Chi-square test

DISCUSSION

This research has several limitations. A cross-sectional design is suitable for examining associations between variables at a single point in time and cannot establish causality or determine temporal relationships. The study's setting for healthy babies in hospital clinics for immunization may introduce selection bias, as it may not capture mothers who seek healthcare for their infants' colic symptoms. The prevalence of infantile colic in our study population was 40%, the same as data reported from pediatricians in North Africa and the Middle East and significantly higher than data estimated in the literature review conducted by Salvatore et al and reported in worldwide surveys which is 20%.¹⁴⁻¹⁶ One systematic review and meta-analysis showed that the prevalence of infantile colic increases from 1-2 weeks of age to 5-6 weeks of age, then decreases gradually to <2% at 10-12 weeks, and disappears at 20 weeks. The duration of crying and fussing also decreased gradually from 100-130 minutes at the age of 1-2 weeks to 50-80 minutes at the age of 10-12 weeks.¹⁷ Our study showed the evolution of the prevalence of infantile colic from 80% at ≤ 2 months to 32.5% at 5 months of age. However, 12.5% of infants still had infantile colic over the age of 5 months. Infants who do not show a normal developmental "crying curve" need to be considered for underlying organic disease, which in the normal population is found in 5%. The symptoms of colic are reported to occur more often in the late afternoon, and evening, and can even last until the next morning.¹⁰ The same pattern is also seen in our data, where most symptoms occur during the evening (45%) and early morning (25%).

Parental reassurance is the first and most important step in taking care of babies with infantile colic. Pediatricians should educate parents that infantile colic is a benign and common problem that will be resolved on its own by 5 months of age.¹⁸ This is highlighted by the fact that almost all mothers (97.5%) in this study worried about their baby's condition and only 12% of mothers knew that most infantile colic would disappear by 5 months of age. Maternal anxiety is known to strongly contribute to infantile colic,¹⁰ although data regarding the relationship between infantile colic and behavioral outcomes and mental health in childhood are inconclusive.^{19,20} As many as 52% of the mothers in our study understood that an inadequate parent-baby interaction can influence the condition of colic in their babies. However, our data showed that inadequate mother-baby interactions are not influenced by the age of the mother (<30 years or ≥ 30 years) or the number

of children she has (1 or ≥ 2 children).

Breastfeeding should be encouraged for all babies.¹⁸ There is no reason to stop breastfeeding because our baby suffered from infantile colic. However, we still found 25% of mothers stopped their breast milk. Changing infant formula is also not recommended as there is no evidence that it will reduce the symptoms significantly.¹⁸ Only 2.5% of mothers from our study replaced the formula milk that was being consumed by the baby. In a logistic regression analysis of 77,000 mothers, Crowcroft et al found that the mother's age, parity, and socioeconomic were the most important risk factors for infantile colic (each $P < 0.005$). They also found the little contribution of dietary factors to mothers' reporting of infantile colic, so dietary change should not be the primary intervention.²¹

Although there is no agreement on what proportion of infants with infantile colic suffer from cow's milk protein allergy (CMPA), early studies reported 30-40% of colic infants suffered from CMPA. CMPA is considered if there are other symptoms, such as frequent regurgitation and vomiting, respiratory symptoms, atopic dermatitis, or a family history of atopy.^{22,23} Our study found that 65% of mothers understand that infantile colic could be a symptom of CMPA. Some reviews suggest that a cow's milk elimination diet may be beneficial if a cow's milk protein allergy is suspected, while other reviews report that partially hydrolyzed formula can be beneficial if CMPA is not considered.^{24,25} A beneficial role of soy-based formulae has not been consistently demonstrated in patients with infantile colic.²⁶

The role of a transient slow maturation of lactase activity as a factor that triggers excessive crying is still a matter of discussion. Negative results on initial enthusiasm about the role of lactase treatment, suggest a minor role of lactase in infantile colic.²⁷ Even though, the National Institute for Health and Care Excellence still recommends a trial of lactase.¹⁸ Sixty-nine percent of mothers in our study believed that the inability to tolerate milk may play a role in their babies crying. Research reported by Narang and Shah in 2022, concluded that oral lactase treatment in infantile colic results in symptomatic relief in terms of shortening of duration of crying or fussing, number of days with colic, and better parental satisfaction in comparison to placebo.²⁸

Swinging is reported to be effective in reducing the duration of colic and crying.²⁹

Van Leeuwen et al reported that parents feel comfortable with swaddling behavioral modification

and reduce crying duration by 42% in colicky babies.³⁰ In our study, 45% of the mothers swaddled their babies when the crying was prolonged and unsoothable. Massaging the infant is also a popular traditional treatment for relieving infantile colic in many parts of the world. The stimulating sensation may soothe the infant and can improve the mother-infant relationship by reducing maternal-infantile stress. Two RCTs showed that massage was more effective than swinging/rocking in reducing the time of an infant's crying. Compared to rocking, massage reduced the number of crying, reduced the length of crying, and increased the length of sleeping significantly.³¹ Mansouri, et al. also found that compared to rocking, massaging decreased crying duration by around half an hour and decreased the number of crying.³² In our study, 72.5% of the mothers massaged their infants when they had a long and unsoothable crying.

Evidence of the effectiveness of pain-relieving agents for the treatment of infantile colic is sparse and prone to bias. No evidence to support the use of simethicone. Available evidence shows that herbal agents, sugar, dicyclomine, and cimetropium bromide cannot be recommended for infants with colic.³³ As many as 3 mothers (7.5%) from our study gave medicine to reduce colic symptoms in their babies, in fact of all that is probiotics. Although, daily crying time appeared to be reduced with probiotic use compared to placebo, but there is no strong evidence that probiotics are more effective than placebo at preventing infantile colic.^{34,35}

CONCLUSION

The knowledge and behavior of mothers in Indonesia regarding infantile colic is quite good, however, parental reassurance still needs to be improved, especially to reduce maternal anxiety.

RECOMMENDATION

It would be beneficial for future research to involve a more diverse range of subjects and explore more deeply the factors influencing maternal knowledge and behavior.

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