

COLIC SCALE SCORES AND ASSOCIATED FACTORS IN INFANTS DIAGNOSED WITH INFANTILE COLIC

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ARTICLE INFO	ABSTRACT				
RESEARCH ARTICLE	Objective: The etiology and treatment of infantile colic has not been fully ex-				
Article history:	and related factors in infants diagnosed with infantile colic.				
Received: 27 November 2021	Material and Methods: This descriptive study consisted of 248 infants aged 0-12				
Accepted: 20 December 2021	months who were diagnosed with infantile colic by the physician who applied to				
Available : 27 December 2021	"Information Form" and "Infant Colic Scale" created by the researchers. Data analy-				
Key Words:	and Post Hoc: Tukey HSD tests. Statistical significance level was accepted as				
Infantile colic, infants, risk factors	p<0.05.				
	Results: In the study, it was determined that 57.3% of the babies diagnosed with infantile colic were boys and 46.8% were 0-3 months old. The mean number of broadfad babies during the degree 40404280 the mean number of broadfad				
*Correspondence: Selda ATEŞ BEŞİRİK	per day was 3.37±0.95, and the mean daily crying time was 4.59±1.21 hours. Infant				

and take a pacifier.

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1. INTRODUCTION

Infantile colic is a behavioral syndrome that occurs in the first months of life and is accompanied by crying spells (1). Wessel et al. (1954) defined infantile colic as "unexplained and uncontrollable crying episodes that begin in the first weeks of life, last more than 3 hours a day, more than 3 days a week, last for at least 3 weeks, and usually occur in the afternoon and evening hours" (2). The incidence of infantile colic varies depending on the place of research and the age (week) of the infants, and it has been reported to be between 3-40% in studies (1, 3-9). It has been reported that the incidence of infantile colic varies between 3-28% in prospective studies and 8-40% in retrospective studies (8). In a meta-analysis study conducted in 2017, the frequency of infantile colic ranged from 17% to 25% in the first 6 weeks, and this rate decreased to 11% at 8-9 weeks of age. It was determined that it decreased to 0.6% in weeks (4).

Colic Scale scores were found to be higher in infants with male gender, 0-3

months of gestation, 38 weeks of gestation, using the bottle horizontally and given

a false pacifier(p<0.001). It was determined that the applications used by the moth-

ers to relieve infants with infantile colic were rocking 18.5%, patting the back 18.1%,

more common in infants who are male, 0-3 months old, use the bottle horizontally

walking 17.7%, swaddling 16.9%, rubbing the tummy 16.1% and massaging 14.9%. **Conclusion:** Infantile colic is more common in male babies. The severity of colic is

> Infantile colic causes long-lasting and inconsolable crying spells, insomnia and feeding problems in infants (1, 7, 10). In a prospective cohort study conducted by Valla et al. (2021), it was found that infants with infantile colic had sleep problems and slept shorter in later ages because they woke up frequently during infancy. Kurth et al. (2011) reported that frequent and long crying spells disrupt the baby's sleep, feeding and resting patterns in infantile colic (11, 12). Studies have shown that parents of infants with infantile colic practice movements that cause shaken baby syndrome (13, 14). Indrio et al. (2015) in a retrospective study conducted with 2987

patients and 3121 control groups; found that functional bowel disease characterized by chronic and recurrent symptoms is observed more frequently in later ages in children who have problems such as colic, regurgitation and constipation in early infancy (15). Infantile colic of infants causes problems such as fatigue, helplessness, insomnia, burnout, anxiety, concentration disorder, breastfeeding problems, loss of self-confidence and feelings of inadequacy in mothers (1, 7, 10).

The high incidence of infantile colic and the difficulties of infants and parents in coping with the symptoms attract the attention of health professionals to the problem. However, the etiology and treatment of infantile colic has not yet been fully clarified. Some treatments have been suggested to relieve symptoms, but no fully effective treatment has yet been found. Behavioral approaches, medications, diet and other treatments are used in the treatment of colic. Detailed history and physical evaluation are important to determine the most appropriate treatment for the baby (7, 16, 17). Healthcare professionals can determine the risk of infantile colic by considering etiological factors and provide early diagnosis and intervention. Effective solutions can be developed by healthcare professionals according to the factors affecting infantile colic and the characteristics of the baby and parents. In particular, nurses can support the baby with colic and its family by giving information to parents about infantile colic, trying to prevent factors that increase the severity of colic, and applying methods to comfort the baby (18). In the fight against infantile colic, it is important for healthcare professionals to know the effect of the disease and related factors, in order to realize the importance of the problem.

The Aim of the research

This study was carried out to determine Infantile Colic Scale scores and related factors in infants.

Questions of the research

What are the factors associated with infantile colic? What is the mean score of the Infantile Colic Scale of infants diagnosed with infantile colic?

Are the mean scores of Infantile Colic Scale in infants with infantile colic affected by the characteristics of infants?

What do mothers do to reduce infantile colic symptoms in babies?

2. MATERIAL AND METHODS

Type of research

This research; it was designed as descriptive and relation-seeking type.

Population and sample of the research

The population of the study consisted of all infants aged 0-12 months, who were diagnosed with infantile colic according to Wessel diagnostic criteria by the physician who applied to the Karaman Training and Research Hospital Pediatrics Polyclinics between June 1 and August 31, 2019. There are 5 pediatric outpatient clinics actively serving in the hospital every day. Out of 294 babies who applied to the hospital during the research period; a total of 46 babies were excluded from the study, as 11 of them were preterm, 21 had chronic diseases and 14 mothers could not read, write and speak Turkish. The sample size of the study was 248 infants who came to the pediatric outpatient clinics, met the inclusion criteria and were diagnosed with infantile colic by the physician according to the Wessel diagnostic criteria. Inclusion criteria in the research: The baby's age is between 0-12 months, the mother's informed and written consent is obtained, the baby is born at term, and diagnosed with infantile colic.

Exclusion criteria from the study: It is the baby's having any chronic disease, congenital anomaly, and the mother's verbal and written communication barrier.

Data collection instruments

Research data were collected with "Data Collection Form" and "Infant Colic Scale".

Data collection form: The form consisted of a total of 23 questions created by the researchers based on the knowledge of the literature (1, 7, 16, 17). In form; sociodemographic characteristics of the parents (such as age, educational status, occupation, smoking

status) and information about the baby (introductory information of the baby, information about the nutritional status, some characteristics related to baby care) were questioned.

Infant Colic Scale: Ellet et al. (2002) developed to this scale to diagnose and evaluate colic (19). The validity and reliability study of the scale in Turkey was carried out by Cetinkaya and Basbakkal (2007) (20). Scale consists of a total of 5 sub-dimensions and 19 questions, including cow's milk/soy protein allergy/ intolerance, immature digestive system, immature central nervous system, difficult infant, and infant with parent-infant interaction problems. Scale items are graded with Likert-type scoring ranging from 1 to 6. The ratings range from "strongly disagree (1)" to "strongly agree (6)". 3rd, 7th, 8th, 9th, 13th, 14th, 15th, 17th, and 19th with negative wording for consistency in interpretation of scores. The questions are reverse coded. A low score from the scale indicates a decrease in colic, while a high score indicates an increase in colic. In the study of adaptation to Turkish, the Cronbach alpha coefficient for the internal consistency reliability of the scale was 0.73 (19, 20), while the Cronbach alpha value was found to be 0.982 in this study.

Collection of data

At the beginning of the study, the mothers of the babies who met the sample selection criteria were informed about the purpose and content of the study, and an informed written consent form was obtained from those who agreed to participate in the study. Questionnaires were given to the mothers, which were filled in and delivered by the researcher. While the mothers were filling out the forms, the researcher took care of the babies of those who did not have any relatives to take care of the baby. The application time of the forms took approximately 15-20 minutes.

The ethical aspect of the research

For the study, permission was obtained by e-mail from Cetinkaya and Basbakkal, who adapted the Infantile Colic Scale (ICS) into Turkish. Before starting the research, ethics committee approval was obtained from the Necmettin Erbakan University Meram Medical Faculty Non-Pharmaceutical and Medical Device Research Ethics Committee with the decision numbered 2019/1905 14567952-050/929. Institutional permission was obtained from the Karaman Provincial Health Directorate and the Chief Physician of Karaman Training and Research Hospital in order to collect the research data. Informed consent was obtained from the mothers of all infants before starting the study.

Analysis of data

IBM SPSS statistics 22 (IBM Corp. Armonk, NY: USA. Released 2013) package program was used for statistical analysis. The conformity of the variables to the normal distribution was evaluated with the Smirnov test, Q-Q Kolmogorov graphs and histograms. While evaluating the research data, Student-t test was used in the evaluations between two groups as well as descriptive statistical methods (number, percentage, mean, standard deviation, frequency). One-way Analysis of Variance (ANOVA) was used in the evaluation of the data between more than two groups. Post Hoc test: It was done with Tukey HSD tests. Cronbach's Alpha reliability coefficient was used to evaluate the reliability of the scale. Significance was evaluated at p<0.05 and p<0.01 levels.

3. RESULTS

In Table 1, the introductory characteristics of the infants and their mothers participating in the study are given. It was determined that 42.7% (n=106) of the study babies were girls and 57.3% (n=142) were boys. Infantile colic was diagnosed in 46.8% (n=116) of infants aged 0-3 months, and 20.2% (n=126) in infants aged 4-6 months. It was determined that the birth type of the babies was normal in 53.6% (n=133) and 79.8% (n=198) were the first child. It was determined that 37.9% (n=94) of the babies used a bottle and 60.6% (n=57) used the bottle horizontally. The mean number of breastfed babies during the day was 10.10±2.83, the mean number of defecations per day was 3.37±0.95, and the mean daily crying time was 4.59±1.21 hours. The mean maternal age of the babies was determined as 25.77±3.91. It was determined that 8.5% (n=21) of the mothers of the babies smoked. The 98.8% (n=245). family type of the babies was found to be nuclear in

Characteristics of Baby and Mother n (%) 106 (42.7) Girl Gender 142 (57.3) Boy 0-3 Month 116 (46.8) 4-6 Month 50 (20.2) Age 7-9 Month 42 (16.9) 10-12 Month 40 (16.1) 133 (53.6) Normal Birth Type of birth **Cesarean Birth** 115 (46.4) 38 89 (35.9) 39 69 (27.8) Gestational age (week) 40 and **†** 90 (36.3) 198 (79.8) First child Which child Second and 50 (20.2) Yes 246 (99.2) Willingly conceive a baby 2 (0.8) No Yes 94 (37.9) Use of bottles 154 (62.1) No Horizontal 57 (60.6) How to use a feeding bottle 37 (39.4) Vertical Yes 104 (41.9) Use of pacifiers 144 (58,1) No Min-Max 4-18 Number of times the baby is breastfed during the day Mean±SD 10.10±2.83 Min-Max 2-6 Number of daily defecations of the baby Mean±SD 3.37±0.95 Min-Max 3-8 Average daily crying time of the baby (hour) **Mean±SD** 4.59±1.21 Min-Max 18-40 Mother's age (year) **Mean±SD** 25.77±3.91 203 (81.9) High school and Mother education status 45 (18.1) University and **†** Min-Max 23-41 Father's age (year) **Mean±SD** 30.54±3.99 146 (58.9) High school and Father education status 102 (41.1) University and 43 (17.3) Yes Mother's employment status 205 (82.7) No 245 (98.8) **Nuclear family** Family type 3 (1.2) **Extended** family Yes 21 (8.5) Mother's smoking status 227 (91.5) No Itself 205 (82.7) Persons who care for the baby Others 43 (17.3) Good 167 (67.3) Degree of relationship with spouse 81 (32.7) Bad 203 (81.9) Yes Father's support in baby care 45 (18.1) No

Table 1. Descriptive Characteristics of Babies and Mothers (N=248)

When Table 2 was examined, it was determined that the infants' mean total score on the Infantile Colic Scale was 85.72±15.81.

Infantile Colic Scale scores were compared in Table 3 according to demographic and nutritional characteristics of infants with infantile colic. All subdimensions and scale total score averages of male infants were found to be significantly higher than female infants (p<0.001). Significant differences were found between the ages (months) of the infants and the Infantile Colic Scale scores (p<0.001). Cow's milk/ soy protein intolerance, immature digestive system, difficult infant sub-dimension and scale total score were found to be significantly higher in infants aged 0-3 months than infants aged 4-6 months and 7-12 months (p<0.001). In addition, the average score of parent-infant interaction + baby with problems subdimension score of 0-3 month old infants was found to be significantly higher than that of 7-12 month old infants (p<0.001). Cow's milk/soy protein intolerance, immature digestive system, difficult infant subdimension and scale total score were found to be significantly higher in infants aged 4-6 months than infants aged 7-12 months (p<0.001). It was determined that the average score of parent-infant interaction + baby with problems sub-dimension score of 4-6 month old infants was significantly higher than 0-3

month old and 7-12 month old infants (p<0.001) (Table 3).

Cow's milk/soy protein intolerance, immature digestive system, immature central nervous system, difficult infant, parent-infant interaction + problematic infant sub-dimension and scale total score averages of infants whose birth week was 38 weeks, 39 weeks and 40 weeks at birth, and were found to be significantly higher than those above (p<0.001). It was determined that the immature central nervous system, difficult baby subdimensions and the mean total score of the infants who used the bottle horizontally were statistically significantly higher than the babies who used the bottle vertically (p<0.05). Cow's milk/soy protein intolerance, immature digestive system, immature central nervous system, difficult baby, parent-baby interaction + problematic baby sub-dimension and scale total score averages were found to be statistically significantly higher than babies who did not use pacifiers (p<0.001) (Table 3). The distribution of practices used by mothers to

The distribution of practices used by mothers to comfort babies with infantile colic is given in Table 4. According to this, it was determined that 18.5% of the babies were rocked, 18.1% were patted on the back, 17.7% were walking, 16.9% were swaddling, 16.1% were rubbing their tummy and 14.9% were massaging.

Infant Colic Scale		
	Min-Max	4-12
Cow's milk/ soy protein intolerance	Mean±SD	8.55±2.30
Immeture directive system	Min-Max	2-12
immature digestive system	Mean±SD	7.97±2.86
	Min-Max	19-42
immature central nervous system	Mean±SD	34.22±5.13
Difficult baby		8-24
	Min-Max 19- Mean±SD 34.22 Min-Max 8- Mean±SD 17.18 Min-Max 8- Maan±SD 17.81	17.18±5.19
Devent hely interaction problem hely	Min-Max	8-24
Parent baby interaction-problem baby	Mean±SD	17.81±4.88
Min-Max		58-114
	Mean±SD	85.72±15.81

Table 2. Comparison of Infant Colic Scale total and sub-dimensions scores of infants (N=248)

Table 3. Comparison of Infant Colic Scale scor	es according to demographic and	I nutritional characteristics of babies (N	=248)
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Variables		Cow's milk/soy protein intoler- ance Mean±SD	Immature di- gestive system Mean±SD	Immature cen- tral nervous system Mean±SD	Difficult baby Mean±SD	Parent baby interac- tion+problem baby Mean±SD	Infant Colic Scale Total Score Mean±SD
Gender	Girl	8.07±2.23	7.32±2.69	31.13±4.67	14.53±4.22	15.74±4.73	76.78±11.43
	Воу	8.92±2.28	8.45±2.90	36.52±4.17	19.15±4.96	19.35±4.41	92.39±15.35
	t	-2.927	-3.133	-9.563	-7.733	-6.192	-8.804
	р	.004**	.002*	.000**	.000**	.000**	.000**
	0-3 monthly (n= 116) ^a	10.07±1.56	10.09±1.87	34.91±6.56	20.59±4.34	19.08±4.76	94.73±15.59
	4-6 monthly (n= 50) ^b	8.42±2.09	7.20±2.02	33.64±3.41	15.36±3.74	21.20±3.14	85.82±9.74
Age	7-12 monthly (n= 82) °	6.49±1.53	5.43±2.03	33.60±3.31	13.46±3.76	13.94±3.16	72.91±8.79
	F	110.518	141.051	1.972	80.970	02.340	72.060
	P	.000**	.000**	.141	.000**	.000**	.000**
	38.haftaª	a>c	a>c	a>c	a>c	b>a, c	a>c
Week of birth	20 h afta P	9.94±1.87	9.61±2.26	35.65±5.29	19.69±4.69	20.56±3.41	95.45±13.06
	39.nana -	7.68±2.04	6.88±2.54	32.10±4.28	14.75±3.94	14.75±4.09	76.17±10.64
	40.hafta ve \uparrow ^c	7.80±2.21	7.09±2.83	33.83±4.84	16.03±5.05	16.94±4.76	81.70±14.51
	F	23.174	21.450	13.955	24.791	36.242	44.040
	p	.000**	.000**	.000**	.000**	.000**	.000**
		a>c, b	a>c, b	a>c, b	a>c, b	a>c, b	a>c, b
How to use a feeding bottle (n=211)	Yatay	8.84±2.32	8.25±2.78	35.77±4.27	18.28±5.21	19.12±4.38	90.26±15.11
	Dikey	8.27±2.22	7.46±2.60	33.49±4.47	15.51±5.13	17.65±5.08	82.38±14.61
	t	1.187	1.374	2.490	2.530	1.496	2.504
	р	.238	.173	.015*	.013*	.138	.014*
	Evet	9.19±2.27	8.67±2.71	35.78±4.96	18.69±5.29	19.4±4.33	91.74±15.99
	Hayır	8.09±2.21	7.46±2.86	33.09±4.97	16.08±4.84	16.65±4.95	81.38±14.22
use of pacifiers	t	3.833	3.370	4.207	4.028	4.550	5.375
	p	.000**	.000**	.000**	.000**	.000**	.000**

t: Student-t Test F: One-Way Analysis of Variance (ANOVA), Post Hoc test: Tukey HSD *p<0.05 **p<0.01

Table 4. Practices to relieve infants with infantile colic (N=248)

Practices	n	%	Practices	n	%
Shaking	46	18.5	Moving your feet	19	7.7
Pat on the back	45	18.1	Hit on the back	17	6.9
Panning	44	17.7	Drinking cumin tea	17	6.9
Swaddling	42	16.9	Hair dryer	15	6.0
Rub your stomach	40	16.1	Lay on shoulder	15	6.0
Massaging	37	14.9	Sing a lullaby	11	4.4
Breast-feeding	34	13.7	Strolling with a baby carriage	10	4.0
Mother leaving food	34	13.7	Driving around	9	3.6
Hot practice	29	11.6	Applying apple oil to your feet	9	3.6
Hugging	25	10.1	Applying cherry seeds to the stomach	9	3.6
Patting your head	22	8.9	Listening to water sound	7	2.8
Giving medication	21	8.5	Broom sound	7	2.8
Exercise	20	8.1	Lying face down	4	1.6
Keep in the dark	20	8.1	Drinking herbal tea (anise, fennel)	3	1.2

More than one option is marked.

4. DISCUSSION

It was performed to determine Infantile Colic Scale scores and related factors in infants aged 0-12 months who were admitted to the hospital and were diagnosed with infantile colic. It was determined that 42.7% of the babies were girls and 57.3% were boys. Study of Mutlu et al. (2020) in infants with infantile colic, similar to this study, 54.1% of infants were male (21). When the studies in the literature were examined, it was found that infantile colic was more common in male infants (1, 7, 22). However, in some studies, gender was not found to be effective in infantile colic (23). In addition, infantile colic was found to be more common in infants aged 0-3 months (46.8%) in this study.

In this study, infantile colic was found to be more common in first-borns. Talachian et al. (2008) found that infantile colic was more common in first children, similar to this study (1).

The mean duration of crying during the day of the babies in the study was found to be 4.59±1.21 hours. Similar results were obtained in the study of Didişen et al. (2020) and it has been found that infants cry for more than three hours a day (22).

It was determined that infants scored between 58 and 114 on the Infant Colic Scale total score. This result was done by Didişen et al. (2020) was found to be similar to the value (between 35 and 98) in his study (22). In this study, Infant Colic Scale scores of infants were compared in terms of gender. The mean score of the male infants was found to be statistically significantly higher than the female infants. In the study conducted by Uysal et al. (2017) with the same scale, they found that there was no statistically significant difference between the babies' genders and infantile colic scale scores (17).

It was determined that as the age of the babies in the research group got younger, they scored higher in all sub-dimensions and total scores of the Infant Colic Scale. This result Uysal et al. (2017) is similar to the study conducted with the same scale (17). Reijneveld et al. (2005) found similar results in another study on infantile colic, and a decrease was found in infantile colic episodes as the baby's age grew (24).

When the practices of mothers to relieve colic of infants with infantile colic are examined, it is seen that all mothers apply behavioral treatment methods (such as shaking, patting on the back, walking, swaddling, rubbing their tummy, massage, breastfeeding, warm application, hugging, patting the head, and exercise). However, it is shown that mothers prefer drug treatment less. When the studies in the literature were examined, it was seen that mothers used similar methods (such as massage, hot application, exercise, giving herbal teas, moving the feet, giving medication, breastfeeding) (17, 21, 22, 25, 26).

In this study, when the food withdrawal of mothers with infants with infantile colic was examined, it was seen that the foods were legumes, dairy products, carbonated drinks, pickles and nuts. Hill et al. (2005); they have proven that by removing gas-producing foods from their diets, mothers have largely disappeared from infantile colic discomfort at the end of a week (27). When the studies were examined, it was stated that the removal of allergenic foods (nuts, eggs, cow's milk, wheat, fish, soy, radish, chocolate) from the mother's diet decreased the crying duration and severity of infants with infantile colic (7, 21, 25-27).

5. CONCLUSION

Infantile Colic Scale scores and related factors were investigated in infants diagnosed with infantile colic. Infant colic was more common in male infants (57.3%), and Infant Colic Scale scores were higher in male infants than in female infants. The Infant Colic Scale score was found to be higher as the age of the infants decreased. In addition, holding the bottle horizontally and using a pacifier affected the Infant Colic Scale score. When the practices of mothers to relieve colic of infants with infantile colic were questioned, it was observed that all of the mothers applied behavioral treatment, and only some of them preferred drug treatment in addition to behavioral treatment.

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