

# Prevalence of obsession and stress in mothers of infants with colic

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## ABSTRACT

**Introduction:** Infantile Colic with high Prevalence can have long-term adverse effects on the family and child and worsen the mental state of mothers.

**Objective:** Studying the prevalence of obsession and stress in mothers of infants with colic referred to the Pediatric Clinic of Shahid Sadoughi University of Medical Sciences, Yazd, Iran from October 2018 to Summer 2020.

**Methods:** In this descriptive-analytical study, 117 mothers of infants with colic (according to the Wessel criteria) referred to the pediatric gastrointestinal clinics of Shahid Sadoughi University of Medical Sciences, Yazd, Iran from October 2018 to summer 2020, were included in the study based on easy sampling method. The prepared questionnaires based on the Holmes-Rahe Stress Scale and Yale-Brown Obsessive-Compulsive Scale and the study related variables were distributed among the sample individuals. The collected data were analyzed using SPSS 19 software. *Chi-square test* was

used to determine the relationship between qualitative variables and  $P$  value  $\leq 0.05$  was considered as a significant level. The required indicators and tables were prepared.

**Results:** Among mothers of infants with colic based on Yale-Brown Obsessive-Compulsive Scale, 64.1% of mothers showed very mild OCD, 24.8% showed relatively mild OCD, 7.7% had moderate OCD and 3.4% had severe OCD. In terms of the Holmes-Rahe Stress Scale, 29.1% of mothers were normal, 14.5% had moderate stress, 28.2% had high stress and 28.2% had severe stress. In this study, no significant relationship was observed between infant parameters of age at the time of visit, sex, weight (at the time of visit and at the time of delivery), birth rank, diet method, term or preterm and the mother's parameters of age, education, job, history of infants with colic, delivery type and place of residence with obsession and stress.

**Conclusion:** Based on the results of this study, most of the mothers of infants with colic presented high or severe stress, and small percentage of studied mothers had moderate to severe OCD. No significant relationship was observed between the studied infant's or mother's variables and obsession and stress of mothers of colic infants.

**Keywords:** Infantile; Colic; Obsession; Stress; Mother

## INTRODUCTION

One of the relatively common causes of restlessness in infants who have a normal physical examination with no specific cause for their crying based on their history and physical examination is infantile colic syndrome [1]. According to the ROM-III criteria, studies have shown that the prevalence of infantile colic is approximately 6-20% among infants worldwide [2].

Problems with the infant sleeping and crying are of the most common causes for parents to refer a doctor in the first trimester of infant life and most parents experience a lot of stress. Even though the infantile colic is not associated with infant mortality, the emotional effects after infantile colic can have an adverse effect on the growth and development of the infant. Moreover, there is no standard treatment for this disorder because its etiology and pathology are unknown [3-4].

Excessive infant crying can affect the mother-infant relationship disrupt sleep, family routines and parental relationships, increase the feelings of anger, frustration and inadequacy, exacerbate stress and parental concentration problems. [5-7]. Most importantly, studies have shown that excessive crying is one of the cases that can clearly increase the risk of non-accidental events for infants (child abuse) because infantile colic has negative effects on mother's mental health and family quality of life which can be a precondition factor for beginning of child abuse [8-10].

According to the WESSEL criteria, the clinical definition of colic is defined as follows:

Crying more than 3 hours a day, repeating more than 3 times a week and as follows according to the new definition: Infant less than 5 months, Existence of crying, abdominal noise, and long, frequent and asymptomatic

periods of restlessness reported by parents that are unpreventable and untreatable, Lack of evidence of FTT and specific fever and illness [11-12].

Although infantile colic certainly improves at 3 to 4 months of infant age, considering its long-term effects on the health of both infants and parents, it can cause significant stress in infant parents [13-16]. Studies have also shown that infantile colic is a major cause of maternal distress and family turmoil, so the basis for managing the disease is to reassure parents that the problem is benign and self-limiting. Also, it has been stated that spouse support in infant care can reduce maternal stress [17,18].

Considering the high prevalence of colic disorder in infants and it poses a great challenge to the family and the infant, it is considered by families, the treatment system and researchers. Also considering that it can have adverse effects on the family and the infant, conducting a descriptive study to understand the prevalence of obsession and stress in mothers of colic infants will provide significant basic information to researchers in this field. Moreover, the frequency of this disorder in mothers of infant with colic and its relationship with maternal age, infant age, nutrition regime, maternal education, infant birth weight and weight at the time of referral, gender, term or preterm, place of residence, birth rank, mother's job, history of colic infant and type of delivery were assessed. Using the results of this study and understanding the prevalence of obsession and stress in mothers with colic infant, it can be understood the important of this issue and help the researchers and activists in this field to be aware of and deal with this disorder.

## MATERIALS AND METHODS

This study was a descriptive-analytical study. The statistical population includes: Mothers of infants with infantile colic (according to the WESSEL criteria and based on the history and physical examination and clinical judgment of pediatric gastroenterology) who referred to the pediatric

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gastrointestinal clinics of Shahid Sadoughi University of Medical Science, Yazd, Iran from October 2018 to summer 2020. Sample size was determined about 120 patients based on the formula for estimating the sample size. Sampling was carried out using easy non-random method.

## Procedure

First, the ethical code was obtained from the school of medicine, Shahid Sadoughi University of medical sciences, Yazd, Iran. Then, by explaining to the parents of colic infants about the implementation of this study, they were assured that their information will be considered confidentially and without a name, and finally the results will be reported in general. The satisfaction of the participants in the study was obtained orally. After interviewing the parents, the mothers of these infants were received the necessary guidance and then they completed a questionnaire based on the Holmes-Rahe Stress Scale and Yale-Brown Obsessive-Compulsive Scale and information containing: age of the mother, age of the infant at the time of medical referral, type of feeding, maternal education, infant weight at the time of birth and medical referral, gender, term or preterm, place of residence, rank of birth, mother's job, history of colic infant and type of delivery. The study was presented in the ethics committee of Shahid Sadoughi University of Medical Sciences of Yazd, Iran and was approved with the code number IR.SSU.MEDICINE.REC.1397.061.

## Inclusion criteria

- Infant with age of 3 weeks to 3 months
- Infant with excessive crying (last more than three hours a day)
- Infant with excessive crying (occur more than three days a week)
- Physical examination of infant with normal result based on judgment of Pediatric gastroenterology clinic
- Parents' consent to participate in the project

## Exclusion criteria

- Parental dissatisfaction
- Infant age less than three weeks
- Infant age over three months
- Infant symptoms not be part of the criteria for colic
- Abnormal clinical examination of infant
- Infants who come from outside the Yazd province
- History of the mother's previous psychiatric illness

## RESEARCH TOOLS

### Holmes-Rahe stress scale

This scale was designed by Holmes and Rahe to determine the stress level of the research sample. The scale lists 43 incidents that cause some changes in life, and assigns a score that called the average value to each incident. This score is established based on the degrees and credits that have been obtained from countless examples of people in relation to these incidents. The data are then summed to obtain the subject's overall score. This score indicates the amount of stress that has been inflicted on the person during the last 12 months. In Iran, Vafayee and Golabi in their research reported the reliability of this questionnaire using Cronbach's alpha equal to 0.79 and its validity using Pearson correlation coefficient equal to 0.36 [19].

In this study, the total score <150 was considered low stress and good and normal mental health, the total score of 150-200 was considered as moderate stress, the total score of 200-300 was considered as high stress and the total score >300 was considered as severe stress.

### Yale-Brown Obsessive-Compulsive Scale (YBOCS)

This scale was created in 1989 and it has 10 items: Five items focus on obsessions and five items focus on practical obsessions [20]. The scoring method in this questionnaire is that the numbers from 1-10 are written next

to the answers of each questions so that the participant must mark them. Then, the answers scores are added to calculate the total score of the questionnaire. In Iran, the reliability ( $r=0.98$ ), internal consistency coefficient ( $r=0.89$ ) and reliability coefficient ( $r=0.84$ ) of this questionnaire/scale among the interviewers has been reported by retesting at two weeks interval. Also, its diagnostic validity was obtained with Beck Depression Inventory and Hamilton Anxiety Rating Scale as ( $r=0.64$ ) and ( $r=0.59$ ), respectively. In a study confirmed the appearance validity of this instrument and they also reported the Cronbach's alpha coefficient  $>0.7$  for the scale [21]. In the present study, Cronbach's alpha coefficient of 0.73 was obtained for this questionnaire, which indicates the acceptable reliability of this research tool in the target community.

How to score: Total score <10=very mild OCD, Total score 10-15=relatively mild OCD, total score 16-25=moderate OCD, total score >25=severe OCD.

## Statistical analysis

The collected data were analyzed using SPSS 19 software. Chi-square test was used to determine the relationship between qualitative variables and P Value  $\leq 0.05$  was considered as a significant level. The required indicators and tables were prepared.

## RESULTS

In these research 117 mothers of infant with colic participated in this study. The average weight of studied mothers was 28 years (17-43 years). The average weight of infants with colic at the time of birth was 3158 g (2200-4000 g) and their average weight at the time of medical referral was 4668 g (3000 g-9000 g).

According to the Yale-Brown Obsessive-Compulsive Scale, among studied mothers 75 mothers (64.1%) had very mild OCD, 29 mothers (24.8%) had relative mild OCD, 9 mothers (7.7%) had moderate OCD and 4 mothers (3.4%) had severe OCD. Also, based on the Holmes-Rahe Stress Scale, among the studied mothers 34 mothers (29.1%) were normal, 17 mothers (14.5%) had moderate stress, 33 mothers (28.2%) had high stress and 33 mothers (28.2%) had severe stress.

In this study, the p value for Holmes-Rahe Stress Scale by different studied variables was as follows: mother's age (p value=0.9), age of infant at medical referral time (p value=0.5), feeding method (p value=0.4), mother's education (p value=0.5), infants birth weight (p value=0.6), infant referral weight (p value=0.1), infant gender (p value=0.6), term or pre-term (p value=0.8), place of residence (p value=0.7), birth rank (p value=0.4), mother's job (p value=0.1), history of previous colic infant (p value=0.1) and type of delivery (p value=0.4). As mentioned, due to the significance level higher than 0.05 reported for all variables studied, there was no significant relationship between these variables and the level of stress in studied mothers of colic infant.

Also, the p value for Yale-Brown Obsessive-Compulsive Scale by different studied variables was as follows: mother's age (p value=0.7), age of infant at medical referral time (p value=0.3), feeding method (p value=0.1), mother's education (p value=0.08), infants birth weight (p value=0.06), infant referral weight (p value=0.6), infant gender (p value=0.7), term or pre-term (p value=0.1), place of residence (p value=0.7), birth rank (p value=0.1), mother's job (p value=0.7), history of previous colic infant (p value=0.7) and type of delivery (p value=0.1). As mentioned, due to the significance level higher than 0.05 reported for all variables studied, there was no significant relationship between these variables and the level of obsession in studied mothers of colic infant (Tables 1-3).

**Table 1:** Demographic Information of the Study Population.

Variable	N	%
Place of residence City	60	51.3
Village	57	48.7

History of previous infant colic	Yes	30	25.6
	No	87	74.4
Gender	Female	57	48.7
	Male	60	51.3
Mother's education	Primary	5	4.3
	Middle	13	11.1
	Diploma	31	26.5
	University	43	36.8
	Higher	25	21.4
Mother's job	Housewife	57	48.7
	Employed	60	51.3
Feeding method	Breast milk	74	63.2
	Milk powder	17	14.5
	Breast milk + Milk Powder	26	22.2
Delivery type	Natural	53	45.3
	Cesarean	64	54.7
Preterm	Pre-term	11	9.4
	Term	106	90.6
Birth rank	1	55	47.0
	2	46	39.3
	3	15	12.8
	4	1	0.9
Current age	1	27	23.1
	1.5	15	12.8
	2	35	29.9
	2.5	14	12.0
Total		117	100

Table 2: Frequency of stress in mothers of colic infants based on the Holmes-Rahe stress scale.

Variable		Stress level			
		Normal	Moderate	High	Severe
Gender	Female	14 (24.6%)	13 (22.8%)	13 (22.8%)	17 (29.8%)
	Male	20 (33.3%)	4 (6.7%)	20 (33.3%)	16 (26.7%)
Mother's job	Housewife	20 (35.1%)	9 (15.8%)	13 (22.8%)	15 (26.3%)
	Employed	14 (23.3%)	8 (13.3%)	20 (33.3%)	18 (30%)
Infant birth rank	1	16 (29.1%)	11 (20.0%)	16 (29.1%)	12 (21.8%)
	2	13 (28.3%)	5 (10.9%)	15 (32.6%)	13 (28.3%)
	3	5 (33.3%)	1 (6.7%)	2 (13.3%)	7 (46.7%)
	4	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)

History of previous colic infant	Yes	7 (23.3%)	2 (6.7%)	11 (36.7%)	10 (33.3%)
	No	27 (31.0%)	15 (17.2%)	22 (25.3%)	23 (26.4%)
Preterm/term	Pre-term	2 (18.2%)	2 (18.2%)	4 (36.4%)	3 (27.3%)
	Term	32 (30.2%)	15 (14.2%)	29 (27.4%)	30 (28.3%)
Place of residence	City	16 (26.7%)	9 (15.0%)	19 (31.7%)	16 (26.7%)
	Village	18 (31.6%)	8 (14.0%)	14 (24.6%)	17 (29.8%)
Delivery type	Natural	16 (30.2%)	10 (18.9%)	13 (24.5%)	14 (26.4%)
		18 (28.1%)	7 (10.9%)	20 (31.2%)	19 (29.7%)
Feeding type	Breast milk	21 (28.4%)	9 (12.2%)	22 (29.7%)	22 (29.7%)
	Milk powder	4 (23.5%)	4 (23.5%)	5 (29.4%)	4 (23.5%)
	Breast milk + milk powder	9 (34.6%)	4 (15.4%)	6 (23.1%)	7 (26.9%)
Mother's Education	Primary	5 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
	Middle	1 (7.7%)	1 (7.7%)	6 (46.2%)	5 (38.5%)
	Diploma	12 (38.7%)	4 (12.9%)	4 (12.9%)	11 (35.5%)
	University	9 (20.9%)	9 (20.9%)	12 (27.9%)	13 (30.2%)
Higher		7 (28.0%)	3 (12.0%)	11 (44.0%)	4 (16.0%)

Table 3: Frequency of Obsession in mothers of colic infants based on the Yale-Brown Obsessive-Compulsive Scale.

Variable		OCD			
		Very mild	Relative mild	Moderate	Severe
Gender	Female	40 (70/2%)	12 (21/1%)	3 (5/3%)	2 (3/5%)
	Male	35 (58/3%)	17 (28/3%)	6 (10%)	2 (3/3%)
Mother's job	Housewife	37 (64/9%)	11 (19/3%)	6 (10/5)	3 (5/3%)
	Employed	38 (63/3%)	18 (30%)	3 (5%)	1 (1/7%)
Infant birth rank	1	39 (70/9%)	10 (18/2%)	3 (5/5%)	3 (5/5%)
	2	30 (65/2%)	13 (28/3%)	3 (6/5%)	0 (0%)
	3	6 (40%)	5 (33/3%)	3 (20%)	1 (6/7%)
	4	0 (0%)	1 (100%)	0 (0%)	0 (0%)
History of previous colic infant	Yes	18 (60%)	8 (26/7%)	4 (13/3%)	0 (0%)
	No	57 (65/5%)	21 (24/1%)	5 (5/7%)	4 (4/6%)
Preterm/term	Pre-term	5 (45/5%)	3 (27/3%)	3 (27/3%)	0 (0%)
	Term	70 (66%)	26 (24/5%)	6 (5/7%)	4 (3/8%)
Place of residence	City	40 (66/7%)	13 (21/7%)	5 (8/3%)	2 (3/3%)
	Village	35 (61/4%)	16 (28/1%)	4 (7%)	2 (3/5%)
Delivery type	Natural	37 (69/8%)	13 (24/5%)	2 (3/8%)	1 (1/9%)
		38 (59/4%)	16 (25%)	7 (10/9%)	3 (4/7%)
Feeding type	Breast milk	43 (58/1%)	19 (25/7%)	8 (10/8%)	4 (5/4%)
	Milk powder	12 (70/6%)	5 (29/4%)	0(0%)	0 (0%)

	Breast milk + milk powder	20 (76/9%)	5 (19/2%)	1 (3/8%)	0 (0%)
Mother's education	Primary	5 (100%)	0 (0%)	0 (0%)	0 (0%)
	Middle	6 (46/2%)	2 (15/4%)	4 (30/8%)	1 (7/7%)
	Diploma	18 (58/1%)	10 (32/3%)	2 (6/5%)	1 (3/2%)
	University	26 (60/5%)	12 (27/9%)	3(7%)	2 (4/7%)
	Higher	20 (80%)	5 (20%)	0 (0%)	0 (0%)

### DISCUSSION

This study was conducted to investigate the frequency of obsession and stress in mothers of colic infants due to the high prevalence of infantile colic and its interactions with mental health of mother and infant. In terms of obsession, small percentage of studied mothers were at the severe or moderate OCD level, however in terms of stress most mothers presented high or severe levels of stress.

The studies that have been conducted in this field and confirm the results of our research has been stated that parental stress is a reason for the excessive crying of the infants and create a vicious cycle between parental stress and crying of colic infant [12]. Excessive infant crying can also irritate parents and cause maternal depression or parental fatigue and stress [7, 22-23]. Two other studies have also reported that maternal stress increases (three fold) the risk of colic and mothers of infants with excessive crying are 5.7 times more likely to score higher on their Parental Stress Index (PSI) [24-25]. Similarly in other studies, mothers of colic infants reported higher levels of stress and were more prone to stress and anxiety and they also reported higher stress than non-colic group in relation to their infant crying behavior [26-27].

In this study, no significant relationship was observed among the level of obsession and stress of mothers of colic infant with the variables of mother's age, infant age at the time of visit, nutrition method, mother's education, infant weight at birth and at the time of visit, infant gender, term or preterm infant, place of residence, birth rank, mother's job, history of previous colic infant and delivery type. It was stated in several studies that the gestational age, infant birth weight, type of delivery, type and sex did not affect the incidence of colic of nutrition and no significant relationship was observed between these scales and infantile colic [28-29].

Also, no statistical significance was found between colic and non-colic groups in terms of infant sex, infant birth weight, mothers' gestational age at birth, type of delivery and infant feeding pattern [30]. In two other studies, it was also reported that no relationship was observed between the occurrence of infantile colic and factors such as family history, socioeconomic status, infant gender or types of nutrition [1]. So, the results of our study indicating no relationship between these variables with obsession and stress of mothers of colic infants, seems logical.

One of the strengths of this research is studying the relationship between these disorders (obsession and stress in mothers of colic infants) and the mentioned variables, which was not found in the previous studies in this field. So, these results will be useful for researchers in this field to conduct additional research.

Limitation to access more complete and larger statistical population, as well as the lack of the control group is of the limitation of this study. In future studies by removing these limitations, it may be possible to obtain more accurate results and use them in supplementary research projects.

### CONCLUSION

Generally, the results of this study showed that most mothers of colic infants presented very mild levels of obsession, however, most of studied mothers of colic infants faced with high stress. Therefore, it can be possible to reduce stress and maintain mothers mental health and prevent destructive effects on the child's health through reassure to parents about the benign and self-limiting colic of infants and encourage fathers to

support their spouses in child care, as well as by examining possible factors in further research and eliminating or reducing these factors.

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