

## Psychosocial status and quality of life in mothers of infants with colic

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**SUMMARY:** Abacı FB, Gökçe S, Tuygun N, Karacan CD, Öner Ö. Psychosocial status and quality of life in mothers of infants with colic. Turk J Pediatr 2013; 55: 391-395.

We aimed to measure the psychosocial status and quality of life in mothers of babies with infantile colic (IC).

Mothers and their newborns were stratified into Group 1 (colicky infant-mother dyad [n: 39]) and Group 2 (non-colicky infant-mother dyad [n: 39]). Maternal symptoms of depression and anxiety were assessed using the Beck Depression Inventory (BDI) and State-Trait Anxiety Inventory (STAI), respectively. The Short Form-36 (SF36) was used to measure quality of life.

Mean BDI score in Group 1 ( $14.7 \pm 12.9$ ) was significantly higher than in Group 2 ( $7.7 \pm 5.5$ ) ( $p=0.020$ ). Mothers in Group 1 had lower Short Form-36 physical functioning ( $26.6 \pm 4.3$  vs.  $28.7 \pm 2.6$ ;  $p=0.010$ ) and social functioning ( $7.4 \pm 2.5$  vs.  $8.9 \pm 3.2$ ,  $p=0.024$ ) domain scores.

Infantile colic (IC) was associated with higher maternal depression symptom scores and lower quality of life scores. As such, we think that mothers who have babies with IC should be closely monitored.

*Key words:* crying, maternal depression, anxiety, quality of life.

Infantile colic (IC) is unexplained, inconsolable crying in an otherwise healthy baby<sup>1,2</sup> that is frequently accompanied by flushing of the face, meteorism, drawing-up of the legs, and the passing of gas. IC occurs in 10%-30% of infants<sup>3</sup>. The crying episodes typically begin during the second week of life, peak at about six weeks, and resolve spontaneously in most cases by the age of three months<sup>1</sup>. Even though IC is a common condition, its etiology remains elusive.

It is commonly thought that IC results from an unfavorable environment created by inexperienced and anxious parents, in particular mothers, and that behavioral problems could result from less than optimal parent-infant interaction. IC can be extremely stressful for the parents. IC is reported to be a significant and independent risk factor for maternal postnatal depression<sup>4-7</sup>. Excessive crying may also induce child abuse<sup>8</sup> and in extreme cases result in infant death<sup>9</sup>.

Unrecognized and untreated symptoms of depression may result in significant psychological disability in mothers<sup>10</sup>. Mothers of babies with IC have been reported to have psychological conflicts regarding the maternal role and an inconsistent style of interaction with their babies<sup>11</sup>. As such, quality of life in mothers of babies with IC is expected to be low. There are some dome data on the relationship between IC and psychosocial status and the well-being of mothers; however, data on the quality of life in such mothers are lacking. The present study aimed to measure psychosocial status and quality of life in mothers of babies with IC.

### Material and Methods

The study included 78 mother-infant pairs. Group 1 was composed of 39 mothers and their babies with IC who were all recruited from the General Pediatrics Outpatient Clinic during a three-month period, and a randomly selected 39 mothers and their infants without

**Table I.** Clinical Characteristics of the Infants in Groups 1 and 2

	Group 1	Group 2	p*
Mean age (days)	41.7±22.5	35.8±18.7	0.295
Gender, male (%)	23 (59.0)	15 (38.5)	0.113 (3.284&)
Mean body weight (g)	4438±1169	4621±1022	0.474
Complicated peri-postnatal course	None	None	-
Type of feeding, exclusively breastfed, n (%)	32 (82.1)	36 (92.3)	0.310 (1.032&)

\*Pearson's chi-square ( $\chi^2$ ) test, Student's t-test.

&Chi-square value

IC in Group 2 served as controls. Inclusion criteria for the infants were uneventful prenatal, perinatal, and postnatal periods, and for the mothers were an uncomplicated postpartum period and agreement to participate in the study. Infants with any medical problems, prematurity, or intrauterine growth retardation, and those that were small for their gestational age were excluded from the study. Mothers with any psychiatric diagnosis and/or psychotropic drug use were excluded. Rome III criteria<sup>2</sup> were used to define IC: 1) Paroxysms of irritability, fussing, or crying that start and stop without obvious cause, 2) Episodes lasting 3 or more hours per day and occurring at least 3 days per week for at least 1 week, and 3) No failure to thrive. A complete physical examination was performed. Urine and stool analysis was performed when indicated.

Data on infant and mother characteristics and sociodemographic features were recorded. The mothers were asked to complete the Beck Depression Inventory (BDI)<sup>12</sup> and State-Trait Anxiety Inventory (STAI-1 and STAI-2)<sup>13</sup> to evaluate the risk of depression and level of anxiety. BDI is a series of questions developed to measure the intensity, severity, and depth of depression. Higher scores are positively correlated with higher levels of depression. Scores  $\geq 17$  indicate the probability of requiring professional help. STAI is an instrument that quantifies state (STAI-1) and trait (STAI-2) anxiety. Scores range from 20 to 80; higher scores indicate greater anxiety. Quality of life was assessed by using the Short Form-36<sup>14</sup>, which includes 36 questions and yields 8 domain scores: physical functioning, social functioning, physical role restriction, emotional role restriction, mental health, vitality, pain, and general health and health change.

The study was approved by the local Ethics Committee, and written informed consent was obtained from the mothers on their own behalf, and from both parents on behalf of each child.

### Statistical Analysis

Analyses were performed using the Statistical Package for the Social Sciences (SPSS) v.15.0 for Windows (SPSS Inc., Chicago, IL). Numerical variables are expressed as mean  $\pm$  SD. Categorical variables are shown as number and percentage. Variables were compared using the t-test, chi-square ( $\chi^2$ ) test, and Fisher's exact test. Statistical significance was set at  $p < 0.05$ .

### Results

Infant characteristics are shown in Table I. There were no significant differences in the mean age, gender, body weight, type of feeding, and peri-postnatal course between the infants in Groups 1 and 2. The mothers' characteristics and demographic features are shown in Table II. There were no significant differences in age, marital status, education, employment, monthly income, parity, mode of the delivery, or gestational and postpartum health-related problems between the mothers in Groups 1 and 2.

Mean BDI score in Group 1 was significantly higher than that in Group 2 ( $p = 0.020$ ). Significantly more mothers in Group 1 had a BDI score  $> 17$  (the cut-off point indicating that the risk of depression is higher) ( $p = 0.008$ ).

There were no significant differences in STAI-1 or STAI-2 scores between the two groups (Table III). Short Form-36 scores are shown in Table IV; the mothers in Group 1 had lower physical functioning ( $p = 0.010$ ) and social functioning ( $p = 0.024$ ) domain scores.

**Table II.** Clinical and Demographic Features of the Mothers in Groups 1 and 2

	Group 1	Group 2	p*
Mean age (years)	26±5.2	25.3±4.7	0.509
Marital status			
Single/no partner	0	1	1.000
Married/living with partner	39	38	
Education			
Less than high school	22	25	0.638 (0.898&)
High school	13	12	
More than high school	4	2	
Employment, yes (%)	5 (12.8%)	4 (10.3%)	0.723 (0.126&)
Mean monthly income (TL)	1325.9±1005.9	1052.8±553.1	0.447
Parity			
Primiparous	18	17	0.650 (0.206&)
Multiparous	21	22	
Type of delivery, vaginal (%)	18 (46.2%)	23 (59%)	0.364 (0.823&)

\*Pearson’s chi-square ( $\chi^2$ ) test, Fisher’s exact test, Student’s t-test.

&Chi-square value.

**Discussion**

As most symptoms of colic resolve by about three months of age<sup>15</sup>, healthcare professionals often advise parents that their babies will outgrow IC with time; however, IC can sometimes be frustrating and exhausting for parents<sup>16</sup>. Persistent crying has been identified as a risk factor for postpartum depression. Chronic stress and sleep deprivation caused by inconsolable crying typically drains parental resources, and can cause or exacerbate postpartum depression, anxiety, anger, and guilt. Persistent crying promotes maternal feelings of incompetence, learned helplessness, and depression<sup>17</sup>, exacerbating postpartum depression. Howell et al.<sup>18</sup> reported that IC plays a critical role in the onset of postpartum depression. Papousek et al.<sup>17</sup> reported that postpartum depression, neurotic conflicts, or personality disorders were observed in 49% of mothers with babies that cried excessively, 26%

of mothers with babies that cried moderately, and 3% of control mothers. Akman et al.<sup>6</sup> reported that mothers of infants with IC had higher depression scores than those with an infant without colic. In the present study, we used BDI as a screening tool for depression. The mothers in Group 1 had significantly higher BDI scores than those in Group 2 (p=0.020). Moreover, a significantly higher number of mothers in Group 1 had a BDI score  $\geq 17$  (p=0.008) - the cut-off point indicating the need for professional help.

Persistent crying is one of the most stressful events for parents. Keefe et al.<sup>19</sup> observed elevated levels of stress in parents with irritable or colicky infants. Mothers of infants that cried moderately to extremely scored low on self-efficacy and high on depression, anxiety, and marital distress<sup>17</sup>. Likewise, the mother-infant relationship was more distressed and disturbed among the mothers of infants with

**Table III.** Beck and STAI Scores in Groups 1 and 2

	Group 1 n = 39	Group 2 n = 39	p*
Mean Beck score	14.7 ± 12.9	7.7 ± 5.5	0.020
Presence of depression (Beck score $\geq 17$ )	12 (30.8%)	2 (5.1%)	0.008
Mean STAI 1 score	38.8 ± 10.9	37.2 ± 11.4	0.536
Mean STAI 2 score	42.6 ± 8.1	41 ± 7.7	0.368

STAI: State-Trait Anxiety Inventory.

\*Pearson’s chi-square ( $\chi^2$ ) test, Fisher’s exact test, Student’s t-test.

**Table IV.** Short Form-36 Quality of Life Scores in Groups 1 and 2

	Group 1 (n = 39) Mean±SD	Group 2 (n = 39) Mean±SD	P*
Physical functioning	26.6±4.3	28.7±2.6	0.010
Role-physical	7.1±6.1	6.7±1.7	0.230
Bodily pain	8.5±3.9	8.5±2.9	0.576
General health	17.1±5.6	18.8±4.2	0.218
Vitality	15.3±5.3	15.9±4	0.652
Social functioning	7.4±2.5	8.9±3.2	0.024
Role-emotional	4.7±2.0	5.7±3.7	0.145
Mental health	20±6.3	20.7±6	0.589

\*Student's t-test.

moderate and extreme crying than among the controls<sup>17</sup>. Stifter et al.<sup>20</sup> reported that mothers of colicky infants tend to be slightly more anxious about separation from their children than the mothers of infants without colic. In the present study, mothers in Group 1 did not have higher levels of anxiety than the mothers in Group 2. In another study from Turkey<sup>6</sup>, STAI scores in mothers with a colicky infant were higher than in mothers without a colicky infant. In addition, a strong association between IC and an insecure attachment style as well as significantly higher anxiety scores in mothers with insecure attachment style have been reported<sup>6</sup>. Indeed, depression, insecure attachment style, and anxiety should interrelate and possibly affect each other, but it remains unclear why mothers in both groups in the present study had similar anxiety scores. It requires further studies on the Turkish family structure and sociocultural properties.

Families with a severely or moderately crying baby were less flexible, had decreased ability to cope with daily activities, and showed less energy and vitality than control families<sup>21</sup>. Mothers with a colicky infant had higher frustration/anger scores and significantly lower self-efficacy scores than control mothers<sup>17</sup>. Levitzky et al.<sup>22</sup> observed a disturbed emotional state in mothers with colicky infants; most (79%) had aggressive thoughts and fantasies, and some mothers (26%) reported having thoughts of infanticide during colic episodes. A mother's self-perception of being judged by others, unwanted and/or unhelpful advice, and continual efforts to soothe a crying baby result

in exhaustion and frustration, gradually leading to isolation<sup>23</sup>. Sometimes, mothers blame themselves for the infant's crying and limit their social interactions<sup>24</sup>. All of these consequences of IC are related to decreased quality of life, which has not been comprehensively evaluated in mothers of babies with IC. In the present study, numerous domains of quality of life were evaluated by using the Short Form-36. Mothers in Group 1 had significantly lower physical functioning and social functioning scores. These low scores may have been related with frustration/exhaustion, low energy level, emotional disturbances, social isolation, among others. The present findings suggest that IC might negatively affect quality of life due to its negative effects on both physical and mental health.

The present study has some limitations. Although IC was diagnosed based on Rome III criteria, the duration, frequency and intensity of crying were subject to bias by the parent's report. A cry diary may be considered to be more reliable, but does not seem practical, and bias cannot be completely avoided. Indeed, there is no ideal method to measure infant crying. We do not know the mothers' psychological condition or quality of life during gestation due to the design of the study, although the mothers did not report any psychiatric diseases, use of psychotropic drugs, or any type of psychotherapeutic intervention during gestation. Nonetheless, excessive crying may be the consequence of maternal depression<sup>25</sup>, which was not addressed in the present study. The most important limitation is the study's

cross-sectional design, which precludes any causal inference. We screened the mothers in terms of depression, anxiety, and quality of life at the time of IC. The scores show the probability of having depression and anxiety, but do not indicate the presence of depression and anxiety. Unfortunately, the study is lacking confirmatory clinical data on either depression or anxiety. Additionally, the mothers were not re-evaluated after IC resolved. Some studies, however, reported high depression scores later when IC had resolved<sup>7</sup>, more separation anxiety in mothers<sup>20</sup> and family stress in families who had an infant with IC<sup>26</sup>.

In the present study, IC was associated with high maternal depression symptom scores, apart from postpartum depression. Thus, we think mothers with babies that have IC should be closely monitored. IC can also result in low quality of life scores, which is only a statistical reflection, but might be related to physical and mental health. Future studies with long-term follow-up are required to determine the clinical significance of these low quality of life scores.

#### REFERENCES

- Barr RG, Rotman A, Yaremko J, et al. The crying of infants with colic: a controlled empirical description. *Pediatrics* 1992; 90: 14-21.
- Hyman PE, Milla PJ, Benninga MA, et al. Childhood functional gastrointestinal disorders: neonate/toddler. *Gastroenterology* 2006; 130: 1519-1526.
- Lucassen PL, Assendelft WJ, van Eijk JT, et al. Systematic review of the occurrence of infantile colic in the community. *Arch Dis Child* 2001; 84: 398-403.
- Andrews-Fike C. A review of postpartum depression. *Prim Care Companion J Clin Psychiatry* 1999; 1: 9-14.
- Howell EA, Mora P, Leventhal H. Correlates of early postpartum depressive symptoms. *Matern Child Health J* 2006; 10: 149-157.
- Akman I, Kuscu K, Ozdemir N, et al. Mothers' postpartum psychological adjustment and infantile colic. *Arch Dis Child* 2006; 91: 417-419.
- Vik T, Grote V, Escribano J, et al. Infantile colic, prolonged crying and maternal postnatal depression. *Acta Paediatr* 2009; 98: 1344-1348.
- Reijneveld SA, van der Wal MF, Brugman E, et al. Infant crying and abuse. *Lancet* 2004; 364: 1340-1342.
- Krugman RD. Fatal child abuse: analysis of 24 cases. *Pediatrician* 1983; 12: 68-72.
- Seidman D. Postpartum psychiatric illness: the role of the pediatrician. *Pediatr Rev* 1998; 19: 128-131.
- Miller AR, Barr RG. Infantile colic. Is it a gut issue? *Pediatr Clin North Am* 1991; 38: 1407-1423.
- Beck AT, Ward CH, Mendelson M, et al. An inventory for measuring depression. *Arch Gen Psychiatry* 1961; 4: 561-571.
- Spielberger CD, Gorsuch RL, Lushene R, et al. *Manual for the State Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press; 1970.
- Ware JE Jr. SF-36 health survey update. *Spine (Phila Pa 1976)* 2000; 25: 3130-3139.
- Barr RG. Colic and crying syndromes in infants. *Pediatrics* 1998; 102: 1282-1286.
- Roberts DM, Ostapchuk M, O'Brien JG. Infantile colic. *Am Fam Physician* 2004; 70: 735-740.
- Papousek M, von Hofacker N. Persistent crying in early infancy: a non-trivial condition of risk for the developing mother-infant relationship. *Child Care Health Dev* 1998; 24: 395-424.
- Howell EA, Mora PA, DiBonaventura MD, et al. Modifiable factors associated with changes in postpartum depressive symptoms. *Arch Womens Ment Health* 2009; 12: 113-120.
- Keefe MR, Kajrlsen KA, Lobo ML, et al. Reducing parenting stress in families with irritable infants. *Nurs Res* 2006; 55: 198-205.
- Stifter CA, Bono MA. The effect of infant colic on maternal self-perceptions and mother-infant attachment. *Child Care Health Dev* 1998; 24: 339-351.
- Raiha H, Lehtonen L, Korvenranta H. Family context of infantile colic. *Infant Ment Health J* 1995; 16: 206-217.
- Levitzky S, Cooper R. Infant colic syndrome--maternal fantasies of aggression and infanticide. *Clin Pediatr (Phila)* 2000; 39: 395-400.
- Megel ME, Wilson ME, Bravo K, et al. Baby lost and found: mothers' experiences of infants who cry persistently. *J Pediatr Health Care* 2011; 25: 144-152.
- Link BG. On stigma and its public health implications. Paper presented at the International National Institutes of Health conference, Stigma and Global Health: Developing a Research Agenda, Bethesda, MD. <http://www.stigmaconference.nih.gov/FinalLinkPaper.html>. In 2001.
- St James-Roberts I, Conroy S. Do pregnancy and childbirth adversities predict infant crying and colic? Findings and recommendations. *Neurosci Biobehav Rev* 2005; 29: 313-320.
- Rautava P, Lehtonen L, Helenius H, et al. Infantile colic: child and family three years later. *Pediatrics* 1995; 96: 43-47.