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Research Article

**STUDY TO DETERMINE THE RELATIONSHIP OF SEVERAL
FACTORS WITH INFANTILE COLIC**¹Dr Hina Khan, ²Dr Alina Khalid, ³Dr Ayesha Siddiq¹Nishtar Medical University, Multan²Nishtar Medical University, Multan³Nishtar Medical University, Multan

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Abstract:**Aim:** to evaluate the relationship of various factors with infantile colic.**Methods:** This case control study was conducted at the Pediatric Unit-II of Nishtar Hospital, Multan for one-year duration from June 2019 to June 2020, infants coming to the outpatient clinic for colic were included. Structured Proforma data for various factors related to infantile colic were collected for each infant. Colic cases were identified using the Wessel criteria, calculations were performed using SPSS version 19, the P value, the odds ratio and the 95% confidence interval were calculated, and the significance of various factors was assessed.**Results:** Of the 735 infants admitted to the outpatient clinic due to colic, only 125 infants meeting Wessel's criteria were enrolled in the study. Likewise, 125 subjects were also selected from an age-matched control group. Factors significantly associated with infantile colic have been found to include stress during pregnancy, delivery, breastfeeding, inappropriate feeding / belching techniques, GER, umbilical / inguinal hernia, and sleep disturbances. However, no statistically significant significance was found for the following factors, pregnancy disease, nutritional status, mode of delivery, educational status, maternal heart rate consumption, family socioeconomic status, parental age, birth weight, and stool frequency.**Conclusion:** Reducing maternal stress during pregnancy, educating the mother in infant management for the first time, may be helpful in reducing the incidence of infant colic.**Key words:** colic, infants, accompanying factors**Corresponding author:****Dr. Hina Khan,**

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INTRODUCTION:

Infant colic has been described as a behavioral syndrome characterized by paroxysmal, inconsolable, excessive crying with no identifiable cause in a healthy infant in the first 3 months of life. The classic definition of infantile colic follows Wessel's criteria that; picky crying of > 3 hours a day, > 3 days a week and at least 3 weeks. Infant colic affects 3-28% of infants, causing considerable stress and anxiety to parents. Individual infants have been reported to peak in crying between 3-12 months of age. The pathogenesis of colic remains elusive, although the evidence points to many independent factors. Most researchers have looked at gastrointestinal factors in the etiology of colic, including gastrointestinal immaturity, types of nutrition, cow's milk intolerance and lactose intolerance. However, the evidence remains weak and conflicting, and research is increasingly pointing to extraintestinal factors. Neff postulated that, due to the increased sensitivity of the central nervous system, a minimal stimulus could lead to the development of colic in some infants. It has been suggested that the transmission of tension from mother to infant is a contributing factor. Carey confirmed this in another prospective study of 103 people. In another study by Paradise, maternal emotional factors were not associated with infantile colic, but with emotional tension or depression during the puerperium. Hansen et al. Described infant colic as the end result of a complex transaction between infants and their environment. According to him, there are many factors responsible for crying and suffering. In various studies previously conducted on the subject, the association with infantile colic has been attributed to factors related to mother and child. On the mother's side; The effects of maternal sensitivity, care techniques, nutritional practices, demographic variables and lifestyle on infant crying levels were investigated and the results were often inconsistent or difficult to interpret. On the part of the infant; difficult temperament, pediatric conditions, birth weight, and other physical factors related to labor were found to be the source of the difference in crying amount. In a large-scale prospective, randomized trial, Rautava et al. Found that symptoms of parental stress, marriage dissatisfaction, social isolation, and the number of physical symptoms, all assessed before the third trimester of pregnancy, were associated with colic at 3 months of age. Hog dalle et al. Identified the stress associated with the disease in pregnancy (vomiting, pelvic pain) and other physiological problems in pregnancy as important risk factors for colic in the first

six months. In a study by Sondergaard et al., An over 3-fold risk of colic was observed in infants born to the mother with a high level of general anxiety in pregnancy. Miller et al. Found no relationship between stress in pregnancy and infantile colic. The aim of the study was to investigate various factors that may be responsible for the development of infantile colic.

MATERIALS & METHODS:

This case control study was conducted at the Pediatric Unit-II of Nishtar Hospital, Multan for one-year duration from June 2019 to June 2020, infants coming to the outpatient clinic for colic were included. Infants meeting the Wessel criteria ("fits of irritability, irritability or crying lasting more than three hours a day in total and more than three days in one week) Were included in the study. Of 735 infants, 125 met the inclusion criteria and the remainder were excluded. Children with other identifiable causes of colic pain such as otitis media, meningitis, and napkin dermatitis were excluded from the study. Along with the cases, 125 subjects were also selected from an age-matched control group. For all of these infants, the details of the related factors were noted and documented in an organized Performa. Statistical analysis was performed using SPSS-19 for the window. The p value, the odds ratio was calculated and tabulated. The P value less than or equal to 0.003 was taken as significant.

RESULTS:

The study was conducted on 250 infants. Factors that are significantly associated with infantile colic have been found to include stress during pregnancy (P value = 0.000, odds ratio = 3.215, 95% confidence interval = 1.709-6.04), first birth (P value = 0.000, Odds = 9.429, 95% CI = 4.323-21.011), breastfed (p-value = 0.002, odds ratio = 0.219, 95% confidence interval = 0.219-0.726), inappropriate feeding and belching techniques (p-value = 0.000, odds ratio = 3.561, 95% confidence interval = 1.992-6.364), GER (P value = 0.000, odds ratio = 4.268, 95% confidence interval = 2.466-7.389), umbilical / inguinal hernia (p-value = 0.003, odds ratio = 4.762, 95% confidence interval = 1.554-14.589), sleep disturbances (p-value = 0.000, odds ratio = 2.970, 95% confidence interval = 1.7575-0.23). However, other risk factors including pregnancy disease, nutritional status, delivery pattern, educational status, maternal impulse intake, family socioeconomic status, parental age, birth weight, pregnancy, and stool frequency were not significantly associated with infant colic.

TABLE 1: Association of various factors with infantile colic

Variables	Cases n=125	Controls n=125	P value	Odd ratio (OR)	95% confidence interval (CI)	
					Lower	Upper
Emotional stress during pregnancy	Positive n=108	Positive n=83	0.000	3.215	1.709	6.04
Hypertension during pregnancy	Positive N=68	Positive N=73	0.524	0.580	0.515	1.402
Poor nutrition during pregnancy (taking less than recommended dietary allowance)	Positive N=53	Positive n=45	0.300	1.309	0.787	2.177
Normal simple vaginal delivery	Positive N=93	Positive N=106	0.041	0.521	0.277	0.980
Educated mother (completed primary school education)	Positive N=78	Positive N=65	0.097	1.532	0.925	2.536
Uneducated mother (below primary school education)	Positive N=47	Positive N=62	0.056	0.612	0.370	1.013
Maternal Puses Intake (more than three times a week)	Positive N=113	Positive N=120	0.079	0.392	0.134	1.149
Poor Socioeconomic status (family income below 10,000/month)	Positive N=40	Positive N=57	0.027	0.561	0.335	0.939
Good Socioeconomic status (family income more than 10,000/month)	Positive N=85	Positive N=70	0.051	1.670	0.997	2.796
Young Parents (age below 20 yrs)	Positive N=57	Positive N=40	0.027	1.781	1.064	2.981
First Born	Positive N=117	Positive N=76	0.000	9.429	4.323	21.011
Appropriate for gestational age	Positive N=83	Positive N=104	0.002	0.399	0.219	0.726
Small for gestational age	Positive N=40	Positive N=22	0.008	2.203	1.216	3.992
Large for Gestation	Positive N=3	Positive N=1	0.313	3.049	0.313	29.719
Full Term	Positive N=101	Positive N=118	0.001	0.250	0.103	0.604
Preterm	Positive N=24	Positive N=8	0.002	3.475	1.495	8.076
Breastfed	Positive N=21	Positive N=42	0.002	0.399	0.219	0.726
Formula Fed	Positive N=17	Positive N=21	0.481	0.780	0.390	1.560
Fresh Milk Fed	Positive N=9	Positive N=3	0.076	3.155	0.834	11.943
Mixed feed (Formula +Breastfed)	Positive N=78	Positive N=59	0.016	1.856	1.121	3.074
Improper Feeding/Burping	Positive N=54	Positive N=22	0.000	3.561	1.992	6.364
Gastroesophageal Reflux (excessive regurgitation with failure to thrive)	Positive N=69	Positive N=28	0.000	4.268	2.466	7.389
Inguinal/Umbilical Hernia	Positive N=17	Positive N=4	0.003	4.762	1.554	14.589
Disturbed Sleep (inability to have undisturbed sleep for about three hours)	Positive N=90	Positive N=58	0.000	2.970	1.757	5.023

DISCUSSION:

This prospective study investigates the association of various factors with infant colic. The incidence of colic in this study was approximately 21%, which is consistent with other studies. Babies were enrolled, to whom mothers cooperated to participate and observe. The vast majority of colic begins at six weeks of age and resolves by three months of age. The incidence of infantile colic varies widely up to 40%. This variation in the index is due to inconsistencies in the case

definition and study protocols. This may be due to the difference in the diet and caring behavior of people in developed and developing countries. Stress during pregnancy showed a significant association with the development of infantile colic in our study. This is consistent with most previous studies, but in contrast to Millar's observations. Birth order was also important in this study. Being firstborn had a strong association with infant colic in our study, which is consistent with another study on infant colic from Iran. Breastfeeding

is mandatory for every infant, but this study did not show a protective effect of breastfeeding on infant colic. Among the studies comparing breastfed and formula fed infants; four studies found no difference, three studies found a higher incidence of colic in breastfed infants than in formula fed infants, and one study found a slightly lower incidence of colic in breastfed infants. Rollin and Pandegast also found a higher incidence of colic in breast-fed infants than in formula-fed infants. Proper nutrition and burping technique are very important. Inexperienced mothers with faulty feeding and burping techniques had a higher incidence of colic in their babies. In our study, children with an inguinal or umbilical hernia had a higher incidence of colic. Whether the hernia is the cause or effect of the colic should be investigated further. In our study, gastroesophageal reflux was associated with infantile colic. This is in line with other studies in this area.

CONCLUSION:

A family with an infant suffering from colic is a real challenge for GPs and pediatricians. Key considerations include providing support through information and conversation as well as encouraging parents to cope mechanically so that family life is easier and parents can deal with screaming babies at home. It is important to continue observing and not to leave parents alone and to emphasize "good parenting" rather than "perfect parenting".

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