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Risk Factors of Gastroesophageal Reflux in Relation to Maternal Feeding Practices

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Abstract

Background: During infancy, the (gastroesophageal reflux), is a typical issue. The purpose of this study was to identify maternal feeding practices as risk factors that could cause newborns to experience gastroesophageal reflux.

Methods and Materials: To achieve its goals, the current study used a case-control approach. A non-probability sample of 140 children between, one month and, 12 months was purposefully chosen based on the Infants with gastric reflux, were included and excluded based on certain criteria; 70 of these infants were in studied groups, and another 70 were in healthy controls.

Results :There were significant differences between the healthy control group and infants with gastroesophageal reflux in the following evaluated potential risk variables: Type of Feeding ($p=0.004$), Position of an Infant during Feeding ($p=0.00$), Approximate duration for each Feeding ($p=0.00$), Sleeping duration after Feeding ($p=0.00$), Feeding Intervals ($p>0.01$), and Pacifier ($p>0.01$).

Conclusions: Numerous possible risk factors have been discovered during the current investigation. Among these risk factors are artificial feeding, lying Position for Infant during Feeding, more than 10 minutes feeding duration for each Feeding, sleeping for less than 2 hours' duration after Feeding, scheduled Feeding Intervals, and not Use of Pacifier.

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Keywords: Gastroesophageal reflux, risk factors, feeding practice

Introduction

When stomach acid secretion keeps flowing back into the esophagus, the tube that joins the stomach and mouth, it is known as gastroesophageal reflux disease. GERD is a common acronym for it. Acid secretion reflux is the term for this backwash, this may cause irritation to the lining of the esophagus. (Vandenplas & Kindt, 2022) ^[11]. All ages can experience GER, a physiological disorder that mostly affects newborns. Half of newborns under three months old experience regurgitation every day, which often goes away on its own for the majority of healthy infants by the time they are 12 to 18 months old. (Curien-Chotard & Jantchou, 2020) ^[3]. Anatomical features, posture, feeding techniques, inflammation, abnormalities, immaturity, and esophageal clearance processes are some of the characteristics that are specific to newborns. (Zachariah, Goo, & Lee, 2020) ^[12]. The aim of the study to determine maternal feeding practices as risk factors that could cause newborns to experience gastroesophageal reflux.

Methodology

Design of the study

Case-control design to accomplish the objectives.

Sample and Sampling

A total of 60 infants between, the ages of 1 month and 12 months were included in the non-probability sample, which was

purposefully chosen based on the criteria for including and excluding infants who have gastric reflux. Thirty of these babies were in the healthy control group, and thirty were in the study group.

Statistical Analysis

The researcher using SPSS for analysis the sample of study.

Results

Table1: The analyzed variables' demographic characteristics (numbers=140).

(Studied Variables)		Cases number=70		Controls number=70	
		No.	%	No.	%
Months of age	one-3month	42	61.5	42	61.5
	< 3-6 month	12	15.8	12	15.8
	< 6-9 month	10	15.6	10	15.6
	< 9-12 month	6	7.2	6	7.2
	$X^2 = 0.000$ P-value = 1.000				
Sex	Males	50	71.4	50	71.4
	Females	20	28.6	20	28.6
	$X^2 = 0.000$ P. value = 1.000				
The gestational ages	Premature	45	64.3	8	11.4
	The full-term	25	35.7	62	88.6
	$X^2 = 41.566$ P. value = 0.000				
Twins	Yes	8	11.4	0	0.00
	No	62	88.6	70	100.0
	$X^2 = (8.485)$ P. value = (0.004)				
The infant's position within the family	The first	31	44.3	10	14.3
	Second	15	21.4	6	8.6
	Third	11	15.7	49	70.0
	More than	13	18.6	5	7.1
	$X^2 = 42.235$ P. value = 0.000				
Consanguinity between father and mother	Relative	52	74.3	13	18.6
	Not relative	18	25.7	57	81.4
	$X^2 = 43.680$ P. value = 0.000				

Table 1: indicated that 71.4% of the newborns with GER in the study were male, and 61.4% of the reflux-afflicted infants were in the 1-3-month age category.

Table 2: The Feeding Practical, Variables number=140.

(Variable)		Case number=70		Control number=70	
		F.	%	F.	%
Feeding Types	Breast milk	20	41.7	28	58.3
	Formula milk	38	79.2	10	20.8
	Mixed	12	27.3	32	72.7
	$X^2 = 26.758$ P. value = 0.000				
Infant positions during Feeding	Lying	47	97.9	1	2.1
	Holding	23	25.0	69	75.0
	$X^2 = 67.083$ P. value = 0.000				
Approximate duration for each Feeding	< 5 minutes	2	20.0	8	80.0
	5-10 minutes	16	23.2	53	76.8
	>10 minutes	52	85.2	9	14.8
	$X^2 = 53.752$ P. value = 0.000				
Sleeping duration after Feeding	< 2 hours	34	81.0	8	19.0
	2-4 hours	31	34.8	58	65.2
	4-6 hours	5	55.6	4	44.4
	$X^2 = 24.397$ P. value = 0.000				
The feeding Intervals	Schedule	41	58.6	18	25.7
	On need	29	41.4	52	74.3
	$X^2 = 15.497$ P. value = 0.000				
Use of Pacifier	No	56	68.3	26	31.7
	Yes	14	24.1	44	75.9
	$X^2 = 26.493$ P. value = 0.000				

Table 2: demonstrates the substantial statistical differences between the case and control groups with respect to the variables under study.

Discussions

Table (1) demonstrates that were (64.4%) of premature baby

in the case groups at (P-value = >0.01) in comparison to the 11.5% of premature neonates in controls.; other researchers reached the same result. (Pados, Briceno, Feaster, & Gregory, 2021) [9]. The physiologic effects of prematurity are the most frequent risk factor for GER because, of the increased respiratory effort and the temporary increase in intra-

abdominal pressure caused by airflow restriction, which lowers LES tone and eventually contributes to reflux, these infants are more prone to encounter GER episodes. (Gulati & Jadcherla, 2019) ^[4]. The study results showed that (12.1%) of twin neonates with (GER) showed significance differences, (p value=0.004) when compared to (0.0%) of non-twin children in the control group. Previous study reached the same ideas. (Cameron *et al*, 2002) ^[2]. Table (1) showed that, in contrast to (7.2%) of less than half infant was (44.4%) of GER infants were the first infant, a statistically significant difference (p-value = >0.001). This discovery may be the result of a mother's enhanced experience managing her regurgitated newborn, given the 91.5% incidence of a positive family history of GER. Table (2) (79.2%) of GER infants, were on formula milk feeding compared to 58.3% of healthy infants on breast milk feeding who had no GER. Formula milk feeding had statistically significant (P = 0.000) greater incidence of GER compared to babies who are breastfed, which is consistent with (Jacobson & Pandya, 2021) ^[5] which found that breastfed infants demonstrate lower rates of GER than formula-fed infants. Another study agrees with the current study's result conducted by (Mairuhu, Darma, & Ranuh, 2021) ^[8] which found that exclusive breastfeeding exhibited significant protective factor affecting incidence of GER in infants. Table (2) shows that 97.9% of mothers of GER infants were placing their infants on lying position for feeding compared to 75% of mothers were holding their infants for feeding. Lying position for feeding had statistically, higher prevalence of GER in comparison to breastfed infants, which is in line with. children whose mothers were feeding them in lying position were about one hundred forty one times more likely to have GER than infants their mothers feeding them in holding position (OR=141.000 95% CI: 18.40–1080.24, P= 0.000), this supported by the findings of (Abdullah & Azizah, 2021) ^[1] It found that upright positions and football hold breastfeeding techniques were more helpful in lowering newborns' frequency of regurgitation. Table (2) showed that 80% and 76.8% of infants with milk feeding duration of < 5 minutes and 5-10 minutes respectively, had no GER; compared to 85.2% of infants with milk feeding duration of more than 10 minutes who had GER (P= 0.000), which is in concordance with the (Poddar, 2019) ^[10] who discovered that giving small, frequent meals or lowering quantities in overfed newborns can lessen reflux episodes, and disagree with (Jadcherla *et al*, 2012) ^[6] who discovered that fewer GER episodes are linked to longer feeding times and slower milk intake or flow rates. Table (2) shows that 81% of GER infants were sleep less than 2 hours after feeding compared to 65.2% of healthy infants were sleep 2-4 hours after feeding. Infants were sleep 2-4 hours after feeding had statistically significant (P = 0.000) less frequency of having GER in comparison to those slept less than 2 hours after feeding, which is in union with a study conducted by (Machado *et al*, 2013) ^[7] which found that that GER episodes are significantly associated with arousals and awakenings among infants. Table (2) shows that about 68.3% of GER infants were not using pacifier compared to 75.9% of healthy infants were using pacifier. Infants who were using pacifier had statistically significant less frequency of having GER in comparison to those not using pacifiers. Infants who were not using pacifier were about seven times more likely to have GER than infants who use pacifier (OR: 6.7692; 95% CI 3.1648- 14.4789, P =0.000), that's in concordance with the result of (Zhao, Yue, Lu, & Xue, 2004) ^[13] It found that

premature neonates who were given a pacifier had a shorter time to acquire full enteral caloric intakes, a faster gastric emptying time, and a total percent time of esophageal exposure to a pH <4.

Conclusion

These risk factors include, artificial feeding, lying Position for Infant during Feeding, more than 10 minutes feeding duration for each Feeding, sleeping for less than 2 hours' duration after Feeding, scheduled Feeding Intervals, and not Use of Pacifier.

Recommendations

Include maintaining breast feeding and avoiding formula as possible would be an important primary preventive measure against the occurrence of GER, supporting good nutrition at proper age through counseling during infant's health visits, is important to improve feeding practices, avoid over feeding of the baby, holding the infant for feeding, and using of pacifier after feeding for GER infants can decrease the refluxing.

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