RESEARCH ARTICLE

Risk factors for early discontinuation of breastfeeding before two years age

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Abstract

Objective: To assess the risk factors regarding early cessation of breastfeeding.

Method: The cross-sectional study was conducted at the Paediatrics Department of Ayub Medical Teaching Institute, Abbottabad, Pakistan, from June 2022 to February 2023, and comprised mother-child dyads who initiated the breastfeeding process at birth, but failed to continue over the subsequent 24 months. Data was collected using a structured proforma through interviews with mothers. Data was analysed using SPSS 26.

Results: There were 250 mothers with mean age 28.48±5.73 years, while the mean age of 250 children was 14.64±7.53 months. The mean duration of breastfeeding was 5.05±3.99 months. The major risk factors identified were a combination of breastfeed and bottle-feed in the first month of life in 198(79.2%) cases, maternal diet restriction postpartum 186(74.4%) and no counselling about breastfeeding 168(67.2%). Pacifier use (p= 0.002), combined bottle-feed and breastfeed in the first month of life (p=0.001) and mothers wrongly considering formula milk healthier than breastfeed (p=0.000) were significant predictors of shorter duration of breastfeeding.

Conclusion: All the reasons identified as potential risk factors for early discontinuation of breastfeeding were modifiable. Health education-based interventions are needed for optimising breastfeeding practices.

Key Words: Cessation of breastfeeding, Exclusive breastfeeding, Breastfeeding duration.

(JPMA 75: 1898; 2025) **DOI: https://doi.org/10.47391/JPMA.25-21963**

Introduction

Breast milk is a rich nutritious diet for infants having a lot of benefits.[1] Apart from being the most nutritive diet for infants, breast milk also has a multitude of short-term and long-term health benefits, including better cognition and intelligence, reduction in infections involving the gastrointestinal tract, ear infections, allergic skin conditions and asthma. Furthermore, the incidence of metabolic diseases, like type 2 diabetes and obesity, is also reduced in adult life.[2] Owing to a number of evidence-based health benefits associated with longer duration of breastfeeding for both the child and the mother, the World Health Organisation (WHO) recommends exclusive breastfeeding for the first 6 months of life.[3] The WHO Nutrition Goals for 2025 included worldwide increase in exclusive breastfeeding in the first 6 months of life to 50%.[4]

Varying rates of breastfeeding cessation are reported from different countries. In the United States, Iran and Italy breastfeeding abandonment before 2 years of age is reported to be 60%, 57% and 12%, respectively.[5] A number of factors have been reported to determine the duration of breastfeeding, including lower maternal age and mother's need to return to her job.[6] Medical literature also implicates a number of other potential risk factors, including psychosocial, cultural, healthcare-associated and economic factors.[7] Maternal perception of inadequate milk supply and problems of lactation, like difficult latching, have also been reported as significant causes of breastfeeding cessation.[8] Malnutrition is considered a documented underlying cause of mortality in children <5 years of age, and it is quite prevalent in Pakistan as evidenced by the National Nutrition Survey which reported nearly 33% underweight, 40.2% stunted and 17.7% wasted paediatric population.[9]

The current study was planned to assess the risk factors regarding early cessation of breastfeeding.

Subjects and Methods

The prospective, analytical, cross-sectional study was conducted at the Paediatrics Department of Ayub Medical Teaching Institute, Abbottabad, Pakistan, from June 2022 to February 2023. After approval from the institutional ethics review board, the sample size was calculated using OpenEpi[10] with margin of error 5%, design effect 1, confidence level 95%, non-response rate 10% and the frequency of outcome variable of inadequate milk production 18%.[11] The formula used

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Submission complete: 11-09-2024 **First Revision received:** 31-12-2024

Acceptance: 30-08-2025 **Last Revision received:** 29-08-2025

was: n = [DEFF*Np(1-p)]/ [(d2/Z21-α/2*(N-1)+p*(1-p)]Population size for finite population correction factor (N) = 1000000; hypothesised % frequency of outcome factor in the population (p) = 18%+/-5; confidence limits as % of 100 (absolute +/- %) (d) = 5%; and design effect for cluster surveys (DEFF) = 1.

The sample was raised using nonprobability convenience sampling technique from among paediatric inpatients and outpatients after taking written informed consent. Those included were mother-child dyads who initiated the breastfeeding process at birth, but failed to continue over the subsequent 24 months. Mothers of babies born full term with congenital anomalies, hypoxic ischemic encephalopathy, those requiring nasogastric tube feeding at birth, and adopted babies were excluded. Mothers with chronic health conditions and those who required prolonged hospitalisation at the time of birth were also excluded.

The mothers were interviewed, and data was documented on a structured proforma, including demographic details of the dyads and questions about the risk factors. On the basis of initial data, the participants were divided into two groups; breastfeeding <6 months, and 6-24 months. Risk factors were assessed in relation to the shorter duration of breastfeeding.

Data was analysed using SPSS 26. Mean ± standard deviation was calculated for continuous variables, and independent sample t test was used for significance testing. Frequencies and percentages were calculated for categorical variables, and chi-square test was used for significance testing. Independent variables included gender of children, maternal education status, maternal job status, primiparity, use of pacifier and other risk factors. Outcome variable was the duration of breastfeeding. P<0.05 was considered significant. Variables with p<0.05 were included in a logistic regression model to determine the predictors of shorter duration of breastfeeding, defined as <6 months. Multi-logistic regression was applied to all parameters included in univariate analysis to obtain adjusted odds ratio (OR) for potential predictors.

Results

There were 250 mothers with mean age 28.48±5.73 years, while the mean age of 250 children was 14.64±7.53 months. Among the children, there were 105(42%) boys and 145(58%) girls. Majority 126(50.4%) were aged 12-24 months. The mean duration of breastfeeding was 5.05±3.99 months (Table 1).

The major risk factors identified were a combination of breastfeed and bottle-feed in the first month of life in 198(79.2%) cases, maternal diet restriction postpartum 186(74.4%) and no counselling about breastfeeding 168(67.2%). Pacifier use was noted in 126(50.4%) subjects, low literacy rate in 105(42%), and next pregnancy within one year in 68(27.2%) cases. A total of 120(48%) babies received feed other than mothers' milk as the first feed (Table 2). Pacifier use (p= 0.002), and combined bottle-feed and breastfeed in the first month of life (p=0.001) were significant predictors of shorter duration of

Table-1: Demographic characteristics.

		Mean ±SD
Age in months(children)		14.64±7.53
Duration of breastfeeding		5.05±3.99 months
Maternal age		28.48±5.73
	Percentage	**Frequency**
Gender		
Male	105	42%
Female	145	58%
Age groups		
Up to 6 months	42	16.8%
>6-12 months	82	32.8%
>12-24 months	126	50.4%
Mode of delivery		
SVD	163	65.2%
C Section	87	34.8%
Duration of breastfeeding		
Up to 6 months	187	74.8%
>6 months to<24 months	63	25.2%
Parity		
Primiparity	44	17.6%
Multiparity	206	82.4%

SVD: Spontaneous vaginal delivery, SD: Standard deviation.

Table-2: Risk factors for discontinuation of breastfeeding before two years of age.

Risk factors	Frequency	Percentage
Delivery by caesarean section	87	34.8%
Low maternal education (<matric)	105	42%
Early introduction of weaning foods	55	22%
Mother working outside home	40	16%
Use of pacifier	126	50.4%
Primiparity	44	17.6%
Maternal postpartum diet restriction	186	74.4%
No counselling/advice about breastfeeding	168	67.2%
Initial feed other than breastfeed	101	40.4%
Combination of bottle-feed and breastfeed in the first month of life	198	79.2%
Poor socioeconomic status	60	24%
Next pregnancy within 1 year	68	27.2%
Family pressure	63	25.2%
Consider formula milk healthier	76	30.4%
Inadequate milk	60	24%

Table-3: Univariate analysis of the risk factors in relation to the duration of breastfeeding.

Risk factors		Duration of breastfeeding		P value	Univariate analysis	
		Up to 6 months	>6-<24 months		OR(95% CI)	P value
Gender of children	Male	78(41.7%)	27(42.9%)	0.873	1.04(.58-1.86)	0.873
	Female	109(58.3%)	36(57.1%)			
Mode of Delivery	SVD	118(63.1%)	45(71.4%)	0.230	.68(.36-1.27)	0.230
	C section	69(36.9%)	18(28.6%)			
Maternal education	Low (<matric)	81(43.3%)	24(38.1%)	0.468	1.24(.69-2.22)	0.468
	Above matric	106(56.7%)	39(61.9%)			
Early introduction of weaning foods	Yes	49(26.2%)	6(9.5%)	0.006	3.37(1.36-8.31)	0.008
	No	138(73.8%)	57(90.5%)			
Mother working outside home	Yes	31(16.6%)	9(14.3%)	0.668	1.19(.53-2.66)	0.668
	No	156(83.4%)	54(85.7%)			
Use of pacifier	Yes	108(57.8%)	18(28.6%)	0.000	3.41(1.84-6.34)	0.000
	No	79(42.2%)	45(71.4%)			
Primiparity	Yes	35(18.7%)	9(14.3%)	0.424	1.38(.62-3.06)	0.424
	No	152(81.3%)	54(85.7%)			
Maternal postpartum diet restriction	Yes	132(70.6%)	54(85.7%)	0.017	0.40(0.18-0.86)	0.020
	No	55(29.4%)	9(14.3%)			
counselling/advice about breastfeeding	Yes	58(31%)	24(38.1%)	0.30	.73(.40-1.32)	0.30
	No	129(69%)	39(61.9%)			
Initial feed other than breastfeed	Yes	97(51.9%)	23(36.5%)	0.035	1.87(1.04-3.37)	0.036
	No	90(48.1%)	40(63.5%)			
Combination of bottle-feed and breastfeed in 1st month of life	Yes	165(88.2%)	33(52.4%)	0.000	6.8(3.50-13.2)	0.000
	No	22(11.8%)	30(47.6%)			
Poor socioeconomic status	Yes	48(25.7%)	12(19%)	0.287	1.46(.72-2.98)	0.289
	No	139(74.3%)	51(81%)			
Next pregnancy within 1 year	Yes	44(23.5%)	24(38.1%)	0.025	0.50(0.27-0.97)	0.026
	No	143(76.5%)	39(61.9%)			
Family pressure	Yes	48(25.7%)	15(23.8%)	0.769	.90(.46-1.76)	0.769
	No	139(74.3%)	48(76.2%)			
Consider formula milk healthier	Yes	46(24.6%)	30(47.6%)	0.001	0.35(0.19-0.65)	0.001
	No	141(75.4%)	33(52.4%)			
Inadequate milk	Yes	51(27.3%)	9(14.3%)	0.037	2.25(1.03-4.88)	0.040
	No	136(72.7%)	54(85.7%)			

SVD: Spontaneous vaginal delivery, OR: Odds ratio, CI: Confidence interval.

breastfeeding. Other factors included maternal postpartum dietary restriction (p=0.017), early introduction of weaning foods (p=0.006), initial feed other than breastfeed (p=0.035), early (<1 year) next pregnancy (p=0.025), maternal perception of inadequate milk (p=0.037) and maternal consideration of formula feed as a healthier option(p=0.001) (Table 3). The mean age of children was significantly associated with shorter duration of breastfeeding (p=0.000), while the association was not significant for mean maternal age (p=0.114).

In univariate logistic regression analysis, pacifier use was associated with a shorter duration of breastfeeding <6 months (p= 0.000). Similarly, combination of bottle-feed and breastfeed in the first month of life (p=0.000), mothers considering formula milk healthier (p=0.001), maternal postpartum dietary restriction (p=0.020), initial feed other than breastfeed (p=0.036), early introduction of weaning foods (p=0.008), maternal perception of inadequate milk (p=0.040), and early next pregnancy (p=0.026) were associated with <6-month duration of breastfeeding. On multivariate analysis, pacifier use (p=0.002) and combination of bottle-feed and breastfeed in the first month of life (p=0.000) were associated with shorter duration of breastfeeding. In addition, mothers wrongly considering formula milk healthier (p=0.000),

Table-4: Univariate and multivariate logistic regression analysis of characteristics associated with breastfeeding duration <6 months.

Variables	Univariate Analysis		Multi variate Analysis	
	OR (95% CI)	P value	OR (95% CI)	P value
Early introduction of weaning foods	3.37 (1.36-8.31)	0.008	0.48 (0.15-1.54)	0.220
Use of pacifier	3.41 (1.84-6.34)	0.000	0.28 (0.12-0.64)	0.002*
Maternal postpartum diet restriction	0.40 (0.18-0.86)	0.020	2.06 (0.78-5.44)	0.145
Initial feed other than breastfeed	1.87 (1.04-3.37)	0.036	1.09 (0.48-2.50)	0.822
Combination of bottlefeed and breastfeed in 1st month of life	6.8 (3.50-13.2)	0.000	0.12 (0.04-0.32)	0.000*
Next pregnancy within 1 year	0.50 (0.27-0.97)	0.026	0.33 (0.15-0.74)	0.007*
Consider formula milk healthier	0.35 (0.19-0.65)	0.001	6.20 (2.66-14.45)	0.000*
Inadequate Milk	2.25 (1.03-4.88)	0.040	3.16 (1.18-8.45)	0.022*

Indicates p<0.05 on multivariate analysis
OR: Odds ratio, CI: Confidence interval.

early next pregnancy (p=0.007) and maternal perception of inadequate milk (p=0.022) were also identified as predictors of shorter duration of breastfeeding (Table 4).

Discussion

A number of risk factors were identified in the current study as being associated with early cessation and shorter duration of breastfeeding. Early introduction of weaning foods before six months of age was found to be associated with shorter duration of breastfeeding. Similar results have been reported by a large survey involving three cohorts in the United Kingdom.[12] A systematic review seeking maternal reasons for early discontinuation of breastfeeding revealed maternal perception of inadequate breast milk, health visitors' advice, problems in feeding methodology, and return to job as potential reasons.[13] The current study also concluded that maternal perception of inadequate milk with subsequent recommendation by healthcare professionals to start formula milk as a significant risk factor for shorter duration of breastfeeding. A study in Colombia reported caesarean section (CS) as a potential risk factor creating hindrance in optimal breastfeeding.[14] The current study revealed CS delivery in one-third of the participants. However, there was no significant association of the mode of delivery with shorter duration of breastfeeding. In a study done in Spain, lack of health education was associated with early cessation of breastfeeding.[15] The current results also showed lack of health education or counselling about breastfeeding in nearly three-quarters of the study population. Implementation of health education strategies and counselling services for mothers are crucial for promoting awareness about breastfeeding and its benefits. A study in Saudi Arabia documented the positive impact of knowledge about breastfeeding and improved breastfeeding practices, and recommended the implementation of breastfeeding health education programmes at healthcare facilities.[16] A study in China explored the reasons for early discontinuation of breastfeeding, and documented that maternal perception of insufficient breastmilk was the most important cause (63.9%).[17] Amongst the current participants, only one-fourth reported having inadequate milk. However, maternal perception of inadequate milk was significantly associated with a shorter duration of breastfeeding. Poor socioeconomic status was present in only one-quarter of the current sample. Furthermore, the association between poor socioeconomic status and shorter duration of breastfeeding was not significant. Similar results have been reported in an American study which concluded that women from poor socioeconomic status reported the same reasons for discontinuation of breastfeeding as women from other strata of society.[18] A vast majority of mothers in the current study population were housewives, showing no significant relationship of shorter duration of breastfeeding with mothers working outside of home. This is in contrast to a study which reported maternal employment as a risk factor for breastfeeding abandonment in nearly half of the study population.[11] Nearly one-third of the current participants had a perception of better nutritional value of formula milk, and this perception was significantly associated with shorter duration of breastfeeding. An Italian study reported maternal perception of poor nutritional value of breast milk as a risk factor for early cessation of breastfeeding.[19] A systematic review assessing the association between pacifier use and exclusive breastfeeding showed that pacifier use was associated with cessation of exclusive breastfeeding.[20] The current study also showed a strong relationship between pacifier use and shorter duration of breastfeeding.

The current study has limitations as it was conducted at a single centre. Also, it was not possible to establish the

causal relationship between early discontinuation of breastfeeding and different risk factors because of the study's cross-sectional design.

Conclusion

Most of the potential risk factors for suboptimal breastfeeding practices were found to be modifiable, including pacifier use, combination of bottle-feed and breastfeed in the first month of life, postpartum dietary restrictions for mother, and lack of family planning. Health education-based interventions are needed to address these problems, thereby optimising breastfeeding practices.

Disclaimer: None.

Conflict of Interest: None.

Source of Funding: None.

References

1. Karabayir N, Mertturk Potak E, Karaman S, Sebirli MF, Istanbullu MB, Potak M, et al. The Finger Feeding Method and Relactation. Cureus 2022;14:e24044. doi: 10.7759/cureus.24044.
2. Usheva N, Lateva M, Galcheva S, Koletzko BV, Cardon G, De Craemer M, et al. On Behalf Of The ToyBox-Study Group. Breastfeeding and Overweight in European Preschoolers: The ToyBox Study. Nutrients 2021;13:2880. doi: 10.3390/nu13082880.
3. Aldalili AYA, El Mahalli AA. Research Title: Factors Associated with Cessation of Exclusive Breastfeeding. J Multidiscip Healthc 2021;14:239-46. doi: 10.2147/JMDH.S277819.
4. World Health Organization (WHO). WHO Global Nutrition Targets 2025: Policy, Brief and Series. [Online] 2014 [Cited 2023 November 13]. Available from URL: https://www.who.int/publications/i/item/WHO-NMH-NHD-14.2
5. Babaee E, Eshrati B, Asadi-Aliabadi M, Purabdollah M, Nojomi M. Early Cessation of Breastfeeding and Determinants: Time to Event Analysis. J Nutr Metab 2020;2020:e3819750. doi: 10.1155/2020/3819750.
6. Tang L, Lee AH, Binns CW. Factors associated with breastfeeding duration: a prospective cohort study in Sichuan Province, China. World J Pediatr 2015;11:232-8. doi: 10.1007/s12519-014-0520-y.
7. Cohen SS, Alexander DD, Krebs NF, Young BE, Cabana MD, Erdmann P, et al. Factors Associated with Breastfeeding Initiation and Continuation: A Meta-Analysis. J Pediatr 2018;203:190-196.e21. doi: 10.1016/j.jpeds.2018.08.008.
8. Houghtaling B, Byker Shanks C, Jenkins M. Likelihood of Breastfeeding Within the USDA's Food and Nutrition Service Special Supplemental Nutrition Program for Women, Infants, and Children Population. J Hum Lact 2017;33:83-97. doi: 10.1177/0890334416679619.
9. Riaz A, Bhamani S, Ahmed S, Umrani F, Jakhro S, Qureshi AK, et al. Barriers and facilitators to exclusive breastfeeding in rural Pakistan: a qualitative exploratory study. Int Breastfeed J 2022;17:59. doi: 10.1186/s13006-022-00495-4.
10. Dean AG, Sullivan KM, Soe MM. OpenEpi: Open Source Epidemiologic Statistics for Public Health, Version: 3.01. [Online] 2013 [Cited 2024 July 27]. Available from URL: https://www.openepi.com/Menu/OE_Menu.htm
11. Giraldo Montoya DI, López Herrera FE, Quirós Jaramillo AM, Agudelo Gómez A, Sierra Cano SM, Agudelo Restrepo D. Breastfeeding abandonment causes and success factors in relactation. Aquichan 2020;20:1-10. DOI: 10.5294/aqui.2020.20.3.6.
12. Lessa A, Garcia AL, Emmett P, Crozier S, Robinson S, Godfrey KM, et al. Does early introduction of solid feeding lead to early cessation of breastfeeding? Matern Child Nutr 2020;16:e12944. doi: 10.1111/mcn.12944.
13. Morrison AH, Gentry R, Anderson J. Mothers' Reasons for Early Breastfeeding Cessation. MCN Am J Matern Child Nurs 2019;44:325-30. doi: 10.1097/NMC.0000000000000566.
14. Finnie S, Peréz-Escamilla R, Buccini G. Determinants of early breastfeeding initiation and exclusive breastfeeding in Colombia. Public Health Nutr 2020;23:496-505. doi: 10.1017/S1368980019002180.
15. Vila-Candel R, Soriano-Vidal FJ, Mena-Tudela D, Quesada JA, Castro-Sánchez E. Health literacy of pregnant women and duration of breastfeeding maintenance: A feasibility study. J Adv Nurs 2021;77:703-14. doi: 10.1111/jan.14625.
16. Shalaby H, Obaid RA, Alharthi RH, Barayan MM, Bagabas NS, Battarjee RM, et al. Health education role in promoting mothers' beliefs, knowledge and practice of exclusive breastfeeding among King Fahd Armed Forces Hospital population. Int J Community Med Public Health 2019;6:1853.
17. Shi H, Yang Y, Yin X, Li J, Fang J, Wang X. Determinants of exclusive breastfeeding for the first six months in China: a cross-sectional study. Int Breastfeed J 2021;16:40. doi: 10.1186/s13006-021-00388-y.
18. Hornsby PP, Gurka KK, Conaway MR, Kellams AL. Reasons for Early Cessation of Breastfeeding Among Women with Low Income. Breastfeed Med 2019;14:375-81. doi: 10.1089/bfm.2018.0206.
19. Gianni ML, Bettinelli ME, Manfra P, Sorrentino G, Bezze E, Plevani L, et al. Breastfeeding Difficulties and Risk for Early Breastfeeding Cessation. Nutrients 2019;11:2266. doi: 10.3390/nu11102266.
20. Buccini GDS, Pérez-Escamilla R, Paulino LM, Araújo CL, Venancio SI. Pacifier use and interruption of exclusive breastfeeding: Systematic review and meta-analysis. Matern Child Nutr 2017;13:e12384. doi: 10.1111/mcn.12384.

AUTHOR'S CONTRIBUTION:

SB: Study design, literature search, data collection and analysis.

SYHG: Literature search and proof reading.

SB: Literature search and drafting.