ORIGINAL ARTICLE

Factors Associated With Exclusive Breastfeeding Practice Among Mothers Within a Six-week of Postpartum Period in Public Clinic, Malaysia

Nurul Hidayu Ibrahim[1,2], Salimah Japar[1], Swee Leong Ong[3], Kim Geok Soh[4], Kim Lam Soh[1]

[1] Department of Nursing, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia
[2] Institut Latihan Kementerian Kesihatan Malaysia Kuala Pilah (Nursing), 72000 Kuala Pilah, Negeri Sembilan, Malaysia
[3] Faculty of Medicine, Universiti Sultan Zainal Abidin, Terengganu Malaysia (UniSZA), 20400 Kuala Terengganu, Terengganu, Malaysia
[4] Department of Sport Sciences, Faculty of Education, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia

ABSTRACT

Introduction: Breastfeeding is a natural and beneficial practice that supports the growth and development of infants by providing essential nutrients and antibodies. Contributing significantly to Sustainable Development Goals by ending hunger, enhancing nutrition, and fostering overall health. This study aimed to examine the factors associated with the practice of exclusive breastfeeding (EBF) within the first six weeks postpartum among mothers in Selangor, Malaysia. **Materials and Method:** This prospective cohort study was conducted at the Antenatal Clinic of a government hospital in Selangor, Malaysia. A total of 348 pregnant women at 34 weeks' gestation or beyond were recruited and followed up after delivery. Data were collected through structured questionnaires during routine antenatal visits and follow-up phone interviews post-delivery and were analysed using SPSS version 22, with binary and multivariate logistic regression to identify significant predictors of EBF. **Results:** The prevalence of EBF within six weeks postpartum was 67.6%. Factors significantly associated with EBF included parity and employment status. Multigravida mothers were 1.78 times more likely to practice EBF compared to primigravida mothers. Non-working mothers were 1.71 times more likely to practice EBF compared to working mothers. **Conclusion:** The prevalence of EBF in this study was relatively higher than other regions of Malaysia. Key factors associated with EBF include higher parity and being a housewife. Challenges such as breastfeeding difficulties, breast engorgement, insufficient milk, and preparation for returning to work were common reasons for cessation.

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Corresponding Author:
Soh Kim Lam, PhD
Email: sklam@upm.edu.my
Tel :+ 603 97692429

INTRODUCTION

Breastfeeding (BF) is a natural and beneficial technique that supports the growth and development of the babies and improves their health by providing them with essential nutrients and antibodies. The benefits of BF are not only for the mother's health but also for the baby. Breast milk provides all the essential nutrients that babies need during the first month of life, supports infants' sensory and cognitive development, and can help protect them from both infectious and chronic illnesses (1). Breastfeeding also contributes significantly to the advancement of Sustainable Development Goals 2 and 3 by working towards ending hunger, enhancing nutrition, and fostering overall health and well-being (2). Therefore, BF is encouraged by many organisations around the world. Breastfeeding refers to the provision of only breast milk without any other food or liquids, whereas exclusive breastfeeding involves the provision of only breast milk for the initial six months of life (3).

Human breast milk is a sophisticated mixture of hundreds of thousands of molecules that cooperate to meet the evolving health and developmental requirements of an infant (4). The protein, fat, and carbohydrate levels in human milk are believed to have an impact on infant growth and body composition, whereas the presence of oligosaccharides and hormones in milk indicates potential functional significance (5). Breast milk is the best nourishment for newborns, offering immunological, metabolic, physiological, and neurological benefits (6).

(7) suggested that a 10% increase in the prevalence of exclusive breastfeeding could decrease 5.6 deaths per 1000 children.

Breastfeeding may be protective against some allergic phenotypes, but the results differ within study groups, with genetic, environmental, dietary, and immunologic factors playing a role (7). Breast milk provides immunological, metabolic, organic, and neurological health benefits for newborns, but exposure to endocrine-disrupting chemicals and indirect food additives may increase allergic sensitisation and diseases (8). Exclusive breastfeeding for 4-6 months is associated with a decreased risk of asthma in preschool-age children, particularly in younger children (3 to 4 years old) (9,10) and eczema (11).

Malaysia is a Southeast Asian nation with moderate incomes. Malaysia updated its National breastfeeding Policy in 2006 (12), recognising that breastfeeding is a recommended practice. Several initiatives are being implemented to encourage exclusive breastfeeding, including the Baby-Friendly Hospital and Clinic Initiative (BFHCI), which can support the promotion and maintenance of breastfeeding (13). In 1991, WHO and the UNICEF launched the BFHI globally. After the implementation of the BFHI, breastfeeding initiation and duration were supported by improving the quality of care provided in health facilities globally (14).

The success of practising exclusive breastfeeding is influenced by various factors, including the mother's knowledge, attitude, and support system. A study by (15) found that although most students were aware of the importance of breastfeeding in the first six months, most of them lacked knowledge about specific breastfeeding practices such as handling breast milk properly. Significant discontinuation rates of breastfeeding occur even among women who deliver at a baby friendly hospital, and multifactorial interventions are needed to achieve higher exclusive breastfeeding rates (16). The Baby Friendly Hospital Initiative (BFHI) has been in place since 1992, but the prevalence of exclusive breastfeeding remains low (17). In view of the still unsatisfactory rate of mothers practising EBF, this study was conducted to examine whether selected factors, such knowledge on breastfeeding and another socio-demographic factor were related to the EBF practice within the six weeks postpartum.

MATERIALS AND METHODS

Samples

This prospective cohort study was conducted at the Antenatal Clinic of a government hospital in Selangor, Malaysia. All pregnant mothers at 34 weeks gestation or more who attended antenatal classes at government hospital were invited to participate in the study. The hospital is situated 25 km from Kuala Lumpur, the capital city of Malaysia. The participants of this study were mainly from an urban/sub-urban environment. The inclusion criteria for this study were an antenatal mother who was 34 weeks and more of gestational age, able to read and understand Bahasa Malaysia and aged more than 18 years. Pregnant women who were not citizens were excluded from this study.

Sample size

The proportion formula was used to determine the sample size, assuming a 95% confidence level and a 5% margin of error of the mean knowledge level regarding breastfeeding from a previous study (18). Based on the percentage of samples in a previous study as a preference, 316 participants were chosen to participate in this study. Taking into consideration 10% dropouts, the total sample size was 348 participants. All participants were selected using universal sampling. All pregnant women that eligible to attend this study were recruited during registration. After identifying the expected due date of the participants, phone calls were made to ensure that they had delivered their baby and practiced of breastfeeding or exclusive breastfeeding were assessed.

Of the 348 eligible pregnant women recruited in this study, all initially consented to participate during their antenatal visits. However, during the postpartum follow-up stage, 18 respondents could not be reached via phone calls due to unreachable contact or relocation, resulting in a final analytical sample of 330 mothers. These non-respondents were not included in the final analysis. Comparison of basic sociodemographic data showed no significant difference between responders and non-responders, suggesting minimal bias due to loss to follow-up.

Data collection process

The structured questionnaire used in this study was developed based on instruments adapted from existed breastfeeding studies conducted. The tool was content-validated by a panel of three maternal and child health experts. A pilot test was conducted with 30 pregnant women who were not included in the final sample, ensuring clarity and relevance of the questions. The internal consistency for the breastfeeding knowledge items was acceptable, with a Cronbach's alpha value of 0.78, indicating good reliability.

There were two steps in the data collection process. First, to assess breastfeeding knowledge, data were collected using a structured questionnaire and during routine antenatal care in the clinic. This questionnaire consisted of six (6) questions on sociodemographic data. Knowledge on breastfeeding was measured using a 10-item scale. Each correct answer was awarded one (1) point, yielding a maximum score of 10. Respondents who scored 5 or higher were categorized as having "good knowledge", while those scoring below 5

were categorized as having "poor knowledge". This classification was guided by reference to prior Malaysian studies assessing breastfeeding knowledge (15).

Second, several days before their expected due date (EDD), follow-up phone calls were made to ensure that the participants had already delivered their baby (for term-gestational). An interview-structured questionnaire was used to identify the practice of breastfeeding during the six weeks of postpartum period, and the reasons for not practising exclusive within the period were recorded. This study was approved by the National Medical Research Registry (NMRR) (an approval code: NMRR-17-709-33961) and the UPM Research Ethics Committee (JKEUPM).

This study focused on exclusive breastfeeding as the dependent variable. In the analysis, mothers who practiced exclusive breastfeeding correctly were assigned a code of '1', while those who did not were given a code of '0'. The independent variables examined were knowledge about breastfeeding during the antenatal period, maternal age, educational level, employment status, and parity.

Maternal age was divided into two categories: ≤30 and >30 years old. In the binary logistic regression analysis, younger age group was used as the reference category. Primigravida was coded as '0' and multigravida as '1'. Maternal education level was also divided into two groups: formal and higher education, with the lowest level of education serving as the reference category in the binary logistic regression analysis. Working mothers were used as the reference category in comparison with non-working mothers. Mothers with less knowledge about breastfeeding were coded as '0', while those who were more knowledgeable were coded as '1'. All independent variables were coded as categorical measures.

Data analysis

SPSS software version 22 was used to input, classify, process, and analyse the data. Tables were used to illustrate the pertinent study findings. The binary logistic regression approach determined the link between each independent variable and dependent variables by computing crude odds ratios (COR) with a 95% confidence interval (CI). Multivariate logistic regression analysis was then performed to investigate the selected independent variables. Chi-square analysis was performed to identify the independent factors related to the outcome variable and to lessen the likelihood of multicollinearity in binary logistic regression analysis. Thus, to evaluate the adjusted effect of each factor, only independent variables with p-values in the bivariate logistic regression of less than 0.25 were included in the binary method. Calculating adjusted odd ratios with a 95% confidence interval allowed us to assess the strength of the relationship. In the binary logistic regression analysis, variables with p-values less than 0.05 were found to be significant and independent predictors of exclusive breastfeeding practice.

RESULTS

Socio-demographic characteristic

The response rate to the breastfeeding knowledge questionnaire was 348 participants (100%). However, during the interview process, only 330 participants were contacted, and the response rate was 94.8%. Therefore, all result only discusses the 330 participants in this study. Most of the participants were younger 30 years old (49.1%). More than half of the participants were multigravida (65.8%). One hundred seventy-two (52.1%) completed their higher education levels, and 229 participants (69.4%) were working. In terms of breastfeeding knowledge, more than half of the participants (81.9%) possessed good knowledge regarding breastfeeding (Table I).

Table I: Socio-demographic and antenatal characteristics of mothers at a Public Clinic, Malaysia (n=330)

Demographic Data	n	%
Age		
≤ 30	162	49.1
>30	168	50.9
Parity		
Primigravida (1)	113	34.2
Multigravida (≥2)	217	65.8
Educational level		
Formal	158	47.9
Higher	172	52.1
Employment Status		
Yes	229	69.4
No	101	30.6
Maternal confidence level on BF		
Mild	3	0.9
High	327	99.1
BF knowledge		
Poor	61	18.5
Good	269	81.5

Breastfeeding practice during post-partum period

In the follow-up process, only 223 of the participants practiced exclusive breastfeeding within the six weeks of postpartum period. Participants were likely to not exclusively breastfeed during the 3rd to 4th week of postpartum period (Table II & Table III).

Table II: Infant feeding outcomes

	( )	(%)
Provided breast milk in 24 hours (n=330)		
Yes	326	98.8
No	4	1.2
Exclusive breastfeeding within 6 weeks (n=330)		
Yes	223	67.6
No	107	32.4

Table III: Practice of Exclusive Breastfeeding up to six weeks of post-partum period (n=330)

Exclusive Breastfeeding Practices (days/weeks) (n=330)	n	Infant Feeding Outcomes	
		Full BF n (%)	Non-fully BF n (%)
1 – 3 days (330)	330	308 (93.3)	22 (6.7)
4 – 7 days (308)	308	292 (94.8)	16 (5.2)
1 – 2 weeks (292)	292	269 (92.1)	23 (7.9)
3 – 4 weeks (269)	269	239 (88.8)	30 (11.2)
5 – 6 weeks (239)	239	223 (93.3)	16 (6.7)
TOTAL		**223**	**107**

Factors associated with exclusive breastfeeding practice In the binary logistic regression analysis, educational level and breastfeeding knowledge were not significant with exclusive breastfeeding practice within the six weeks postpartum. However, variables with a p-value of more than 0.25, such parity and the employment status of the participants, were included in the binary logistic regression model. When each independent variable was adjusted for other variables, parity and employment status were found to be statistically significantly associated with exclusive breastfeeding practice within the six-week of postpartum period at the 95% confidence level (p-value = 0.05). Multigravida were more likely to practice EBF by more than 50% (AOR 1.778, 95% CI 1.098, 2.879) than primigravida. In addition, non-working mothers were 1.712 times more likely to practice EBF within six weeks postpartum compared with their counterpart (AOR 1.712, 95% CI 1.044, 2.806) (Table IV & Table V).

Table IV: Association between sociodemographic characteristics with EBF practice among mothers

	Exclusive breastfeeding practice		p-value	Prevalence ratio	95 % CI	
	Yes n (%)	No n (%)			Upper	Lower
Age						
≤30	110 (67.9)	52 (32.1)	0.901	1.030	0.649	1.633
>30	113 (66.7)	55 (33.3)				
Educational level						
Formal	107 (67.7)	51 (32.3)	0.957	1.013	0.638	1.607
Higher	116 (67.4)	56 (32.6)				
Employment status						
No	163 (71.2)	66 (28.8)	0.035*	0.593	0.363	0.967
Yes	60 (59.4)	41 (40.6)				

*Chi square
* p < 0.05

Table V: Association between antenatal characteristics with EBF practice among mothers

	Exclusive breastfeeding practice		p-value	Prevalence ratio	95 % CI	
	Yes n (%)	No n (%)			Upper	Lower
Parity						
1	67 (59.3)	46 (40.7)	0.020*	0.570	0.353	0.919
≥2	156 (71.9)	61 (28.1)				
Confidence level						
Mild	2 (66.7)	1 (33.3)	0.973	0.959	0.086	10.698
High	221 (67.6)	106(32.4)				
BF knowledge						
Poor	39 (63.9)	22 (36.1)	0.501	0.819	0.457	1.466
Good	184 (68.4)	85 (31.6)				

*Chi square
* p < 0.05

DISCUSSION

This study aimed to assess the factors associated with exclusive breastfeeding practice within the six-week of postpartum period in a public clinic in Malaysia. The prevalence of EBF was 67.6%. This rate was higher than those of other Malaysian studies conducted in Kubang Kerian (53.2%), Pasir Mas (54.4%), Klang (63.3%), and Kinta (65.4%) (18–21). In addition, although most pregnant women (99.4%) intended to breastfeed exclusively, only 65.4% of them were successfully

practice exclusive breastfeeding within one month after delivery (21). This study reported that most mothers were more likely to wean off breastfeeding at the 3rd-4th week of the postpartum period. This finding was in line with studies conducted in Pasir Mas, Kota Bharu, Nova Scotia, and Kinshasa (22–24). Meanwhile, according to the 2016 Malaysian National Health Morbidity Survey (NHMS 2016), only 52.9% of women exclusively breastfeed at two months after giving birth and 47.7% at four months (12). These studies outlined the same reasons for EBF cessation, which included the inability to manage breastfeeding difficulties, breast engorgement, insufficient milk, poor understanding of BF techniques, and preparation for returning to work (22,23,25).

In this study, a majority of mothers (81.9%) possessed good knowledge on BF, yet this did not show a statistically significant association with EBF within six weeks postpartum. This finding was similar with study conducted by (26). A possible explanation is that many participants had already acquired basic BF knowledge from antenatal classes (27,28) or previous pregnancies (29), resulting in a high baseline level. This may have reduced variability in knowledge scores and limited its ability to predict behavioural differences. Additionally, measurement may not have captured practical aspects of breastfeeding management. These findings align with previous studies suggesting that while knowledge is important, it must be complemented with practical support, emotional encouragement and favorable structural conditions to effectively influence BF behaviour.

Problems and challenges in breastfeeding are common, and health care professionals have different ways and methods to effectively address these issues (30). Pain during breastfeeding, difficulties in maintaining milk supply, and challenges in milk intake are among the most frequently reported issues by new mothers. These challenges and problems can lead to increase maternal stress, as well as a negative perception of the breastfeeding experience, which in turn can impact the duration and exclusivity of breastfeeding (30).

Regarding factors leading to exclusive breastfeeding practice, parity and employment status statistically associated with the exclusive breastfeeding practice especially within the six-week of postpartum period. Accordingly, mothers with higher parity were more likely to have EBF within postpartum period than primigravida. This finding was in line with studies conducted in Klang, Malaysia, Nova Scotia, Canada, and the Kingdom of Saudi Arabia (23,31,32). A possible explanation for the observed association could be that mothers with higher parity had more experience with BF and were more prepared to manage BF problems, whereas primigravida also stated that not enough milk led to early cessation of EBF (19,23,24,32). In contrary with study conducted in Suburban Malaysia, which stated that mothers for first and second time (parity less than 2) were more likely to practice EBF (33) and in Gozamin District, Ethiopia, which reported that mothers with parity less than 3 had higher prevalence to practice EBF compared to those with parity more than 3 (34). These studies emphasised on the importance of counselling on BF during the postpartum period to improve mothers' knowledge about BF and lead to longer practice of EBF (33,34). A study on the effects of nutrition counselling with demonstrations showed that such interventions can significantly increase mother's knowledge and attitudes about breastfeeding and complementary foods, thereby improving the nutritional status of infants (35).

In this study, housewives showed a significant association with the EBF practice compared to part-time or full-time workers. A few Malaysian studies reported that the employment status did affect EBF practice among mothers (19,25). Working mothers face unique challenges in maintaining exclusive breastfeeding. A qualitative study on working mothers in Kota Bharu, Malaysia revealed that these challenges include the perception of insufficient milk supply and difficulties in breastfeeding, as well as the need for support from family, friends, and employers (36). This finding is not only in Malaysia but also in line with studies done in Nova Scotia, Debre Berhan District, rural Ghana, and Gozamin District (23,37). This might be due to the fact that employed mothers only have very short maternity leave to stay home and practicing EBF. Some participants stated that their working place was inconvenient for expressing breast milk (26,38). In contrast, housewives were more likely to practice EBF because they had a longer bonding time with their babies (22,34,37). In this study, EBF practice was not significantly associated with maternal age. However, studies conducted in Kelantan, and suburban Malaysia have found that maternal age is significantly affected EBF practice (18,34). The same findings were also found in the Kingdom of Saudi Arabia, Nova-Scotia, Debre Berhan District (24,32,37). Older mothers were more likely to practice EBF as they had more experienced in handling BF problems (18,32–34).

Limitation

This study has several limitations. First, the use of self-reported data for breastfeeding practices may have introduce recall bias or social desirability bias, particularly during follow-up interviews. Second, the study was limited to a single government hospital in Selangor, which may restrict the generalizability of findings to other regions or healthcare settings in Malaysia, including rural and private institutions. Third, although a 6-week postpartum window provides early insights into breastfeeding practices, a longer follow-up period would be more appropriate to assess sustained exclusive breastfeeding up to the recommended 6 months.

Recommendations

These findings suggest the need for targeted support

systems, particularly for primigravida mothers who may lack breastfeeding experience. Additionally, workplace-related challenges faced by employed mothers highlight the importance of policy interventions such as extended maternity leave, flexible working hours, and provision of lactation rooms. Integration of such support measures can help enhance the feasibility of exclusive breastfeeding among working mothers. In addition, the period of 6-week was found to be a short period on assessing the successful of breastfeeding. Therefore, future studies should consider longitudinal tracking and broader geographic sampling to enhance representativeness and policy applicability.

CONCLUSION

The study showed that prevalence of EBF practice especially within the six weeks of postpartum, was relatively high compared with other studies. Challenges such as breastfeeding difficulties, breast engorgement, insufficient milk, and preparation for returning to work were common reasons for stopping exclusive breastfeeding. =Key factors associated with exclusive breastfeeding within six weeks postpartum were parity and employment status. These associations suggest potential target areas for interventions aimed at improving breastfeeding support. Mothers with higher parity were more likely to practice exclusive breastfeeding, likely because of their greater experience and ability to manage breastfeeding problems. In contrast, first-time mothers often reported insufficient milk supply because of early cessation. Employment status also played a significant role; housewives were more likely to maintain exclusive breastfeeding compared to working mothers who faced challenges such as short maternity leave and inconvenient workplaces for expressing milk. Although maternal age did not significantly impact exclusive breastfeeding in this study, other studies have suggested that older mother are more likely to practice exclusive breastfeeding because of their experience in handling breastfeeding issues. These findings highlight the importance of providing adequate support and education to mothers, especially first-time and working mothers, to improve exclusive breastfeeding rates and promote better maternal and infant health outcomes.

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Conflict of Interest

The authors declare no conflict of interest in this study.

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