DETERMINANTS OF EXCLUSIVE BREASTFEEDING PRACTICES AMONG MOTHERS OF 6-24 MONTHS-OLD INFANTS IN PADANG CITY, INDONESIA

Helmizar[1*], Frima Elda[1], Faza Yasira Rusdi[1], Restu Sakinah[1]
[1]Department on Nutrition, Faculty of Public Health, Universitas Andalas, Padang, Indonesia
*E-mail: helmizar@ph.unand.ac.id

ABSTRACT

The practice of exclusive breastfeeding (EBF) can reduce mortality and morbidity rates in children and supports optimal growth and development in children. The practice of EBF is influenced by various predisposing factors, supporting factors and reinforcing factors. This study aimed to evaluate the determinants of exclusive breastfeeding practices among mothers of infants aged 6-24-months in Padang. This case control study conducted at Padang with 200 mothers, consisting of 100 mothers of case groups and 100 mothers of control groups. Maternal and infant characteristics, family characteristics, predisposing factors, supporting factors and reinforcing factors, and exclusive breastfeeding were collected for this study. Chi-square and binary logistic regression were used to the data analysis. The determinants that most influence exclusive breastfeeding are mother's occupation, knowledge about exclusive breastfeeding and parents' support. Results showed that mother's occupation, exclusive breastfeeding knowledge and parents' support were the most influencing determinants for exclusive breastfeeding.

Keywords: *exclusive breastfeeding, knowledge, mothers' occupation, parents' support*

INTRODUCTION

The practice of Infant and Young Child Feeding (IYCF) has a role in managing nutritional problems in infants and toddlers (Raniati et al., 2023). One indicator of the IYCF practice is exclusive breastfeeding (EBF) for six months. The World Health Organization (WHO) and UNICEF suggest that breastfeeding should be started immediately after the child's birth and that exclusive breastfeeding should be continued throughout the child's first six months of life (WHO, 2021). Breastfeeding has a positive impact on children, as in reducing morbidity and mortality due to infections, reducing the risk of disease, regulating growth, development and metabolism, and increasing intelligence (Gartner et al., 2005; Goldman, 2012; Victora et al., 2016). Breastfeeding provides health, economic, and environmental benefits for children, women, and society. In order to safeguard, encourage, and support breastfeeding, financial and political assistance is required (Rollins et al., 2016a).

One of the primary causes of infant morbidity and mortality in developing countries is non-exclusive breastfeeding (NEBF) (Feleke et al., 2021). Infants who do not receive exclusive breast milk will experience malnutrition, which will affect growth or cause inappropriate height (de Onis & Branca, 2016; Fatima et al., 2020). There is a significant relationship between non-exclusive breastfeeding and stunting (Lestari et al., 2018). It is related to growth and development during infancy, in which case NEBF causes the child to be susceptible to greater risk of stunting. NEBF is associated with a higher incidence of infectious diseases, such as diarrhea in infants under six months who are fed foods other than breast milk (Damayanti et al., 2017). An infant's intestinal system, which is still in the process of maturation, is not suitable for food other than breast milk (Lestari et al., 2018). Non-exclusive breastfeeding can also increase the risk of infectious diseases, such as diarrhea and pneumonia in children under five (Karmany et al., 2020; Turin & Ochoa, 2014).

Globally, around 40% of infants are exclusively breastfed, which is expected to increase to 50% by 2025. Although rates of exclusive breastfeeding have grown over the past 20 years,

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there is still a long way to reach UNICEF's goal of 100% global coverage (Jama et al., 2020). As many as 72.04% of children in Indonesia received exclusive breast milk in 2022 (BPS, 2022). This coverage decreased by 0.46% year over year (BPS, 2021). Coverage of exclusive breastfeeding in Padang City in 2022 included 9,065 children (67.7%) (Dinkes Padang, 2022). This coverage was still lower than the national coverage.

Green (1980 cited in in Notoatmodjo , 2010) described two determinants of human behavior: behavioral and non-behavioral causes. Predisposing factors, enabling factors, and factors include support from friends, family, medical personnel, and others (Notoatmodjo, 2010; Oktalina et al., 2015; Purwanti et al., 2022).

The practice of EBF is influenced by various factors such as cultural, socioeconomic, and individual factors related to the baby and mother (Awoke & Mulatu, 2021; Mekebo et al., 2022; Rollins et al., 2016b; Tsegaw et al., 2021). Exclusive breastfeeding is influenced by several external variables, including a support from the government, healthcare professionals, and community; constant advertising of formula milk; sociocultural considerations; and a shortage of facilities for maternity and child health services (Novita et al., 2022). Exclusive breastfeeding can also be caused by nutritional status before and during pregnancy. Fat mobilization to produce breast milk in mothers with malnutrition is lower than in mothers with normal nutritional status. This will cause low breast milk production, which in turn can cause failure in EBF (Umami & Margawati, 2018).

The coverage of EBF in Padang City still needs to be improved. This research aims to evaluate the determinants of exclusive breastfeeding as a step to determine nutritional intervention and nutrition promotion strategies that will be used to increase coverage of exclusive breastfeeding.

METHODS

This case control study was conducted from August to September of 2023 in the working areas of five community health centers in Padang city (Public Health Center Andalas, Nanggalo, Kuranji, Belimbing, and Koto Panjang Ikur Koto). The subjects in this study were mothers who had infants aged 6 – 24 months. This study protocol was approved by the Ethics Committee of Faculty of Public Health, Universitas Andalas No. 46/ UN16.12/KEP-FKM/2023.

A written consent form was issued to mothers who met the inclusion criteria and only those who consented to participate in the study were interviewed. The exclusion criteria for the case group and control group were mothers with severely ill or stillborn babies, and mothers with twins. Mothers who refused to consent for interviews were also excluded from the study. The sample size was calculated using the Lemeshow formula, with a 95% confidence level, a 5% margin of error, and the observed parameter was assumed to be 0.252. After calculation, the minimum sample size for interview was approximately 95 for each group. A 5% attrition was anticipated. Subjects were selected by matching the residence of the case group.

Primary data were collected through interviews and a questionnaire survey. The data collected consisted of subject characteristics, history of exclusive breastfeeding, predisposing factors, enabling and reinforcing factors for exclusive breastfeeding, nutritional status of mother and child, and child's food intake. Maternal nutritional status was measured by measuring body weight and height (Yusni & Meutia, 2019). The mother's body weight was measured using a digital scale (GEA) with an accuracy of 0.1 kg and the mother's height was measured using a microtoise (GEA) with an accuracy of 0.1 cm. The child's weight was measured by subtracting the mother's weight without the child from the mother's weight when carrying the child. The child's body length was measured using a length board. Nutritional status measurements were carried out by trained nutritional enumerators. The nutritional status measurement tool was calibrated every day before data collection. All subjects signed a written agreement and provided informed consent.

The subjects fell in the 20–35 years age and <20 - >35 years category. In terms of nutritional status, the subjects were categorized as either malnourished (< 18.5 kg/m^2 and >25.0 kg/m^2) and normal (18-25 kg/m^2). In terms of parity, the subjects were categorized as either women who

had given birth more than twice and less than twice. In terms of education, the subjects were categorized as either low-educated (not in school, elementary school, junior high school) or high-educated (senior high school and university). In terms of occupation, the subjects were categorized as either working or not working. Monthly household income was categorized as either low or high, based on the subject's average income.

Predisposing factors consisted of knowledge, attitude and self-efficacy of EBF. Exclusive breastfeeding knowledge was categorized as either low or high, based on the subject's average. In terms of EBF attitude, the subjects were categorized as either high or low. The self-efficacy variable consists of mother's desire, mother's belief, and child's satisfaction. Mother's desire and belief were questions about whether there is a feeling of wanting the mother to provide EBF and whether the mother is confident to provide EBF to the child, while child satisfaction was the mother's opinion about the child's satisfaction after getting breast milk from the mother. These three things certainly affect the mother's self-efficacy in providing exclusive breastfeeding.

Enabling factors consisted of the availability of antenatal care (ANC) and EBF information. In terms of ANC, the subjects were categorized as either complete (10 T) and incomplete (< 10 T). Exclusive breastfeeding information was categorized as either ever or never.

Reinforcing factors consisted of husband's support and parents' support. Husband's support was categorized as either low or high, based on the subject's average score. In terms of parents' support, the subjects were categorized as either low or high.

Data were analyzed using the Statistical Program for Social Science (SPSS) version 26.0. The univariate analysis result of each variable is presented in one table as a proportion. Chi-square test was used to see the relationship between subject characteristics and factors that influenced exclusive breastfeeding. A 95% confidence level and a p-value<0.05 were used to assess statistical significance. Binary stepwise logistic regression analysis was used to analyze the determinant factors associated with EBF. Each covariate on the dependent variable where p-value < 0.25 was entered into the logistic regression model. In addition, maternal knowledge and attitude variables were also included in the logistic regression analysis based on theory.

RESULTS AND DISCUSSIONS

A total of 200 mothers were selected as respondents in this study and divided into two groups, EBF and NEBF. The characteristics of the mothers can be seen in Table 1. The maternal age was the age at the time of interview. Table 1 shows that most mothers in the case and control groups were of healthy reproductive age (20 – 35 years). The average maternal age was 30.8 ± 4.9 in the EBF group and 29.9 ± 4.5 in the NEBF group. The optimal productive age for healthy reproduction is between 20 and 35 years. The risk of pregnancy problems and poor pregnancy outcomes such as miscarriage, premature birth, LBW, and anemia will increase at under 20 and over 35 years of age (Rani Sukma et al., 2020). Pregnancy at non-reproductive age indirectly carries the risk of LBW because it is affected by the competition for nutritional requirements fulfilments between the adolescent, immature mother and the fetus and by the mother's physical and mental unpreparedness. Some diseases, including hypertension, diabetes mellitus, and anemia, are related with pregnancy in mothers over 35 and are frequent signs of unplanned or unwanted pregnancies (Widiyanto & Lismawati, 2019).

The mother's nutritional status can influence exclusive breastfeeding. As many as 56% of mothers in the EBF group and 53% in the NEBF group in this study had normal nutritional status. In the EBF group, 56% of mothers had normal nutritional status, 12% were underweight, and 32% were overweight. In the NEBF group, 53% of mothers had normal nutritional status, 9% were underweight, and 38% were overweight. Body Mass Index (BMI) reflects past nutritional status and represents sufficient energy reserves. The mother's fat reserves are used as an extra source of breast milk production (Shofiya et al., 2020).

Most mothers (62% in the EBF group and 72% in the NEBF group) had fewer than two children. Fikawati and Syafiq (2009) found that older mothers with higher parity appeared to

be more likely to practice EBF for six months. Mothers who give exclusive breast milk have better knowledge of exclusive breastfeeding than mothers who do not give exclusive breast milk (George et al., 2022). Psychosocially, women with higher parity may have positive or negative breastfeeding experiences from nursing their previous children, which may influence their self-efficacy to breastfeed their next child (Fikawati & Syafiq, 2009; Huang et al., 2019).

Mother's and father's education can be a factor in exclusive breastfeeding. Most mothers and fathers in both groups had a high level of education. Parental education is the primary factor of children's health and development (Sarkar et al., 2023). A higher level of education tends to provide more opportunities for mothers to provide EBF (Laksono et al., 2021). Father's education is related with EBF (*p*-value=0.050). A high level of father's education can optimize the father's role of a "breastfeeding father" because higher education can increase fathers' effectiveness in supporting EBF (Tresnaasih et al., 2021). Fathers will directly motivate mothers to continue breastfeeding exclusively, give praise, and provide good support to mothers (Mufdililah & Johan, 2019).

Table 1. Respondent Characteristics

Variables	EBF (n=100)		NEBF (n=100)		*p*-value
	n	%	n	%	
Age (years)					
At risk (< 20 - > 35)	15	15	14	14	0.841
Not at risk (20 – 35)	85	85	86	86	
Mean ± SD	30.8 ± 4.9		29.9 ± 4.5		
Nutritional status					
Malnourished	44	44	47	47	0,670
Normal	56	56	53	53	
Parity					
> 2	38	38	28	28	0.133
≤ 2	62	62	72	72	
Mother's education					
Low	13	13	11	11	0.663
High	87	87	89	89	
Husband's education					
Low	25	25	14	14	0.050*
High	75	75	86	86	
Mother's occupation					
No Work	86	86	66	66	0.001*
Work	14	14	34	34	
Husband's occupation					
No Work	0	0	0	0	-
Work	100	100	100	100	
Monthly household income					
Low (< Rp 2.500.000)	36	36	31	31	0.454
High (> Rp 2.500.000)	64	64	69	69	
Distance to health services					
> 3 km	20	20	15	15	0.352
< 3 km	80	80	85	85	
How to get to health services					
Walk	10	10	0	0	0.001*
Using a vehicle	90	90	100	100	
Attending Maternity Classes					
Ever	33	33	23	23	0.115
Never	67	67	77	77	

Variables	EBF (n=100)		NEBF (n=100)		*p*-value
	n	%	n	%	
Complementary feeding information					
Ever	86	86	92	92	0.175
Never	14	14	8	8	
Child's Age (months)					
0 – 6 months	15	15	25	25	
6 – 9 months	25	25	29	29	0.143
9 – 12 months	16	16	16	16	
12 – 24 months	44	44	30	30	
Child's Sex					
Male	54	54	51	51	0.671
Female	46	46	49	49	

Notes: Bivariate Chi-Square Test *significant *p*-value <0·05

Parental occupation can affect attitudes and behaviors in relation to exclusive breastfeeding. Most of the mothers in both groups did not work or played the role as housewives, while all fathers in this study were working. Maternal employment is related with exclusive breastfeeding (p-value=0.001). This result is aligned with the study result of Liu et al. (2013), who found a relationship between maternal employment and exclusive breastfeeding. Parents with higher education levels are less likely to provide EBF than those with lower education (Liu et al., 2013). This may be due to professional preoccupation and higher income that allows for a higher ability to afford complementary foods. However, these study result are still inconsistent.

Most respondents in both groups had a high income (> IDR 2,500,000). The analysis of this study found that household income was not related to EBF practice. This study was not in line with Tewabe et al. (2016), where income was significantly associated with EBF practice. This may be because mothers are psychologically and economically aware of exclusively breastfeeding their infants (Tewabe et al., 2016). In addition, in families with low income, the mother usually contributes to the family income by working, so that the attention to exclusive breastfeeding is reduced (Hartina et al., 2017).

Breastfeeding exclusively is encouraged and supported with easy access to a health facility. Ease of access to health services means that mothers have easy access to healthcare. Health workers who examine mothers during childbirth will have a positive effect on exclusive breastfeeding by mothers to their babies (Fauziah, 2023). Most mothers in this study had easy access to services in terms of distance and means to access health services (Table 2). As many as 52.5% of mothers chose the nearest Community Health Center (Puskesmas) as their preferred health services facility. The World Alliance for Nursing Action suggests that the government and healthcare professionals, among others, must assist nursing mothers to achieve breastfeeding success. Access to health services and support from health workers can affect the success of exclusive breastfeeding. Health resource support from health services that the mother receives influences her decision to breastfeed or not breastfeed her baby (Wibowo, 2016).

Most mothers in both groups received incomplete antenatal care (ANC) services and still many mothers had never attended maternity class. ANC is a preventive obstetric program to prepare mothers and optimize pregnancy outcomes through routine monitoring activities during pregnancy. ANC should be carried out at least six times during pregnancy (Kemenkes RI, 2020). Maternity classes provide pregnant women with a means of learning about health, each attended by a maximum of 10 people face-to-face and guided by health workers, with the aim of increasing knowledge and skills (Novitasari et al., 2020).

Most of the children in both groups were 12 – 24 months old, and the average age was 11.6 months. In the EBF group, 54% children were boys, while in the EBF group 51% were.

Predisposing factors, enabling factors, and reinforcing factors determine a mother's success in breastfeeding. The analysis found that maternal belief (p-value =0.001), child satisfaction (p-value=0.000), and parents' support (p-value=0.001) were associated with exclusive breastfeeding (Table 2). Mothers should feel quite confident in themselves. Seeing other mothers successfully breastfeed gave them the confidence to succeed (Thomas et al., 2015). Furthermore, mothers will be confident to provide EBF if their husbands and parent are motivating and supporting them during the lactation period and they have social support, such as obtaining knowledge and information (Fauziah et al., 2015).

Breastfeeding women with strong self-efficacy outlast those with low self-efficacy after giving birth. First-time mothers are frequently receptive to everything about their babies' health, making them easily provoked by unfavorable presumptions. For example, they may believe that babies will not be sufficiently satisfied if they only receive breast milk or that, at the start of the postpartum period, the mother may only produce little colostrum or may not have released any breast milk (Wulandari, 2020).

Most mothers in this study had received information about exclusive breastfeeding. Of all mothers in this study, 87% received information about EBF from health workers. This indicates that health professionals had an essential part in promoting EBF, including in educating pregnant women (Idris et al., 2020).

The results of the analysis in this study are in line with those of Rosita (2016), who found that there was a relationship between parental support

Table 2. Determinants of Exclusive breastfeeding

Variables	EBF (n=100)		NEBF (n=100)		*p*-value
	n	%	N	%	
Predisposing					
Exclusive breastfeeding knowledge					
Low	30	30	32	32	0.760
High	70	70	68	68	
Exclusive breastfeeding attitude					
Negative	30	30	35	35	0.450
Positive	70	70	65	65	
Self-Efficacy					
Desire					
Yes	100	100	97	97	0.081
No	0	0	3	3	
Belief					
Certain	100	100	89	89	0.001*
Not certain	0	0	11	11	
Infants satisfaction					
Satisfied	100	100	82	82	0.000*
Not satisfied	0	0	18	18	
Enabling					
Antenatal Care (ANC)					
Incomplete	61	61	54	54	0.317
Complete	39	39	46	46	
Exclusive breastfeeding information					
Ever	94	94	95	95	0.756
Never	6	6	5	5	
Reinforcing					
Husband's Support					
Low	53	53	45	45	0.258
High	47	47	55	55	

Variables	EBF (n=100)		NEBF (n=100)		*p*-value
	n	%	N	%	
Parents' support					
Low	60	60	37	37	0.001*
High	40	40	63	63	

Notes: Bivariate Chi-Square Test *significant *p*-value <0.05

and breastfeeding behaviour with p-value =0.001. Mothers who receive support from parents have a higher opportunity to breastfeed exclusively than those who do not receive support from parents (Rosita, 2016).

Table 3 shows that husband's education, mother's occupation, access to health services, mother's belief, infant's satisfaction, knowledge about EBF, and parents' support collectively had an effect of 35% on EBF with Nagelkerke value 0.350; there are still other variables (65%) outside of this study that can be determinants of EBF.

Mothers with high knowledge about exclusive breastfeeding have a higher chance (OR = 2.402) of practicing EBF than mothers with low knowledge. Mothers with higher knowledge are more likely to be better in practice than mothers with low knowledge about exclusive breastfeeding (Mogre et al., 2016). Other studies have also found the same results regarding the relationship between knowledge about EBF and exclusive breastfeeding (Mogre et al., 2016; Sultana et al., 2022).

The result of this study also showed that working mothers (OR=0.383) still had the opportunity to practice EBF. It was found in this study that these mothers worked 7 – 8 hours on average daily. Maternal employment is related with the practice of EBF (Chekol et al., 2017; Tadesse et al., 2019). However, most working mothers in this study (70.8%) did not exclusively breastfeed babies. This might be because working mothers did not have sufficient time to breastfeed their infants during working hours compared to non-working mothers. Non-working mothers usually

Table 3. Determinants of exclusive breastfeeding in 6-24 month old infants

Variables	Adjusted OR	95% CI	p-value
Husband's education			
Low	Reference	0.201 – 1.121	0.089
High	0.474		
Mother's occupation			
No Work	Reference	0.174 – 0.847	0.018*
Work	0.383		
How to get to health services			
Walk	Reference	-	0.999
Using a vehicle	0.000		
Belief			
Not Sure	Reference	-	0.998
Sure	0.000		
Infants satisfaction			
Not satisfied	Reference	-	0.998
Satisfied	0.000		
Exclusive breastfeeding knowledge			
Low	Reference	1.138 – 5.070	0.021*
High	2.402		
Parents' support			
Low	Reference	0.235 – 0.931	0.031*
High	0.468		

Notes: Logistic Regression Test; OR (95% CI) odds ratio (95% confidence interval); *significant p-value <0.05

have flexible working hours compared to working mothers, which might contribute to the relatively higher adherence to EBF practices of non-working mothers than that of working mothers (Zewdie et al., 2022a). Workplace factors may also be equally important in a mother's decision to breastfeed her infant exclusively. Key factors are inadequate duration of maternity leave and lack of maternity policies and facilities that support breastfeeding in the workplace (Abekah-Nkrumah et al., 2020; Zewdie et al., 2022b). Adequate support should be provided to working mothers, including adequate policies and facilities to improve EBF practice (Zewdie et al., 2022b).

The results of this study also showed that if mothers received support from their parents (OR=0.468), they had the opportunity to practice EBF. The social and emotional support from family, including parents, regarding exclusive breastfeeding practice for breastfeeding mothers is important to note. Parents are among the ones closest to the mother that can influence a mother's actions. Lack of informational, instrumental, emotional, and appraisal social support from the family will inhibit EBF behavior (Fadjriah et al., 2021). This study found that parental support played a role in exclusive breastfeeding. Parental support can increase the duration of breastfeeding and play an essential role in providing breast milk. (Aprilia Ningsih et al., 2020). In addition, breastfeeding mothers usually need help and assistance when starting and continuing breastfeeding for up to two years. Parents provide this assistance and help (Mamangkey et al., 2018).

CONCLUSION

The factors that most influence exclusive breastfeeding are the mother's occupation, exclusive breastfeeding knowledge and parents' support. Researchers recommend that the target of the intervention is focused on husbands and parents of breastfeeding mothers. Universities can also have a role in community service to promote EBF to the community. In addition, the government needs to focus more on promoting exclusive breastfeeding as a practice.

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