



# Determinants of Exclusive Breastfeeding in Lactating Mothers in Yogyakarta, Indonesia

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## Abstract

**Edited by:** Sasho Stoileski  
**Citation:** Santi M, Nur W, Widyastuti Y, Khasanah F. Determinants of Exclusive Breastfeeding in Lactating Mothers in Yogyakarta, Indonesia. Open Access Maced J Med Sci. 2023 Jan 24; 11(E):96-103. https://doi.org/10.3889/oamjms.2023.11286  
**Keywords:** Exclusive breastfeeding; Determinants; Lactating mother; Infant-feeding  
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**Received:** 18-Nov-2022  
**Revised:** 29-Dec-2022  
**Accepted:** 14-Jan-2023  
**Copyright:** © 2023 Mina Santi, Wafi Nur, Yani Widyastuti, Furaida Khasanah  
**Funding:** This study was supported through the Research Grant "Penelitian Dosen Pemula" from Health Polytechnic Ministry of Health of Yogyakarta and the Minister of Health Republic Indonesia  
**Competing Interests:** The authors have declared that no competing interests exist  
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**BACKGROUND:** The national coverage of exclusive breastfeeding (EBF) in Indonesia still low and one of the causes was from lactating mothers' factor. The EBF coverage in Bantul Regency, Yogyakarta was still below the national target (80%). Breast milk has been proven to be the best source of nutrition that provides various benefits for babies, mothers, families, and the country. Benefits for babies are better immunity, as well as intelligence and mental development.

**AIM:** The research aims to analyze the determinants of exclusive breastfeeding in lactating mothers in Yogyakarta, Indonesia.

**METHODS:** An observational analytical research with cross-sectional design in Bantul Regency, Yogyakarta, Indonesia. The population was lactating mothers in Sewon and Srandakan, Bantul uses a sample of 100 people with purposive sampling method. Data were collected with questionnaires and analyzed with Chi-square test and Multiple Logistic Regressions using Statistical Package for the Social Sciences-16. The husband's support (informational support, award support, instrumental support, and emotional support) is declared not supportive if the total value is less than the mean.

**RESULTS:** Factors that related to EBF were husband's informational support, husband's total support, and the promotion of infant formula ( $p < 0.05$ ). The variable that proven to be the determinant of EBF was the promotion of infant formula (odds ratio = 4.47, 95% CI = 1.50–13.30) in probability equal to 0.007.

**CONCLUSION:** The study showed a low prevalence of EBF. Totally support of the husband, especially the information support was needed by lactating mothers. The most influential factor that proved to be a determinant of EBF in lactating mothers was the promotion of infant formula. It was necessary to prevent and stop all ways of promoting formula milk, especially in healthcare facilities or through advertisements and involving community leaders or well-known figures to campaign for the benefits of EBF for the community through various media.

## Introduction

Breast milk is the best essential food for babies, especially in the first 6 months of life. Breast milk contains all the nutrients that babies need to achieve optimal growth. Breast milk provides protection against various diseases and even reduces the risk of death due to the presence of antibodies that can act as the first vaccine for babies. The World Health Organization states that Exclusive Breastfeeding (EBF) can reduce up to more than 800,000 child deaths per year, especially those caused by diarrhea and pneumonia. Breastfeeding optimally for babies can prevent nearly 100,000 maternal deaths from cancer and type II diabetes per year [1]. Because of the many benefits of exclusive breastfeeding, every mother is expected to be able to give it to her baby, including mothers who give birth through an operation process using epidural anesthesia because one study found that epidural analgesia has no negative effect on the breastfeeding process [2].

Some studies have proven the benefits of exclusive breastfeeding for infants and mothers both in the short- and long-term. Breastfeeding in the first 6 months of a baby's life can reduce the risk of various diseases and infections in infancy and childhood such as acute respiratory tract infection, obesity, eczema, asthma, and stunting [3], [4], [5], [6]. Another benefit for children is their cognitive development, nutrition, health, and well-being for life. It also reduces expenses for families, health facilities, and the government. EBF also supports emotional bonding between mother and baby, as well as other mental health benefits [7], [8].

Although EBF has been shown to provide many benefits for baby survival, the national coverage of exclusive breastfeeding in Indonesia has still not shown a significant increase over the past few years. The coverage of exclusive breastfeeding in infants 0–6 months was 52.3% in 2014 and in 2015 there was a slight increase to 55.7%. However, this amount of coverage is still far from the national target set in 2014 of 80% [9], [10]. Yogyakarta Special Region, Indonesia has not been maximal in achieving the national target

of EBF. The coverage of EBF in 2014 was 70.8% and in 2015 slightly increased to 71.6% [9], [10]. Bantul Regency's EBF coverage rate in 2014 was 71.55% and increased in 2015 to 74.73%. By region, exclusive breastfeeding coverage in Sewon is only 67.29% while in Srandakan it reached 86.69% in 2015 [11].

One of the factors that can cause the low coverage of EBF was from the lactating mother. In the previous study, younger infants, babies born to married women, who are housewives, having a vaginal birth in a health facility, and whose mother's breasts were healthy, were predictors for EBF in Ethiopia. Housewives were more likely to breastfeed their babies than employed mothers [12]. Variables associated with exclusive breastfeeding practices of female healthcare workers in Jakarta, Indonesia were knowledge, attitude, co-worker support, and healthcare worker support [13]. In Xinjiang, People's Republic of China, the average exclusive breastfeeding duration was 1.8 months. Factors negatively associated with exclusive breastfeeding duration were mother's going to work and using a pacifier [14]. Determinants of being not exclusive breastfeeding were initiation of breastfeeding, drank from bottle with nipple, delivery by cesarean section, infants age, and preceding birth interval [15]. Some studies concluded that there is a significant correlation between maternal age, socioeconomic, residence, high education level, employment status, husband's and friend's support, breastfeeding support groups, knowledge, experience of breastfeeding before, and early initiation of breastfeeding [16], [17]. Promotion of formula milk is also stated to affect the sustainability of mothers in breastfeeding their children [8]. The determinant of EBF practice and factors affecting it from husband support and promotion of infant formula has not been studied in Indonesia. The aim of this study was to analyze the determinant of exclusive breastfeeding in lactating mothers in Bantul Regency, Yogyakarta Special Region Province, Indonesia.

## Methods

This study was conducted in two sub-districts located in Bantul Regency, Yogyakarta Special Region, namely Sewon and Srandakan during March–October 2016. The reason for the selection of the two sub-districts is because Sewon was a sub-district that is close to urban areas while Srandakan was a sub-district that is far from urban areas. This was an analytical descriptive cross-sectional type. Observational method using a questionnaire. The population of this study was lactating mothers in Sewon and Srandakan, Bantul Regency, Yogyakarta Special Region. Based on data from the Bantul Regency Health Office in 2013, it is known that the number of toddlers in Sewon District is 6,138 people, and in Srandakan District 2,120 people. This figure is used as a reference to estimate

the number of toddlers at the time the study will be conducted. It is estimated that there are 8,258 toddlers and 826 (10%) of them are toddlers aged 6–24 months. Then that figure was rounded to 900 people and the number of these toddlers is estimated to represent the number of breastfeeding mothers. The samples in this study were taken using purposive sampling techniques to control the confounding variables in the study with inclusion and exclusion criteria. Inclusion criteria are breastfeeding mothers who have the last child aged between 6 and 24 months, have the ability to read and write, and are willing to be a respondent. The exclusion criteria were mothers who gave birth to their last child with a gestational age of <37 weeks and low birth weight babies, mothers who gave birth to twins, mothers who suffered from a serious illness when the last child was 0–6 months old, the mother with a child who had suffered serious illness when the last child was 0–6 months old. The sample size is determined using the Slovene formula with a significance level of 10% plus a 10% chance of a sample falling. So with a population of 900 people, the number of samples needed is 100 people. The selection of the two sub-districts is based on the characteristics of the region. Sewon District is an urban area while Srandakan District is a rural area, and each district is set with a sample of 50 breastfeeding mothers.

Primary data were collected by questionnaire and interviews with lactating mothers. Secondary data from the public health center and Bantul Regency Health Office include the number of lactating mothers and the amount of breastfeeding coverage in each sub-district in Bantul Regency. Independent variables in this study were the mother's age, mother's educational level, the status of mother's employment, husband's support for EBF (informational support, appreciation or award support, instrumental support, and emotional support), and the infant formula promotion. Exclusive breastfeeding by lactating mothers was a dependent variable in this study. The questionnaire collected primary data containing questions about the mother's characteristics (age, education level, and employment status), husband's support, promotion of infant formula, and exclusive breastfeeding. The husband's support in this study consisted of informational support, appreciation or award, instrumental, emotional, and total support. Total support means a combination of all support from the husband given to the mother in the form of informational, appreciation or award, instrumental, and emotional support. The total support of the husband is assessed based on the total score of the four supports given by the husband to the lactating mother when the baby is 0–6 months old.

After the questionnaire instrument has been compiled, then the validity and reliability tests are carried out first on 30 lactating mothers in different locations from the study site who have similar characteristics to lactating mothers who will be studied. Husband's support for exclusive breastfeeding measured using questionnaire obtained 21 valid statement items with  $r$  value more than 0.361 and of the valid statements,

all of them are reliable with an alpha value of 0.892, respectively. In the form of statements husband's support during breastfeeding divided into 4 groups of statements: Informational support (4 questions), appreciation or award support (4 questions), instrumental support (9 questions), and emotional support (4 questions) with the grading scale is answer yes (1) and answers no (0). Informational support from husbands includes: Husbands have sought information about exclusive breastfeeding and infant feeding patterns, until now husbands are still seeking information about exclusive breastfeeding, husbands accompany mothers during consultations with health workers to obtain information about exclusive breastfeeding, and husbands always remind that babies aged 0–6 months should only be given breast milk. Appreciation or award support from husbands includes: Husbands accompanying mothers while breastfeeding even in the middle of the night, when mothers breastfeed in the middle of the night, husbands only sleep, husbands often give praise to mothers for breastfeeding their babies and husbands don't care whether mothers breastfeed their babies or not.

Husbands are declared less supportive if the total score is less than the mean. The questionnaire was filled in directly by the lactating mother accompanied by the research team who helped explain to the mother if she did not understand the data that had to be filled in or the meaning of the statement. The research team also checked the completeness and technique of the mother in filling in the data and filling in the answers. Data were analyzed by Chi-square test by calculating the value of the odds ratio (OR) and Multiple Regression Logistic test with Backward likelihood ratio method at 95% significance level using Statistical Package for the Social Sciences ver.16.

### Ethical considerations

This research has received approval to be carried out (Ethical clearance) from the Health Research Ethics Committee of the Yogyakarta Ministry of Health Poltekkes Kemenkes Yogyakarta Republic of Indonesia with the number: LB.01.01/KE/XXXII/222/2016.

## Results

### Characteristics of mother and univariate analysis

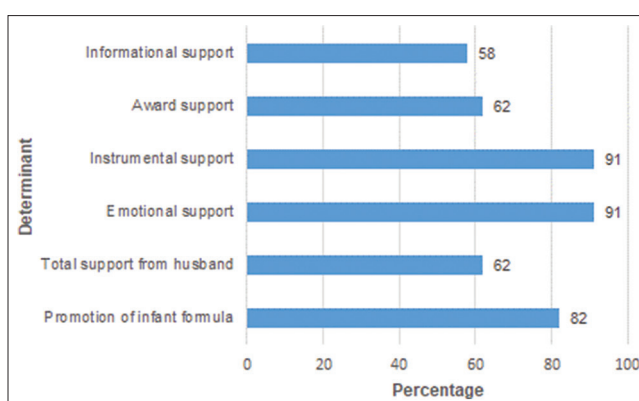
Table 1 represents the distribution of studies from samples of breastfeeding mothers according to their socio-demographic characteristics. The socio-demographics include the mother's age, education level, and employment status of the mother. It revealed that breastfeeding mothers had a mean age of 30.16 years old with standard deviation (SD) was 5.11 years old. The

**Table 1: The characteristic of breastfeeding mothers in Bantul regency, Yogyakarta**

Characteristic of mother	Srandakan district n (%)	Sewon district n (%)	Total n (%)
Mother's age			
<20 or>35 years old	9 (18)	8 (16)	17 (17)
20–35 years old	41 (82)	42 (84)	83 (83)
Education level			
Elementary school or Junior high school	7 (14)	14 (28)	21 (21)
Senior high school	39 (78)	27 (54)	66 (66)
High education	4 (8)	9 (18)	13 (13)
Employment status			
Employed	13 (26)	28 (56)	41 (41)
Unemployed	37 (74)	22 (44)	59 (59)
Total	50	50	100

maternal education level was found to be 21 mothers who completed elementary school or junior high school, 66 mothers who completed senior high school, and 13 mothers who completed high education (college and above). Based on employment status more than half of them (59 mothers) were unemployed.

Figure 1 represents the frequency distribution of respondents who support EBF based on their husband's support and getting promotion of infant formula. Based on the six variables that support EBF, it is known that instrumental support and emotional support have the highest percentage (91%) while informational support has the lowest percentage of EBF (58%).



**Figure 1: Frequency distribution of respondents who support EBF based on their husband's support and promotion of infant formula**

Table 2 represented the husband's support to mothers in EBF and the promotion of infant formula. It

**Table 2: Husband's support to mothers in exclusive breastfeeding and promotion of infant formula**

Determinant	Srandakan district n (%)	Sewon district n (%)	Total n (%)
Informational support			
Does not support	20 (40)	22 (44)	42 (42)
Supports	30 (60)	28 (56)	58 (58)
Award support			
Does not support	14 (28)	24 (48)	38 (38)
Supports	36 (72)	26 (52)	62 (62)
Instrumental support			
Does not support	3 (6)	6 (12)	9 (9)
Supports	47 (94)	44 (88)	91 (91)
Emotional support			
Does not support	1 (2)	8 (16)	9 (9)
Supports	49 (98)	42 (84)	91 (91)
Total support from husband			
Does not support	17 (34)	21 (42)	38 (38)
Supports	33 (66)	29 (58)	62 (62)
Promotion of infant formula			
Does not support	4 (8)	14 (28)	18 (18)
Supports	46 (92)	36 (72)	82 (82)



was revealed that support to the mother in EBF from the husband consists of five parameters, namely, husband's information support, husband's award support, husband's instrumental support, husband's emotional support, and husband's total support.

Based on Table 2, more than half of lactating mothers (62%) get support in providing exclusive breastfeeding from their husbands. About 58% of mothers received informational support, 62% received appreciation or award support, and 91% of mothers received instrumental support and emotional support from their husbands. The study also found that most nursing mothers (82%) were not exposed to formula promotion during breastfeeding by the time their babies were 0–6 months old.

Figure 2 shows the proportion of respondents who received their husband's support and not getting promotion of infant formula who provided EBF and Not EBF. Based on Figure 2, the percentage of mothers who received support from their husbands and not getting promotion of infant formula was found to be more likely to provide EBF. The percentage of EBF is in the range of 64.71–94.12% with the highest percentage in the emotional support variable.

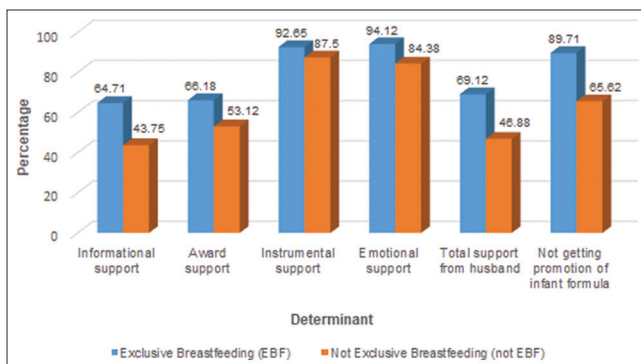


Figure 2: Proportion of respondents who received their husband's support and not getting promotion of infant formula

Figure 3 represents the proportion of respondents who did not receive support from their husbands and getting promotion of infant formula who provided EBF and Not EBF. Based on Figure 3, the percentage of mothers who did not receive support from their husbands and got promoted to infant formula was found to be more without EBF. The percentage is not EBF in the range of 12.5–56.25% with the highest percentage in the information support variable.

Table 3 showed the relation between exclusive breastfeeding and determinants of exclusive breastfeeding. It showed that there is statistically significant relation between informational husband's support and EBF with statistically significant differences ( $p < 0.05$ ) OR 2.36, total support from husband and EBF ( $p < 0.05$ ) OR 2.54, promotion of infant formula and exclusive breastfeeding ( $p < 0.05$ ) OR 4.57. This shows that the husband's support and the promotion of infant formula have an effect on the success of giving EBF.

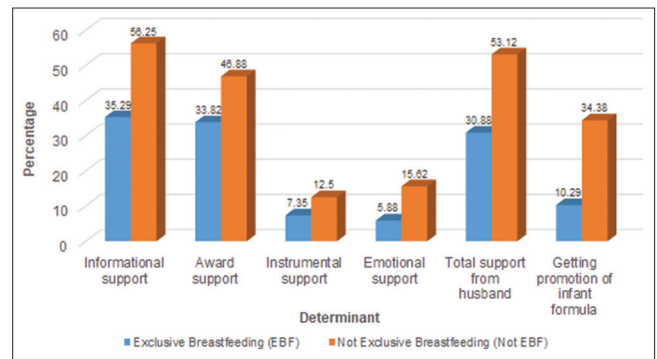


Figure 3: Proportion of respondents who did not receive support from their husbands and getting promotion of infant formula

## Discussion

This study showed that based on the characteristics, the breastfeeding mother's mean age was 30.16 years old with an SD of 5.11 years old, most of the mother's educational level was senior high school and unemployed. In this study, it was found that there was no correlation between the mother's characteristics (age, education level, and employment status) to EBF. However, a previous study found that EBF relates to the mother's age, lack of mother's formal education, mother's knowledge during pregnancy, and the number of attendance at pregnancy visits [18], [19]. This difference may be attributable to other characteristics such as the mother's knowledge about EBF and previous breastfeeding experience. Knowledge was an influential factor in the success of exclusive breastfeeding [13]. Mothers with infants aged 0–1.9 months and 2–3.9 months practiced EBF more than mothers with infants aged 4–6 months [12].

It has been reported from a recent local study near Kuala Lumpur that EBF was positively associated with rural residents Malay mothers, non-working mothers, non-smoking mothers, multiparous mothers, mothers of full-term infants, mothers with husbands who support breastfeeding, and mothers who practice bed-sharing [20]. Mother's higher education, formal working mothers who get paid leave >6 months, get support from husband and friends, have breastfeeding support groups and have good knowledge and successful experience in breastfeeding before >6 months, and initiate early breastfeeding had a significant correlation with EBF [17]. Fewer working mothers are successfully breastfeeding due to workload and time constraints for mothers to breastfeed their babies during the first 6 months [21]. Lactating mothers who return to work earlier after giving birth make them stop breastfeeding earlier than mothers who return to work in the recommended period [22]. Housewives practiced EBF more than employed mothers [12].

This present study has a similar result to that found EBF among unemployed mothers was higher than the employed mothers [23]. Factors negatively

**Table 3: Determinants of EBF for Lactating Mothers in Bantul Regency, Yogyakarta**

Determinant	Not exclusive breastfeeding n (%)	Exclusive breastfeeding n (%)	Odds ratio (OR)	95% CI	p-value
Mother's age					
<20 or >35 years old	26 (81.25)	11 (16.18)	1.20	0.40–3.58	0.477
20–35 years old	6 (18.75)	57 (83.82)			
Education level					
Elementary and Junior school	8 (25)	13 (19.12)	1.41	0.52–3.84	0.335
Medium-high school	24 (75)	55 (80.88)			
Employment status					
Working	15 (46.88)	26 (38.24)	1.42	0.61–3.33	0.273
Non-working	17 (53.12)	42 (61.76)			
Husband's informational support					
Doesn't support	18 (56.25)	24 (35.29)	2.36	1.00–5.56	0.039*
Support	14 (43.75)	44 (64.71)			
Husband's award support					
Doesn't support	15 (46.88)	23 (33.82)	1.73	0.73–4.07	0.151
Support	17 (53.12)	45 (66.18)			
Husband's instrumental support					
Doesn't support	4 (12.50)	5 (7.35)	1.80	0.45–7.21	0.312
Support	28 (87.50)	63 (92.65)			
Husband's emotional support					
Doesn't support	5 (15.62)	4 (5.88)	2.96	0.74–11.89	0.115
Support	27 (84.38)	64 (94.12)			
Total support from husband					
Doesn't support	17 (53.12)	21 (30.88)	2.54	1.07–6.02	0.028*
Support	15 (46.88)	47 (69.12)			
Promotion of infant formula					
Getting promotion	11 (34.38)	7 (10.29)	4.56	1.57–13.30	0.005*
Not getting promotion	21 (65.62)	61 (89.71)			

associated with exclusive breastfeeding duration were mother's going to work [14]. Employment outside the home, particularly full-time employment, is negatively associated with breastfeeding duration [24]. This study has proven an association between husband's informational support and total support with exclusive breastfeeding. The bivariate analysis found a correlation between the husband's total support and exclusive breastfeeding with an adjusted OR of 2.54. This means that mothers who get total support from their husbands will have the opportunity to give exclusive breastfeeding 2.54 times greater than mothers who do not get total support.

In line with the previous study, family social support was an important factor in the success of EBF. There was a relationship between the family's informational, emotional, instrumental support, and appraisal of the success of EBF [25]. The fathers who provided education to their wives are prepared better to support EBF [25], [26]. Mothers who do not get support from their families, especially their husbands as the closest people, will certainly have difficulty providing EBF. Total support from the closest people will make the mother feel more confident and comfortable. A supportive husband will certainly help the mother physically and mentally so that she can successfully provide breast milk for at least the first 6 months of her baby. Mothers can feel confident and able to breastfeed if they get support from their husbands through verbal encouragement and also active involvement in breastfeeding activities. Health practitioners can involve husbands by providing information, inviting them to become active learners and functioning them as supportive discussion partners [27] because the husband's support can influence mothers' decision to breastfeed [28]. Information support from partners has an impact on the success of breastfeeding mothers. Not only mothers need to have good knowledge

about breastfeeding but husbands also need to have it. Husbands can be actively involved in learning with mothers, for example, by being actively involved in discussions or the practice of correct breastfeeding techniques so that they can remind mothers if they are wrong in breastfeeding their babies, especially for mothers who are breastfeeding for the first time. A study showed that breastfeeding training can increase the knowledge of mothers and improved their attitude toward breastfeeding and telephone follow-up had positive effects on mothers' knowledge and achievement in breastfeeding [29].

In line with another study's conclusion that educational interventions can increase the rate of EBF, duration of initiation, and breastfeeding. The combination of both individual and group interventions was superior to just the individual or group counseling and the impact of these interventions was higher in developing countries than in developed ones [30]. Husband's support in helping to find information about everything related to breastfeeding either through consultations or attending discussion classes or by reading various appropriate literatures will greatly help mothers to be more confident in breastfeeding. So that the support from the husband accompanied by education from the breastfeeding counselor as well as support from the peer group will have a good impact on the success of the mother in exclusively breastfeeding. Factors associated with exclusive breastfeeding included maternal work, planned pregnancy, intention to breastfeed, and source of maternal emotional support [31].

In line with the results of previous research that stated that efforts that can be made to improve the success of breastfeeding are to empower the community through maternal support groups and socialize Government Regulation of the Republic of Indonesia Number 33 of 2012 concerning exclusive

breastfeeding and breastfeeding counselors [32]. The results of multivariate analysis in this study (as presented in Table 4) showed that the promotion of infant formula was the only variable that proved to affect EBF with an adjusted Odd Ratio of 4.47. This means that lactating mothers who are not exposed to formula promotion during the first 6 months of their baby's life have a chance to breastfeed exclusively 4 times greater than lactating mothers who are exposed to formula promotion. Lactating mothers should be avoided from exposure to the promotion of infant formula to continue to provide EBF for their babies.

**Table 4: Final model of multivariate analysis with backward LR method**

Determinants	B	adjusted OR	95% CI	p-Value
Husband's informational support	0.83	2.30	0.94–5.62	0.068
Promotion of infant formula	1.50	4.47	1.50–13.30	0.007*

Finally, the result of multivariate analysis showed that promotion of infant formula was proved to influence EBF with OR=4.467 95% CI=1.500-13.305. LR: Likelihood ratio.

Regulations in Indonesia have prohibited producers or distributors of infant formula or other products from carrying out activities that could hinder the EBF program such as giving free samples of milk products through health services, health workers, pregnant women, and mothers who have just given birth, offering directly to homes, and advertise through mass media [33]. Although there are regulations that prohibit formula milk promotion efforts are still found in the community accompanied by the ease with which mothers can get infant formula which is widely traded in shops. This situation demands that more effective efforts be made to encourage mothers to give EBF. All forms of infant formula promotional efforts must be monitored and prevented, especially in health care facilities, whether in the form of giving milk samples or advertising formula milk brands on bags or other forms of goods that can attract the mother's attention. Promotions that are carried out openly through print and electronic media should also be monitored because they can influence mothers and make mothers interested in giving to their babies, especially mothers who feel they cannot provide enough breast milk for their babies or are influenced by other people.

Other studies corroborate the statements of this study with the conclusion of its research that there is an urgent need to protect mothers and families from the promotion of unregulated infant formula and easily found through mass media or people of influence on mothers including health care providers [34]. Another previous study also found that the provision of free breast milk substitutes in maternity facilities and provided by health workers or broadcast through the media will have a negative impact on efforts to provide EBF [35]. The promotion of infant formula is also stated to affect the sustainability of mothers in breastfeeding their children [7]. The findings of this research might not be generalizable due to the small sample size. The other limitation was some sessions need to be

extended due to workload, noise, and interference from others.

## Conclusion

Factors that are related to exclusive breastfeeding in breastfeeding mothers are the support of information from husbands, total support from husbands, and promotion of infant formula. Factors that were not related to EBF in breastfeeding mothers were age, employment status, and education level. The most influential factor on EBF in lactating mothers was the promotion of infant formula. The lactating mother needs to be totally supported by her husband, especially informational support. Hence, husbands should be given information about breastfeeding and become active learners together with mothers and as discussion partners by a health practitioner or breastfeeding counselor since the antenatal period. It was also necessary to prevent and stop all ways of promoting formula milk, especially in health-care facilities or through advertisements. Carry out advocacy efforts for the government to establish regulations by referring to the International Code of Marketing of Breast-milk substitutes and provide strict sanctions for violators of these regulations. Involving community leaders or well-known figures to campaign for the benefits of EBF for the community through various media to balance the incessant promotion of infant formula. Recommendation for further research is still needed to create a health promotion model to anticipate the use of infant formula by family-based in increasing exclusive breastfeeding.

## Acknowledgments

This research was carried out by the financial support of the Health Polytechnic Ministry of Health of Yogyakarta and the Minister of Health Republic Indonesia through Research Grant "Penelitian Dosen Pemula." We would like all the participants for their collaboration to participate in the study.

## Author Contributions

Concept and design (MYS, and WNM), data collection (MYS and WNM), data analysis and interpretation (MYS and YWA), drafting of the manuscript (MYS and FKH), critical revision of the manuscript (MYS and FKH), final approval and accountability (MYS, FKH, and YWA), supervision (MYS).



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