

Meta-Analysis: The Effect of Lactation Education by Midwives on Exclusive Breastfeeding Behavior in Mothers and Pregnant Women

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ABSTRACT

Background: Exclusive breastfeeding has a good impact on the baby's growth and development. Therefore, the role of health workers, especially midwives, is needed to provide an education about the importance of exclusive breastfeeding for babies. The purpose of this study was to determine the effect of lactation education conducted by midwives related to exclusive breastfeeding behavior for mothers and pregnant women.

Subjects and Method: This study is a meta-analysis study with Population: Mothers and pregnant women, Intervention: lactation education by midwives, Comparison: without midwife lactation education and Output: Exclusive breastfeeding behavior. The article search process is carried out through the Pubmed web search engine and is a research article published from 2017-2022. The articles obtained will be filtered using the stages according to the PRISMA flow diagram.

Results: A total of 9 articles used in this study were reviewed and met the requirements for a meta-analysis, the research conducted in these articles was carried out in various countries such as Indonesia, Bangladesh, Euthiopia, and Spain. Where from the meta-analysis of 9 cross-sectional articles, it is known that there is an influence between lactation education by midwives and exclusive breastfeeding behavior for mothers and pregnant women (aOR= 1.60; 95% CI= 1.37 to 1.88; p= 0.008).

Conclusion: Lactation education by midwives increases exclusive breastfeeding behavior for mothers and pregnant women.

Keywords: lactation education, exclusive breastfeeding, midwives, mothers, pregnant women, meta-analysis.

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Cite this as:

Ramadhani AK, Suryananda A (2022). Meta-Analysis: The Effect of Lactation Education by Midwives on Exclusive Breastfeeding Behavior in Mothers and Pregnant Women. J Health Promot Behav. 07(02): 86-96. <https://doi.org/10.26911/thejhp.2022.07.02.01>.



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BACKGROUND

The critical period of growth and development in human life is infancy. Also, nutrition becomes very important during this period. Breast milk is the best food for babies in the first few months of life (Ghanbarnejad et al., 2014). Breastfeeding is optimal nutrition for infant growth and

development and has specific biological and emotional impacts on the health of mothers and babies (Olang et al., 2012). Breast milk is rich in high quality, easily absorbed substances that provide energy, nutritional balance, ease of digestion, and healthy growth (Hockenberry and Wilson, 2014). Practically no substance can replace breast milk.

Breast milk contains more than 400 beneficial ingredients, such as white blood cells and antibodies, so it cannot be replicated in the laboratory. These substances keep disease away from infants (Taylor et al., 2004) reduce mortality, diabetes, diarrhea, abdominal colic, intestinal bleeding, acute respiratory infections, asthma, atopic disease and jaundice, and obesity (Heydarpour et al., 2011). They are also important for the development of neurons and the brain (Innis, 2003). Currently, the health of babies is very dependent on breastfeeding (Walker, 2010).

The benefits of breastfeeding for both mother and baby are widely noted and exclusive breastfeeding for the first six months of a child's life is recommended as the single most potential intervention to prevent child mortality (Jones et al., 2018). To that end, the World Health Assembly has set a global nutrition target, that by 20-25 at least 50% of infants should be exclusively breastfed at the age of six months (WHO, 2018). Despite its well-known benefits, developed countries continue to witness low rates of breastfeeding (Rollins et al., 2016). Globally, only 38% of infants are exclusively breastfed at the age of six months (WHO, 2018).

In Greece, breastfeeding initiation rates are high (85-94%) (Bouras et al., 2013), but breastfeeding rates decline rapidly over the following months; to 55% after the first month and to 12-22% at the end of the sixth month (Theofilogiannakou et al, 2006). The rate of exclusive breastfeeding at the age of six months ranges from 0.3-23.4%. (Ladomenou, 2007). However, these data lack a standardized definition and method used to monitor breastfeeding rates and duration, making it difficult to compare these figures among other countries. Thus, according to national data on breastfeeding, women in Greece seem to breastfeed exclusively at six

months at only 0.7% (Gaki et al, 2009). This figure is much lower than the national data of other countries, such as Denmark (17.2%), Spain (28.5%), Portugal (34.0%), Hungary (43.9%) or Slovakia (49.3%) (Bosi, 2016).

The World Health Organization has identified several key factors that contribute to low rates of exclusive breastfeeding, including social beliefs that support mixed feeding, hospital practices that do not support breastfeeding, and lack of knowledge among women and their partners (WHO, 2014). Furthermore, factors related to continued breastfeeding can be categorized into a) socio-demographic factors; b) biomedical factors and c) psychosocial factors such as breastfeeding attitudes and self-efficacy. Psycho-social factors are very important for clinical practice, because they can be modified.

Maternal breastfeeding self-efficacy is an important psychometric factor that positively influences breastfeeding rates (Inoue, 2012) and identifies mothers at high risk for early cessation of breastfeeding in various groups of mothers. In addition, in terms of increasing exclusive breastfeeding behavior, there are several important things to consider, such as the support factor from the husband, support from health workers in terms of providing education and support for parents and the surrounding environment (Rostamkhan et al., 2020)

Although breastfeeding is a natural physiological process, it is also a learned behavior (Whitney and Rolfes, 2018). Maternal knowledge about breastfeeding and breastfeeding attitudes are associated with longer duration and intention to breastfeed (Scott et al., 2015). Mothers with a propensity for active breastfeeding were more likely to maintain breastfeeding longer, whether exclusively or not. In addition, mothers who found breastfeeding to be more practi-

cal, healthier, and cheaper to choose formula milk less frequently than mothers who found breastfeeding to be inconvenient and embarrassing (Cox et al., 2015).

SUBJECTS AND METHOD

1. Study Design

This research is a type of meta-analysis research. The source of the articles used is from database searches such as Pub-Med, Google Scholar and Science Direct. The keywords used in the article search were Lactation AND Education AND Breastfeeding AND Midwife AND Mother AND Pregnant. Search articles using full text filters and are articles published from 2017 to 2022.

2. Inclusion Criteria

The inclusion criteria of this study were mothers who breastfed their children with exclusive breastfeeding and women who were during pregnancy and this is a quantitative study that discusses the effect of lactation education on exclusive breastfeeding behavior for mothers and pregnant women carried out by midwives. Are all types of primary study research (full text), quantitative research that has a statistical value of OR/mean/median/SD/95% CI, written in both English and Indonesian, published articles from 2017-2022.

3. Exclusion Criteria

The exclusion criteria for this research are qualitative research articles and are research conducted before 2017 and written in languages other than English and Indonesian.

4. Operational Definition of Variables

This research was conducted based on the previously determined PICO formula. The formulation of the PICO and this research are Population: Mothers and Pregnant Women Intervention: Lactation Education by

Midwives Comparison: Without Midwife Lactation Education and Outcome: Exclusive Breastfeeding Behavior.

Lactation education is an educational process or learning about breastfeeding children with exclusive breastfeeding that is carried out by mothers or prospective mothers. This process includes the correct way of breastfeeding, breast milk management, as well as the benefits of exclusive breastfeeding. Meanwhile, exclusive breastfeeding behavior is the behavior of a mother to provide exclusive breastfeeding to her child from birth to 6 months on a regular basis without additional fluids, such as formula milk, sugar water, and other types of fluids.

5. Data Analysis

Articles were analyzed using the Review Manager (RevMan) 5.3 application to calculate effect size and heterogeneity, and form the final results of the meta-analysis. The results of data processing are presented in the form of forest plots and funnel plots.

RESULTS

Process of searching article was carried out by searching several journal databases Pub-Med, Scencedirect, and Google scholar. it can be seen using the PRISMA FLOW flow-chart shown in Figure 1.

The initial search for articles sourced from various databases obtained initial results of 1085 articles, after which they will be filtered again by going through various processes such as checking for duplicates, checking the suitability of the title and abstract and the last is checking the full text. Where after going through several processes obtained 9 articles that meet the inclusion and exclusion criteria that have been set previously.

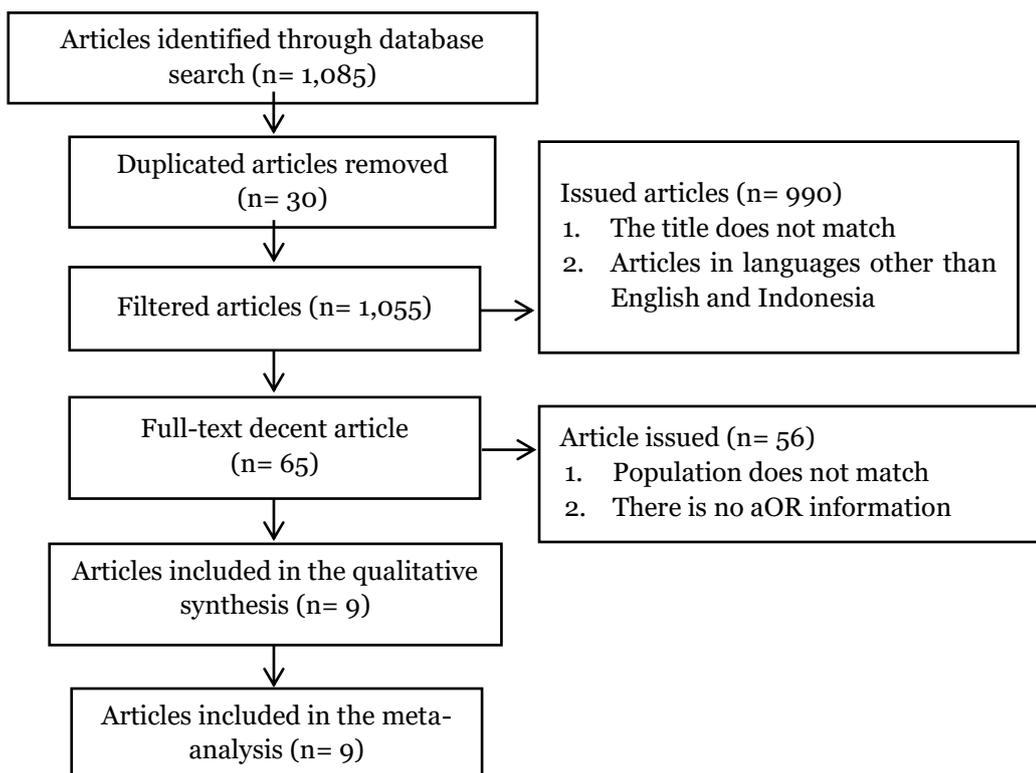


Figure 1. Results of Prisma Flow Diagrams

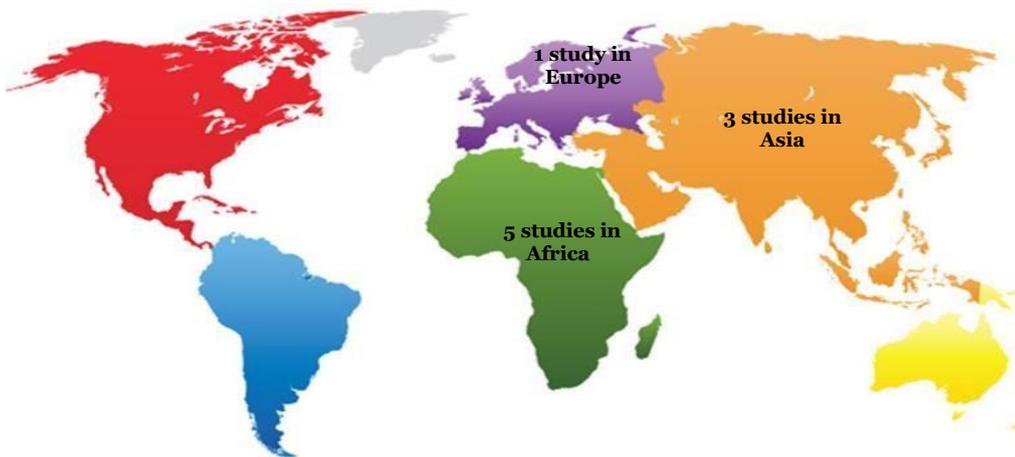


Figure 2. Research Distribution Map

figure 1. Research related to the effect of lactation education by midwives on exclusive breastfeeding behavior in mothers and pregnant women consisted of 9 articles from the initial search process yielding 1,085 articles, after the deletion process, articles were published with 1,055 requirements for full-text review more carry on. A

total of 9 articles that met the quality assessment were included in the quantitative synthesis using a meta-analysis.

It can be seen in Figure 2 that the research articles come from three continents, Asian continent (Indonesia, Bangladesh), the African continent (Ethiopia), and the European continent (Spain).

Table 1. Assessment of study quality published by Joanna Briggs Institute (JBI)

No	Indicator	Publication (Author and Year)								
		Azeze et al, 2019	Ballesta-Castilejos et al, 2020	Gebrem eskel et al, 2019	Nurfatimah et al, 2019	Hossain et al, 2018	Titaley et al, 2021	Azeze et al, 2021	Mamo et al, 2020	Yirdaw et al, 2018
1	Were the criteria for inclusion in the sample clearly defined?	1	1	1	1	1	1	1	1	1
2	Were the study subjects and the setting described in detail?	1	1	1	1	1	1	1	1	1
3	Was the exposure measured in a valid and reliable way?	1	1	1	1	1	1	1	1	1
4	objective, standard criteria used for measurement of the condition?	1	1	1	1	1	1	1	1	1
5	Were confounding factors identified?	0	1	1	1	1	1	1	1	1
6	Were strategies to deal with confounding factors stated?	0	1	1	1	1	1	1	1	1
7	Were the outcomes measured in a valid and reliable way?	1	1	1	1	1	1	1	1	1
8	Was appropriate statistical analysis used?	1	1	1	1	1	1	1	1	1
	Total	6	8	8	8	8	8	8	8	8

Table 2. Description of Primary Research included in the Meta-Analysis

No	Author (Year)	Country	Study Design	Sample	Population (P)	Intervention (I)	Comparison (C)	Outcome (O)	aOR (95 % CI)
1	(Azeze et al., 2019)	Ethiopia	Cross Sectional	412	Mother	Exercise and breastfeeding factors	No breastfeeding practice	Breastfeeding behavior with exclusive breastfeeding	1.52 (0.23-4.65)
2	(Ballesta-Castillejos et al., 2020)	Spain	Cross Sectional	5,671	Mother	Factors that breastfeeding behavior	In addition to factors that influence breastfeeding behavior	Breastfeeding behavior with exclusive breastfeeding	2.10 (1.32-3.34)
3	(Gebremeskel et al., 2019)	Ethiopia	Cross Sectional	803	Mother	Early Initiation Breastfeeding	Late Initiation Breastfeeding	Breastfeeding behavior with exclusive breastfeeding	1.15 (0.84-1.58)
4	(Nurfatimah et al., 2019)	Indonesia	Cross Sectional	50	Pregnant mother	Lactation Counseling	No lactation counseling	Breastfeeding behavior with exclusive breastfeeding	4.60 (1.0-21.7)
5	(Hossain et al., 2018)	Bangladesh	Cross Sectional	3,541	Mother	Lactation Counseling	No lactation counseling	Breastfeeding behavior with exclusive breastfeeding	1.22 (0.73-2.05)
6	(Titaley et al., 2021)	Indonesia	Cross Sectional	1,210	Mother	Lactation Counseling	No lactation counseling	Breastfeeding behavior with exclusive breastfeeding	1.40 (1.08-1.82)
7	(Azene et al., 2021)	Ethiopia	Cross Sectional	741	Mother	Lactation Counseling	No lactation counseling	Breastfeeding behavior	3.91 (3.98-7.72)
8	(Mamo et al., 2020)	Ethiopia	Cross Sectional	725	Mother	Lactation Counseling	No lactation counseling	Breastfeeding behavior	2.544 (1.23-5.22)
9	(Yirdaw et al., 2018),	Ethiopia	Cross Sectional	500	Mother	Lactation Counseling	No lactation counseling	Breastfeeding behavior	5.508 (2.46-12.32)

An assessment of the quality of the articles used in this study can be seen in table 1. Then Table 2 shows that 9 articles from a cross-sectional study provide evidence about the effect of lactation education by midwives on exclusive breastfeeding behavior in mothers and pregnant women. Then in table 2 it can be seen about the details of the articles used in this study, such as the study population, intervention, comparison, and the results of each study. All articles used in this study are articles with a cross sectional study design.

Based on the results of the forest plot (figure 3) of the cross sectional study design, it is known that lactation education by midwives has an effect of 1.60 on exclusive breastfeeding behavior by mothers and

pregnant women. The effect of lactation education and breastfeeding behavior was also shown to be significant (aOR= 1.60; 95% CI= 1.37 to 1.88 p= 0.008). In the results of the analysis, it is also known that $I^2= 70%$, which means that the distribution of the data is heterogeneous (random effect model).

In (Figure 4) it can be seen about the Funnel Plot from the results of the data analysis that has been carried out, where it can be seen that the shape of the funnel plot is asymmetrically distributed. This asymmetrical funnel plot distribution indicates that there is a potential for bias. Funnel plot has bias, right side 5 plots, left side 3 plots and 1 plot sticks to the vertical line.

Study or Subgroup	log[Odds Ratio]	SE	Weight	Odds Ratio IV, Fixed, 95% CI	Year
Yirdaw 2018	1.7062	0.411	3.9%	5.51 [2.46, 12.33]	2018
Hossain 2018	0.1989	0.262	9.5%	1.22 [0.73, 2.04]	2018
Nurfatihah 2019	1.5261	0.7786	1.1%	4.60 [1.00, 21.16]	2019
Gebremeskel 2019	0.1398	0.1603	25.5%	1.15 [0.84, 1.57]	2019
Azeze 2019	0.4187	0.9635	0.7%	1.52 [0.23, 10.05]	2019
Mamo 2020	0.9337	0.3671	4.9%	2.54 [1.24, 5.22]	2020
Castillejos 2020	0.7419	0.2369	11.7%	2.10 [1.32, 3.34]	2020
Titaley 2021	0.3365	0.1324	37.4%	1.40 [1.08, 1.81]	2021
Azene 2021	1.3635	0.3472	5.4%	3.91 [1.98, 7.72]	2021
Total (95% CI)			100.0%	1.60 [1.37, 1.88]	

Heterogeneity: $\text{Chi}^2 = 26.75$, $\text{df} = 8$ ($P = 0.0008$); $I^2 = 70\%$
 Test for overall effect: $Z = 5.83$ ($P < 0.00001$)

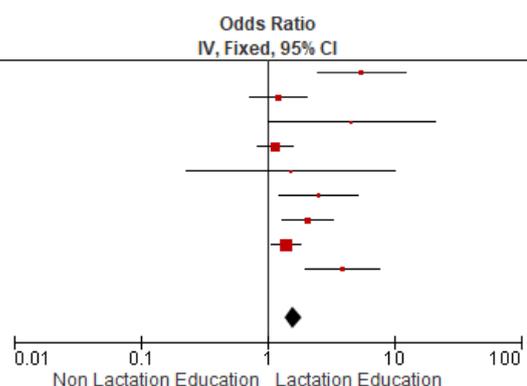


Figure 4. Forest plot of the effect of lactation education by midwives on exclusive breastfeeding behavior in mothers and pregnant women

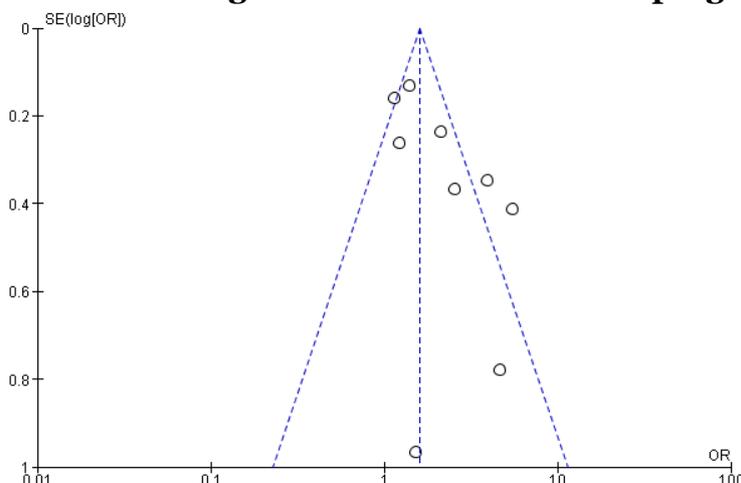


Figure 4. Funnel plot of the effect of lactation education by midwives on exclusive breastfeeding behavior in mothers and pregnant women

DISCUSSION

This study is a meta-analysis study with the theme of the effect of lactation education by midwives on exclusive breastfeeding behavior in mothers and pregnant women. The independent variable in this study is lactation education by midwives, while the dependent variable in this study is exclusive breastfeeding behavior by mothers and pregnant women. Estimation of the combined effect of the effect of lactation education by midwives on exclusive breastfeeding behavior for mothers and expectant mothers was performed using Revman 5.3.

The analysis is based on a cross sectional study design. Based on the results of the forest plot, it was found that there was an effect of lactation education by midwives on exclusive breastfeeding behavior for mothers and pregnant women of 1.60 (aOR= 1.60; 95% CI= 1.37 to 1.88 p= 0.008). In the analysis results, it is also known that $I^2 = 70\%$, which means that the data distribution is heterogeneous (random effect model). From the results of the funnel plot, it is distributed asymmetrically, which indicates that there is a potential bias. The funnel plot has a bias, right side 5, left side 3 and 1 stick to the vertical line.

The results of this study are also in accordance with the research conducted by Nurfatimah et al., (2019), it is known that counseling regarding lactation is very influential with exclusive breastfeeding. In the study, it was stated that lactation counseling provided by midwives to mothers and prospective mothers regarding early initiation of breastfeeding (IMD) was very important to encourage and support mothers and prospective mothers to provide exclusive breastfeeding for their babies. Lactation counseling also increases the number of mothers who provide exclusive breastfeeding to their babies.

Gebremeskel et al., (2019) also stated that lactation counseling at the time of fetal examination also had an effect on exclusive breastfeeding for infants, this is also in line with research conducted by Azeze et al., (2019) where the results of the research described that the counseling carried out will provide understanding and additional insight regarding the benefits and advantages of providing exclusive breastfeeding to children. Ballesta-Castillejos et al., (2020) also stated that lactation counseling is very important, especially for mothers who are having children for the first time, where generally for mothers who are beginners there are still many things that are not known and that is where the importance of lactation counseling provides education to mothers regarding the importance of providing exclusive breastfeeding to children.

The results of the research by Hossain et al., (2018) showed that the success of exclusive lactation could be achieved by women who received counseling about the importance of exclusive lactation for the growth and development of children, especially during the first 6 months after birth. Titaley et al., (2021) explained that knowledge about lactation by mothers can increase mother's awareness to give exclusive breastfeeding. Therefore, lactation education is very necessary to increase maternal self-efficacy so that it can accelerate the right practice of exclusive breastfeeding. If mothers and prospective mothers have never received information or counseling about lactation, then mothers and prospective mothers do not know when is the right time to initiate lactation so that it can affect the growth of children Azene et al., (2021).

The research of Mamo et al., (2020) supports the importance of lactation counseling to increase awareness of mothers and

expectant mothers so as to encourage mothers and expectant mothers to exclusively breastfeed. From the research of Yirdaw et al., (2018), it is known that exclusive breastfeeding by mothers is still in the low category so it is highly recommended to provide lactation counseling to mothers to increase the number of mothers who give exclusive breastfeeding to their children.

AUTHOR CONTRIBUTION

Akbar Suryananda and Amanda Kesli Ramadhani worked together to determine research topics, search for articles through several databases, conduct data analysis and write meta-analytical articles that were carried out simultaneously.

FUNDING AND SPONSORSHIP

This study is self-funded.

CONFLICT OF INTEREST

There is no conflict of interest in this study.

ACKNOWLEDGMENT

We are very grateful for the ease of searching data through several databases such as PubMed, Scencedirect and Google Scholar.

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