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Masters Program in Public Health, Universitas Sebelas Maret
Meta-Analysis

Meta-Analysis: The Effect of Early Breastfeeding Initiation on Hypothermia and Diarrhea in Infants

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ABSTRACT

Background: Early initiation of breastfeeding is the process of letting the baby instinctively breastfeed within the first hour after birth, along with skin-to-skin contact between the baby and the mother's skin which can prevent hypothermia in the baby. This study aims to analyze the relationship between early initiation of breastfeeding and the incidence of hypothermia in infants.
Subjects and Method: This is a systematic review and meta-analysis study. Population= Infants aged 0-59 months, Intervention= early initiation of breastfeeding, Comparison= no early initiation of breastfeeding, Outcomes= incidence of hypothermia and diarrhea. Article searched through journal databases include: PubMed, Science Direct, Google Scholar, research gate, and Springerlink. The keywords used are breastfeeding" OR "early initiation of breastfeeding" OR "initiation breast-feeding" AND newborn OR neonatal OR neonate OR infant OR children OR child AND hypothermia OR “low body temperature” OR “low temperature” OR thermoregulation OR “body temperature regulation "AND diarrhea OR diarrhea. Articles were selected with the help of PRISMA flow diagrams. Inclusion criteria included full-text articles with cross-sectional studies, multivariate analysis results in the form of AOR values and published in English from 2011-2021. Eligible articles were analyzed using Revman 5.3 application.
Results: Sixteen articles from Ethiopia, Vietnam, Bangladesh, Pakistan, Tanzania, and India were included in the meta-analysis. Meta-analysis in 7 cross-sectional studies showed that early initiation of breastfeeding was able to reduce the risk of hypothermia in infants (aOR= 0.32; 95% CI= 0.21 to 0.48; p<0.001). Meta-analysis in 9 cross-sectional studies showed that early initiation of breastfeeding was able to reduce the risk of diarrhea in infants (aOR = 0.81; 95% CI = 0.76 to 0.86; p<0.001).
Conclusion: Early initiation of breastfeeding reduced the risk of hypothermia and diarrhea in infants. Researchers recommend implementing early initiation of breastfeeding in the first hour of birth to prevent the risk of hypothermia and diarrhea in infants.

Keywords: early initiation of breastfeeding, hypothermia, diarrhea, meta-analysis

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BACKGROUND

Hypothermia is a major cause of morbidity and mortality in newborns in developing countries (Nebiyu et al., 2021). Hypothermia is defined as a pathological condition where the baby's temperature drops below the

recommended normal temperature range, which is a body temperature of less than 36.5°C to 37.5°C (WHO in Vilinsky and Sheridan, 2014).

The global prevalence of neonatal hypothermia ranges from 11% - 95% (Ukke and Diriba, 2019). Globally, hypothermia is estimated to occur in 17 million neonates every year in developing countries (Farhadi et al., 2014). Neoni's research (2021) showed that the prevalence of neonatal hypothermia in Iran was 53.3%, in Brazil 66.9%, in West Africa at 62%, in East Africa at 57.2%, in Ethiopia 80%, in the Netherlands by 93%, and in Indonesia was 90%.

Infants who are hypothermic have a higher risk of developing hypoglycemia, respiratory distress syndrome, jaundice, and metabolic acidosis (Yitayew et al., 2020). The high prevalence of hypothermia can also increase infant mortality by 5 times and every 1°C decrease in body temperature can increase mortality by 80% (Demissie et al., 2018).

Another condition in low-income countries that causes high morbidity and mortality among toddlers is diarrheal disease (Melese et al., 2019). Diarrhea is a condition in which the baby defecates with a watery or liquid consistency 3 times or more and if the mother perceives an increase in the frequency or liquidity of feces more than usual (Dagnew et al., 2019).

The estimated global incidence of diarrhea is an estimated 2.5 billion cases of diarrhea occur among toddlers each year (Melese et al., 2019). Fenta et al. (2020) described the prevalence of diarrheal disease in infants in Ethiopia by 54%, in Iraq by 46.1%, in Tanzania by 32.7%, and in Cameron by 23.8%. In Indonesia, based on the 2019 Indonesian Health Profile data, diarrhea is an infectious disease that accounts for the highest mortality rate in the group of toddlers (12–59 toddlers) with 314 deaths (10.7%) and 746 deaths (12.1%) in children aged 29 days-11 months old (Ministry of Health of RI, 2019).

Babies with diarrhea will face many problems such as loss of appetite and inadequate absorption of nutrients which can potentially lead to weight loss and growth failure. Diarrhea also causes water and electrolyte deficits so that dehydration occurs if it is not replaced on time (Fetensa et al., 2020).

The incidence of hypothermia and diarrhea in infants which are the main causes of increased morbidity and mortality in infants aged 0-59 months old can be overcome by carrying out early initiation of breastfeeding during the management of newborn care (Ekubay et al., 2018). Early initiation of breast-freeding, which is to give newborns the opportunity to breastfeed within the first hour after birth (Seidu et al., 2020).

At the time of initiation of early breastfeeding, there is skin to skin contact between the baby and mother, when the baby's skin is attached to the mother's chest, the skin temperature of the mother's chest will adjust to the baby's body temperature, if the baby is cold, the mother's skin temperature will automatically rises by two degrees to warm the baby thereby reducing the risk of hypothermia (Boundy et al., 2016).

The results showed that infants who had an EBF within the first hour after birth had a lower risk of hypothermia (28.9%) than infants who did not have an EBF (81.4%) and infants who did not have an EBF had a 5 times risk of developing hypothermia compared to those who have done EBF (Nebiyu et al., 2021).

At the time of EBF, the baby will also receive the first breast milk, namely colostrum, which colostrum contains protective substances such as lactobacillus bifidus, lactoferrin, and secretory immunoglobulin A (sIgA) which can protect babies from infectious diseases that cause diarrhea such

as Escherichia coli, Campylobacter, Shigella, and salmonella enterica (Shahid et al., 2019).

The research of Hajiebhoy et al. (2014) also showed that children who received early initiation of breastfeeding had a 0.74 times risk of experiencing diarrhea compared to children who were not given an EBF. Infants who were not given EBF had a 9 times higher risk of experiencing diarrhea compared to infants who were given EBF (Gizaw et al., 2017).

Early initiation of breastfeeding also has other important benefits such as lowering the risk of gastrointestinal infections, sepsis, pneumonia, tetanus, and premature birth (Phukan et al., 2018).

SUBJECTS AND METHOD

1. Study Design

This was a systematic review and meta-analysis, using PRISMA flow diagram guidelines. Search articles through journal databases including PubMed, Google Scholar and Science Direct, Researchgate and Springerlink. The articles used in this study were articles that have been published from 2011-2021.

The keywords to search for articles were as follows: breastfeeding OR "early initiation of breastfeeding" OR "initiation breastfeeding" AND newborn OR neonatal OR neonate OR infant OR children OR child AND hypothermia OR “low body temperature” OR “low temperature” OR thermoregulation OR “ body temperature regulation” AND diarrhea OR diarrhea.

2. Inclusion Criteria

In this study, the inclusion criteria were full text articles using a cross sectional study design in English, the analysis used was multivariate with adjusted Odds Ratio (aOR), the subjects were infants aged 0-59 months, the intervention was early initiation of breastfeeding the outcome was the incidence of hypothermia and diarrhea.

3. Exclusion Criteria

Exclusion criteria in this study include articles published before 2011, articles on primary studies with RCT study design and observational studies other than cross-sectional (cohort and case-control) and articles using other than English.

4. Operational Definition

In formulating the study problem, the researchers used PICO. The population is infants aged 0-59 months. Intervention is early initiation of breastfeeding with comparison, which is no initiation of early breastfeeding, outcomes are the incidence of hypothermia and diarrhea.

Early initiation of breastfeeding is a post-natal activity by placing the baby on the mother's chest immediately after birth so that the baby can find the mother's nipple by her/his self and provide the opportunity for the baby to actively breastfeed within the first hour of birth, both in normal delivery and cesarean section delivery facilitated by personnel. health.

Hypothermia is a condition in which the baby's body temperature when the axillary temperature measured is < 36.50C.

Diarrhea is a condition when a baby defecates with a liquid or watery consistency 3 times a day.

5. Instrument of the Study

An assessment of the quality of research articles was carried out using the Critical Appraisal Checklist for cross-sectional Study published by CEBM University of Oxford 2014 (CEBM, 2014).

6. Data Analysis

Articles were collected using PRISMA Flow diagrams and analyzed using the Review Manager (RerMan) 5.3 application by calculating the effect size and heterogeneity to determine the combined research model and form the final result of the meta-analysis.

RESULTS

This study was related to the effect of early initiation of breastfeeding on the incidence of hypothermia and diarrhea in infants consisting of 16 articles from 2 continents, there are 6 research articles from the Asian continent and 10 research articles from the African continent.

The search for articles was carried out using a database based on the PRISMA flow diagram in Figure 1 after the study quality assessment was carried out, there were 16 articles that fulfilled the quantitative requirements so that they could be included in a systematic study and meta-analysis. Of the 16 articles, they were divided into 2 categories according to the outcome of the intervention, namely 7 articles for the incidence of hypothermia and 9 articles for the incidence of diarrhea among infants.

Study Quality Assessment

Assessment of the quality of research articles using the Critical Appraisal Checklist for cross-sectional study which can be seen in table 1. The criteria for evaluating articles with cross-sectional study design are as follows:

1. Does the study formulate the research question (research problem) clearly?
2. Is the cross sectional research method appropriate to answer the research question?
3. Is the method for selecting research subjects clearly described?
4. Does the sampling technique not introduce bias (selection)?
5. Is the sample representative of the research target population?
6. Is the sample size based on consideration of the results of previous studies regarding statistical power?
7. Is the minimum response rate achieved?
8. Is the instrument for determining hypothermia and diarrhea (questionnaire) valid and reliable?
9. Has statistical significance been tested?
10. Did the researcher report confidence intervals?
11. What confounding factors have been taken into account?
12. Are the results applicable in practice or in the community?

After assessing the quality of the study, a total of 16 articles were divided into 2 categories according to the dependent variable included in the meta-analysis quantitative synthesis process using RevMan 5.3.

RESULTS

1. The effect of early initiation of breastfeeding on hypothermia

a. Forest Plot

The interpretation of the results of the meta-analysis process can be seen through the forest plot. In Figure 2, it can be seen that there is high heterogeneity (I^2=59%; p= 0.020), therefore, the forest plot data analysis used a random effect model. Then it was found that there was an effect of early initiation of breastfeeding on the incidence of hypothermia in infants aged 0-59 months old where babies who had early initiation of breastfeeding (MD) at one hour after the baby was born could reduce the incidence of hypothermia in infants by 0.32 times compared to no initiation. early breastfeeding significantly (aOR= 0.32; CI 95%= 0.21 to 0.48 ; p<0.001).

b. Funnel Plot

Figure 3 showed the funnel plot of the effect of early initiation of breastfeeding on the incidence of hypothermia in infants. The funnel plot showed no publication bias, which was indicated by a symmetrical distribution of the estimated results of the primary study, the right plot was 3 and the left plot was 3, while there was 1 plot that touched the vertical line.

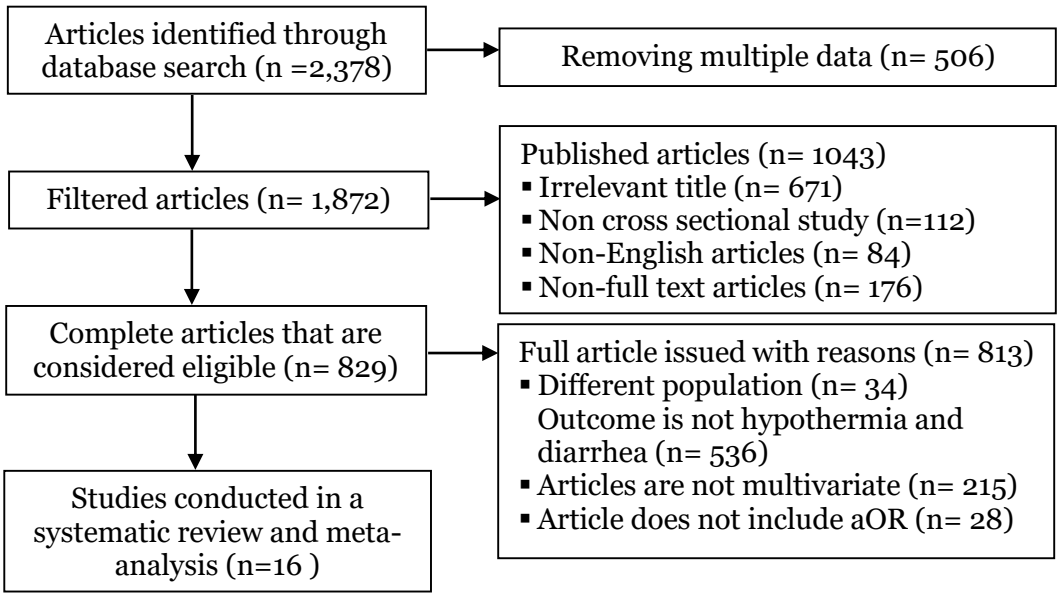

Figure 1. The Results of Prism Flow Diagram

Table 1. Assessment of the quality of cross-sectional study design

Primary Studies	Criteria												Total
	1	2	3	4	5	6	7	8	9	10	11	12	
Seyum and Ebrahim (2015)	1	1	1	1	1	1	1	1	0	1	1	1	11
Demissie et al. (2018)	1	1	1	1	1	1	1	1	1	1	1	1	12
Yitayew et al. (2020)	1	1	1	0	1	1	1	1	1	1	1	1	11
Ukke dan Diriba (2019)	1	1	1	1	1	1	1	1	1	1	1	1	12
Bayih et al. (2019)	1	1	1	1	1	1	1	1	1	1	1	1	12
Nebiyu et al. (2021)	1	1	1	1	1	1	1	1	1	1	1	1	12
Raj et al. (2015)	1	1	1	1	1	1	1	1	1	1	1	1	12
Gizaw et al. (2017)	1	1	1	1	1	0	1	1	1	1	1	1	11
Saeed et al. (2020)	1	1	1	1	1	0	1	1	1	1	1	1	11
Ahmed et al. (2020)	1	1	1	1	1	0	1	1	1	1	1	1	11
Hajeebhoy et al. (2014)	1	1	1	1	1	0	1	0	1	1	1	1	10
Ogbo et al. (2017)	1	1	1	1	1	0	1	1	1	1	1	1	11
Srivastava et al. (2020)	1	1	1	1	1	0	1	1	1	1	1	1	11
Ogbo et al. (2018)	1	1	1	0	1	0	1	1	1	1	1	1	10
Sheikh et al. (2020)	1	1	1	1	1	0	1	1	1	1	1	1	11
Hossain (2017)	1	1	1	1	1	0	1	1	1	1	0	1	10

2. The effect of early initiation of breastfeeding on the incidence of diarrhea

a. Forest Plot

The interpretation results of the meta-analysis process can be seen through the forest plot. In Figure 4, it can be seen that there was high heterogeneity (I^2= 58%; p= 0.02), so the forest plot of data analysis used a random effect model. Then it was found that there was an effect of early initiation of breastfeeding on the incidence of diarrhea in infants aged 0-59 months where babies who had early initiation of breastfeeding (EBF) at one hour after the baby was born could significantly reduce the incidence of diarrhea in infants by 0.81 times higher compared to no early initiation of breastfeeding (aOR= 0.81; CI 95%= 0.76 to 0.86; p<0.001).

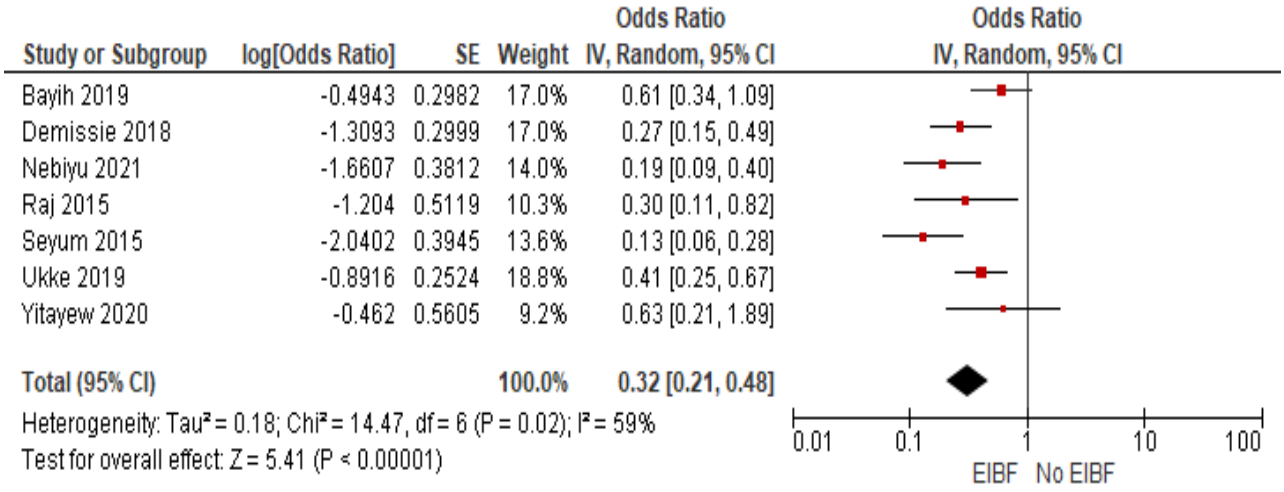

Figure 2. Forest Plot of the Effect of EBF on Hypothermia

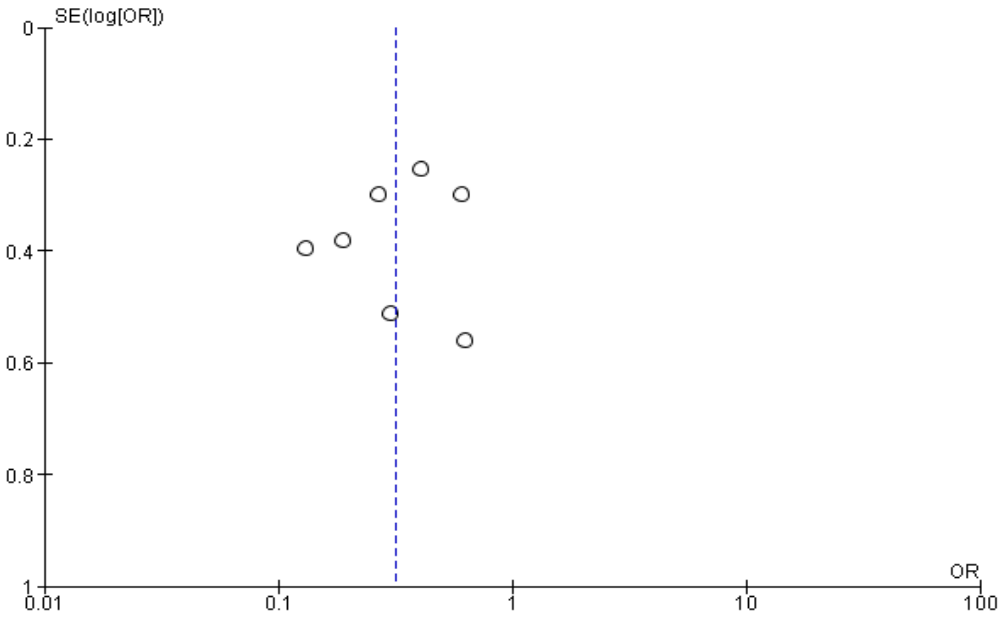

Figure 3. Funnel Plot of the Effect of EBF on Hypothermia

b. Funnel Plot

Figure 5 showed the Funnel Plot effect of the early initiation of breastfeeding on the incidence of diarrhea among infants. The funnel plot showed no publication bias, which was indicated by a symmetrical distribution of the estimated primary study results, the right plot was 3 and the left plot was 3, while there were 3 plots that touched the vertical line.

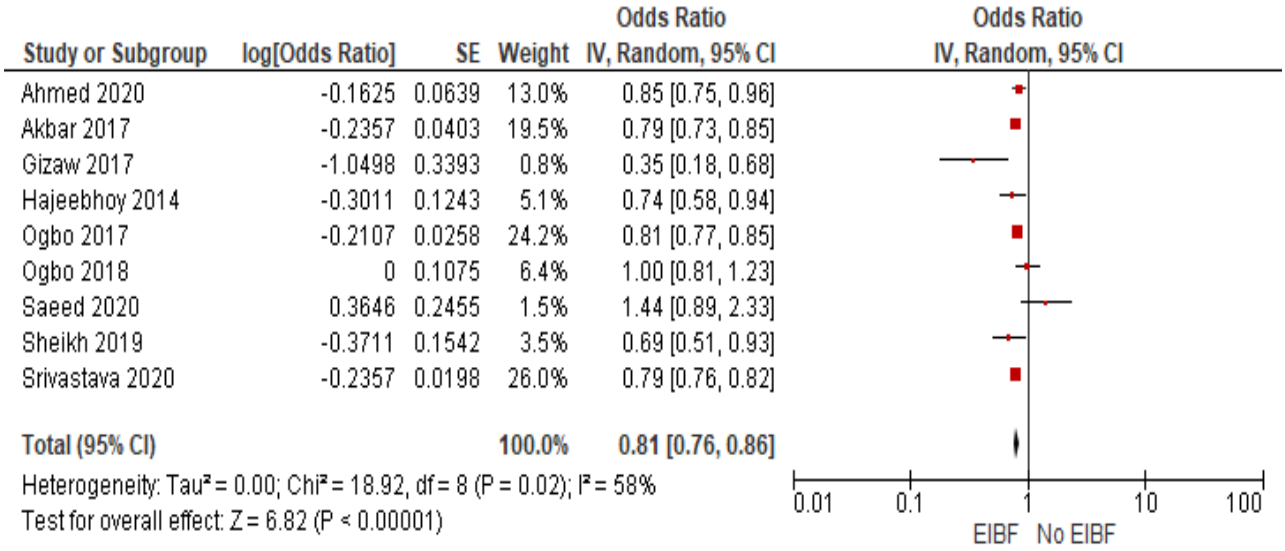

Figure 4. Forest Plot of EBF effect on diarrhea

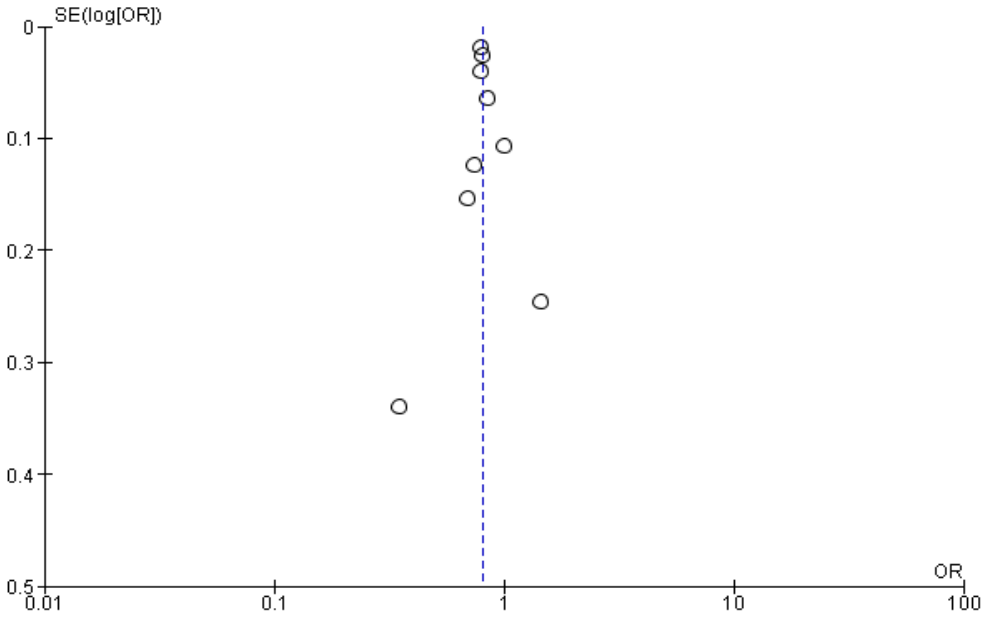

Figure 5. Funnel Plot of EBF effect on diarrhea

DISCUSSION

This systematic review and meta-analysis study took the topic of the effect of early initiation of breastfeeding on the incidence of hypothermia and diarrhea in infants. The independent variable in this study was early initiation of breastfeeding and the dependent variable analyzed was the incidence of hypothermia and diarrhea. This intervention was designed with the aim of reducing the risk of hypothermia and diarrhea by giving early initiation of breastfeeding in the first hour of birth with a cross sectional study design.

Research that discusses the incidence of hypothermia and diarrhea is considered important because hypothermia and diarrhea in infants aged 0-59 months is a major problem in increasing infant morbidity and

mortality in countries in the world, especially in developing countries.

This meta-analysis study used 16 primary study articles identified from around the world from 2011 to 2021. This systematic review and meta-analysis study used previous primary studies that have controlled for confounding factors which can be seen from the inclusion criteria of previous primary studies used is the result of multivariate analysis in the form of adjusted odds ratio (aOR).

Confounding factors can affect the relationship or effect of exposure to the occurrence of the disease estimated by the study that is not similar to the actual relationship or effect that occurs in the target population, in other words, the study results are invalid or incorrect (Murti, 2018).).

Data processing in this meta-analysis study was the effect of early initiation of breastfeeding on the incidence of hypothermia and diarrhea in infants using the Review Manager (RevMan) 5.3 application with the generic inversion of variance method.

The description of the results of this meta-analysis can be seen in the forest plot which provided a visual description of the magnitude of variation (heterogeneous) between the studies used in this meta-analysis research and the funnel plot which shows the relationship between the study effect size and the sample size from various studies and the possibility of publication bias that can be seen from the asymmetrical number of studies on the right and left sides depicted through the plot in the figure (Murti, 2018).

1. Early Initiation of Breastfeeding on Hypothermia

The results of a meta-analysis study using 7 primary study articles with a cross sectional study design showed that infants who received early initiation of breastfeeding within the first hour of birth could reduce the incidence of hypothermia by 0.32 times higher in infants aged 0-59 months compared to infants who were not initiated in early breastfeeding. This study showed that there was no publication bias which was indicated by the symmetry of the right and left plots where there were 3 plots on the left and 3 plots on the right and 1 plot touched the vertical line.

Publication bias in meta-analysis research can occur due to the influence of sample size, type of design, sponsorship, conflicts of interest and prejudices about the observed relationships. The strength of this meta-analysis study was that it can ensure that this type of meta-analysis study can provide strong evidence about the effect of early initiation of breastfeeding on the incidence of hypothermia among infants (Murti, 2018).

The results of this study are in line with the research done by Seyum and Ebrahim (2015) which stated that infants aged 0-23 months old who had early initiation of breastfeeding in the first hour of birth could reduce the risk of hypothermia by 0.13 times higher compared to infants who did not receive early initiation of breastfeeding (aOR= 0.13; 95% CI= 0.06 to 0.28; p<0.05). Research by Demissie et al. (2018) also explained that babies who were given early initiation of breastfeeding were able to reduce the risk of hypothermia by 0.27 times higher compared to babies who were not given early initiation of breastfeeding.

Early initiation of breastfeeding can prevent hypothermia through the mechanism of thermoregulator thermal synchrony and the mechanism of nutrition fulfillment (breast milk). The mechanism of thermoregulator thermal synchrony during EBF is the mother's body mechanism in increasing the body surface temperature of the chest from 30.10C to 37.60C as long as the baby is attached to the mother's chest (Boundy et al., 2016). The mother's skin is the right

thermoregulator for the baby, the temperature of the mother's chest skin will adjust to the baby's body temperature, if the baby is cold, the mother's skin temperature rises by two degrees automatically to warm the baby thereby reducing the risk of hypothermia, when the baby's temperature increases, the mother's skin temperature automatically drops one degree to stabilize the baby's temperature (Nebiyu et al., 2021).

The second EBF mechanism to help stabilize the body temperature of a hypothermic baby is the fulfillment of nutrition in the form of breast milk. Breast milk is needed by the baby to make subcutaneous tissue and fat which is an insulator for the baby's body temperature so that the baby does not easily lose heat (hypothermia) (Yitayew et al., 2020).

Infants who are hypothermic have a higher risk of developing hypoglycemia, respiratory distress syndrome, jaundice, and metabolic acidosis (Yitayew et al., 2020). The high prevalence of hypothermia can also increase infant's mortality by 5 times and every 1°C decrease in body temperature can increase mortality by 80% (Demissie et al., 2018).

2. Early Initiation of Breastfeeding on the Incidence of Diarrhea

The results of the meta-analysis of study on the effect of early initiation of breastfeeding on the incidence of diarrhea in infants using 9 primary study articles with a cross sectional study design showed that infants who had early initiation of breastfeeding one hour after the baby was born could significantly reduce the incidence of diarrhea in infants by 0.81 times higher compared to not doing early initiation of breastfeeding .

The results of the analysis showed that the aOR value of the effect of early initiation of breastfeeding on the incidence of diarrhea was almost close to 1, which mean that there was no significant relationship between EBF and diarrhea in infants. This is because there were several primary studies used in this meta-analysis study that have a low correlation value between BMI and diarrhea so that it affected the results of the analysis when they were combined into the meta-analysis study.

Funnel Plot of the effect of early initiation of breastfeeding on the incidence of diarrhea in infants. The funnel plot showed no publication bias, which was indicated by a symmetrical distribution of the estimated primary study results, the right plot was 3 and the left plot was 3, while there were 3 plots that touched the vertical line.

The results of this study are supported by Hajeebhoy et al. (2014) which showed that children who received early initiation of breastfeeding had a 0.74 times lower risk of developing diarrhea compared to children who were not given an EBF (aOR= 0.74; 95% CI= 0.58 to 0.93; $p<0.05$). A study by Gizaw et al., (2017) with a sample of 113 infants aged under 6 months also stated that infants who did not receive EBF during the first hour of birth had a 9.13 times higher risk of having diarrhea compared to infants who received EBF (aOR= 9.13; CI 95%= 1.78 to 4.67); $p<0.01$).

Early initiation of breastfeeding can reduce the risk of diarrhea in infants because at the time of EBF, the baby gets breast milk for the first time in the form of colostrum. Colostrum contains protective substances such as lactobacillus bifidus, lactoferrin, and secretory immunoglobulin A (sIgA) (Saragih, 2019).

Infants with diarrhea will face many problems such as loss of appetite and inadequate absorption of nutrients which can potentially lead to weight loss and growth failure. Diarrhea also causes water and electrolyte deficits so that dehydration occurs if it is not replaced on time (Fetensa et al., 2020).

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This study used personal fund from the main researcher.

AUTHOR CONTRIBUTION

Fristyaningrum Hidayah is the main researcher who choosed the topic and conducted a search for data collection in this study. Yulia Lanti Retno Dewi and Uki Retno Budihastuti conducted data analysis and reviewed research documents.

CONFLICT OF INTEREST

There was no conflict of interest in this study.

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REFERENCES

Boundy EO, Dastjerdi R, Spiegelman D, Fawzi WW, Missmer SA, Lieberman E, Kajeepeta S, Wall S, Chan GJ (2016). Kangaroo Mother Care and neonatal outcomes: A meta-analysis. J Paediatrics and Child Health. 52(5). 579. https://doi.org/10.1111/jpc.13218.

Dagnew AB, Tewabe T, Eshetu T, Kefelegn W, Zerihun K, Urgessa M, Teka T (2019). Prevalence and associated factors of visual impairment among school- age children in Bahir Dar City, Northwest Ethiopia. Clinical Optometry. 11 135-143. https://doi.org/10.2147/OPTO.S213047.

Demissie BW, Abera BB, Chichiabellu TY, Astawesegn FH (2018). Neonatal hypothermia and associated factors among neonates admitted to neonatal intensive care unit of public hospitals in Addis Ababa, Ethiopia. BMC Pediatr. 18(1): 1–10. https://doi.org/10.1186/s-12887-018-1238-0.

Fenta A, Alemu K, Angaw DA (2020). Prevalence and associated factors of acute diarrhea among under-five children in Kamashi district, western Ethiopia: Community-based study. BMC Pediatr. 20(1). https://doi.org/10.1186/s12887-020-02138-1.

Gizaw Z, Woldu W, Bitew BD (2017). Child feeding practices and diarrheal disease among children less than two years of age of the nomadic people in Hadaleala District, Afar Region, Northeast Ethiopia. Int Breastfeed J. 12(1): 1–10. https://doi.org/10.1186/s13006-017-01- 15-z.

Gribble KD, Hausman BL. (2012). Milk sharing and formula feeding: Infant feeding risks in comparative perspective. Australasian Medical J. 5(5): 275–283. https://doi.org/10.4066/AMJ.-2012.1222.

Hajeebhoy N, Nguyen PH, Mannava P, Nguyen TT, Mai LT (2014). Suboptimal breastfeeding practices are associated with infant illness in Vietnam. Int Breastfeed J. 9(1): 1–7. https://doi.org-/10.1186/1746-4358-9-12.

Murti B (2018). Prinsip dan Metode Riset Epidemiologi (5th edn) (Epidemiological Research Principles and Methods (5th edn)). Program Studi Ilmu Kesehatan Masyarakat, Program Pascasarjana, Universitas Sebelas Maret.

Nebiyu S, Berhanu M, Liyew B (2021). Magnitude and factors associated with neonatal hypothermia among neonates admitted in neonatal intensive care units: Multicenter cross-sectional study. J Neonatal Nursing. 27(2): 111–117. https://doi.org/10.1016/j.jnn.20-20.07.010.

Phukan D, Ranjan M, Dwivedi LK (2018).

Impact of timing of breastfeeding initiation on neonatal mortality in India. Int Breastfeed J. 13(1): 1–10. https://doi.org/10.1186/s13006-018-0162-0.

Shahid B, Ahmed T, Kabir S, Huq E, Shahunja KM, Faruque ASG, Rahman MM, Islam MM, Chisti MJ (2019). Consequences of Lack of Neonatal Breastfeeding in Infants Hospitalized for Diarrhea at an Urban Hospital, Bangladesh: A Case Control Design. GPH, 6. https://doi.org/10.1177/2333794X19851431.

Shibesh BF, Yalew WA, Beyene MB, Minyiwab GW (2020). Determinants of neonatal hypothermia among neonates admitted to neonatal intensive care unit northwest, Ethiopia, case-control study. J Maternal-Fetal and Neonatal Med. 0(0): 1–6. https://doi.org/10.1080/14767058.2020.1843153.

Ukke GG, Diriba K (2019). Prevalence and factors associated with neonatal hypothermia on admission to neonatal intensive care units in Southwest Ethiopia – A cross-sectional study. PLoS ONE. 14(6): 1–13. https://doi.org/10.1371/journal.pone.0218020.

Vilinsky A, Sheridan A (2014). Hypothermia in the newborn: An exploration of its cause, effect and prevention. BJM. 22(8): 557–562. https://doi.org/10.12968/bjom.2014.22.8.557.

Woldeamanuel BT. (2020). Trends and factors associated to early initiation of breastfeeding, exclusive breastfeeding and duration of breastfeeding in Ethiopia: Evidence from the Ethiopia Demographic and Health Survey 2016. Int Breastfeed J. 15(1): 1–13. https://doi.org/10.1186-/s13006-019-0248-3.

Yitayew YA, Aitaye EB, Lechissa HW, Gebeyehu LO (2020). Neonatal Hypothermia and Associated Factors among Newborns Admitted in the Neonatal Intensive Care Unit of Dessie Referral Hospital, Amhara Region, Northeast Ethiopia. Int J Pediatrics. 2020: 1–8. https://doi.org/10.1155/2020/3013427.

Yu JC, Khodadadi H, Malik A, Davidson B, Salles L, Bhatia J, Hale VL, Baban B (2018). Innate Immunity of Neonates and Infants. Front immunol. 9(July). 1759. https://doi.org/10.3389/fimmu.2018.0175.