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Meta-Analysis

Meta-analysis: Relationship between Antenatal Care Visits and Exclusive Breastfeeding

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ABSTRACT

Background: Breastmilk is the main source of nutrition for babies who cannot eat solid food until they are 6 months old. Exclusive breastfeeding education can be given as long as pregnant women make antenatal care visits. The purpose of this study was to determine the relationship between antenatal care visits and exclusive breastfeeding.
Subjects and Method: This study was a meta-analysis with the following PICO, population: mothers. Intervention: antenatal care visits. Comparison: no Antenatal Care visits. Result: Exclusive breastfeeding. The articles used in this study were obtained from three databases, namely Google Scholar, Pubmed, and Science Direct. Keywords to search for articles are "Antenatal Care Attendance" or "Antenatal Care Visit" or "Prenatal Care" and "Exclusive Breastfeeding" or "exclusively breastfed". Included articles are full-text English with a cohort study design from 2010 to 2021 and report on adjusted Odds Ratio (aOR) in multivariate analysis. Article selection is done by using PRISMA flow diagram. Articles were analyzed using the Review Manager 5.3 application.
Results: A total of 9 cross-sectional studies involving 19,716 mothers from Africa, Europe, and Asia were selected for systematic review and meta-analysis. The data collected showed that mothers who had antenatal care visits increased 1.50 times for exclusive breastfeeding compared to mothers who did not visit antenatal care (aOR = 1.50; 95% CI = 1.18 to 1.89); ($p < 0.001$).
Conclusion: Antenatal care visits increase exclusive breastfeeding.

Keywords: antenatal care, exclusive breastfeeding, meta-analisis

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BACKGROUND

Breastfeeding has many health benefits for both mother and baby. Breast milk contains all the nutrients a baby needs in the first six months of life. Breastfeeding protects against diarrhea and common childhood illnesses such as pneumonia, and may also have long-term health benefits for both mother and child, such as reducing the risk of overweight and obesity in childhood and adolescence. Exclusive breastfeeding means that the baby only gets breast milk. No other liquids or solids are given – not even water–except for oral rehydration solutions, or vitamin, mineral or drug drops or syrups (WHO, 2019).

Breastfeeding is an established intervention and is recommended for improving child nutrition. EBF for the first six months of an infant's life is a cost-effective inter-

vention in saving children's lives and it is recommended by WHO and the United Nations International Children's Fund (UNICEF) that mothers initiate breastfeeding within the first hour after birth (Mundagowa et al., 2019). WHO has set a target to increase the EBF rate to 50% by 2025 to improve maternal and infant nutrition (Gupta et al., 2019).

The World Health Organization envisions a world where every pregnant woman and newborn receives quality care during pregnancy, childbirth and the postnatal period. Within the reproductive health care setting, antenatal care (ANC) provides a platform for essential health care functions, including health promotion, screening and diagnosis, and disease prevention. It has been established that by implementing timely and appropriate evidence-based practices, ANC can save lives. Most importantly, ANC also provides opportunities to communicate with and support women, families and communities at critical times in a woman's life journey. This communication and support function of the ANC is key, not only to saving lives, but also to improving lives, utilization of health services, and quality of care. The positive experiences of women during ANC and childbirth can create the basis for being a healthy mother (WHO, 2016).

Antenatal care, a basic component of maternal health care, is an ideal entry point for delivering a variety of health and nutriation interventions to improve maternal and fetal well-being, breastfeeding behavior, and birth readiness (Biks et al., 2015). In addition, institutional delivery creates better opportunities for neonates to receive skin-to-skin care from their mothers, a newborn care practice that has been shown to increase the likelihood of early initiation, exclusiveness, and long duration of breastfeeding (Bhutta et al. 2013).

Counseled mothers practice exclusive breastfeeding significantly more than the uncounted group. This may be because during antenatal care, mothers get information about infant feeding and advice to start breastfeeding immediately after birth and practice exclusive breastfeeding for the first 6 months (Ahmad et al, 2012).

SUBJECTS AND METHOD

1. Study Design

This research is a systematic research and meta-analysis. The articles used in this study were obtained from several databases, namely Google Scholar, Pubmed, and Science Direct between 2010 and 2021. The selection of articles was carried out using the PRISMA flow chart. The keywords to search for articles are as follows “Antenatal Care” OR “Antenatal Care Visits” OR “Prenatal Care” AND “Exclusive Breastfeeding” OR “Exclusive Breastfeeding”.

2. Inclusion Criteria

The inclusion criteria in this research article are: full-text article with cross-sectional design, research subject is mother, study result is exclusive breastfeeding, multivariate analysis with Adjusted Odds Ratio (aOR) to measure the estimated effect.

3. Exclusion Criteria

The exclusion criteria in this research article were: articles published in languages other than English, statistical results reported in the form of bivariate analysis, articles before 2010.

4. Operational Definition of Variables

The search for articles was carried out by considering the eligibility criteria determined using the PICO model. Population: mother. Intervention: ANC attendance or visit. Comparison: no ANC attendance or visit. Result: exclusive breastfeeding.

Antenatal care visits are visits by pregnant women to midwives or doctors as early

as possible since they feel they are pregnant to receive antenatal care or services.

Exclusive breastfeeding is breastfeeding, immediately after delivery until the baby is 6 months old without additional food.

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 wascarried out by searching several journal databases including Google Scholar, Pubmed, and Science Direct. it can be seen using the PRISMA FLOW flowchart shown in Figure 1.

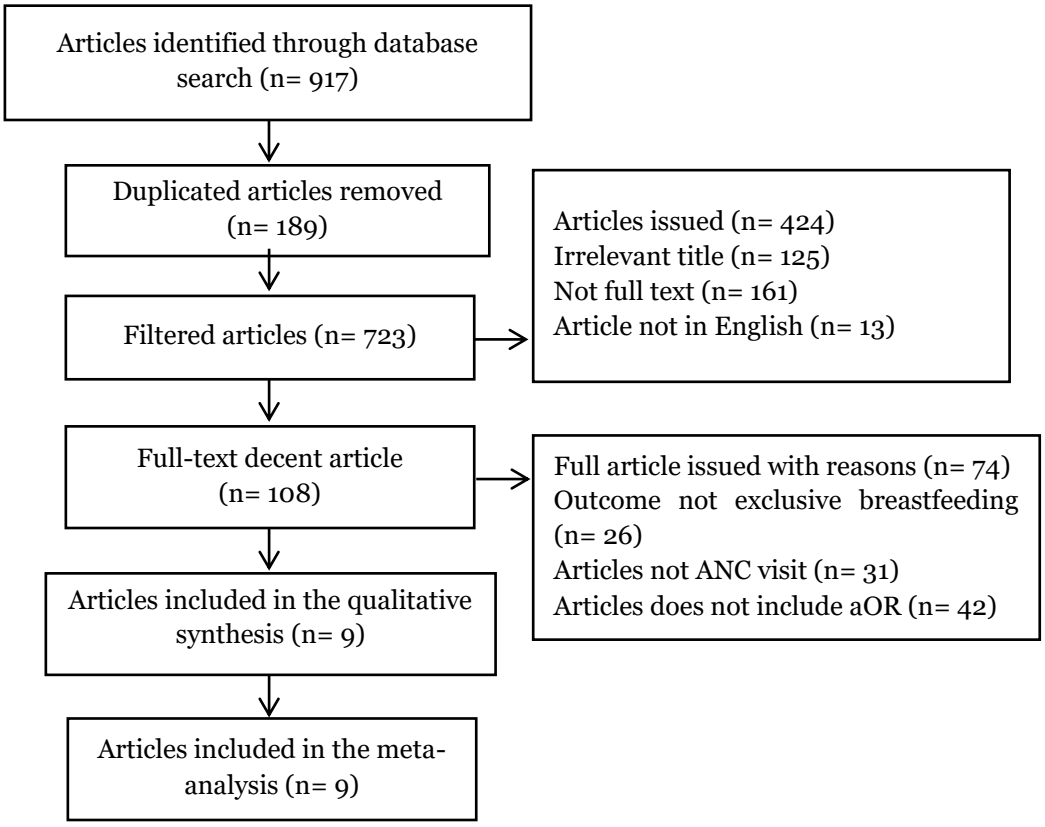

Figure 1. Results of Prisma Flow Diagrams

Figure 2. Research Distribution Map

figure 1. Research related to exclusive breastfeeding in mothers who visited antenatal care consisted of 9 articles from the initial search process yielding 917 articles, after the deletion process, articles were published with 178 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, namely Africa (Ethiopia and Congo), Asia (China) and Europe (Italy). Table 1, researchers conducted an assessment of the quality of the study. Table 2 shows that 9 articles from a cross-sectional study provide evidence about the association of mothers who made antenatal care visits to exclusive breastfeeding.

Based on the results of the forest plot, a cross-sectional study showed that mothers who had antenatal care visits increased 1.63 times for exclusive breastfeeding compared to pregnant women who did not visit antenatal care (aOR= 1.50; 95% CI = 1.18 to 1.89), and the results were statistically significant ($p < 0.001$). The heterogeneity of the research data shows $I^2 = 78\%$ so that the distribution of the data is said to be heterogeneous (random effect model.

The funnel plot results show publication bias with an overestimated effect characterized by an asymmetric distribution between the right and left plots. There are four plots on the right, five plots on the left and two plots that touch the vertical line. The plot on the right side of the graph has a standard error (SE) between 0 and 0.5. The plot on the left side of the graph has a standard error (SE) between 0 and 0.3.

Table 1. Assessment of study quality published by the Centre for Evidence-Based Medicine

No	Indicator	Publication (Author and Year)								
		Dhakal et al. (2017)	Li et al. (2020)	Lindau et al. (2014)	Mekuria and Edris (2015)	Seid et al. (2013)	Seifu et al. (2014)	Shiferaw et al. (2017)	Solomon et al. (2021)	Tariku et al. (2017)
1	Did the study address a clearly focused question / issue?	2	2	2	2	2	2	2	2	2
2	Is the research method (study design) appropriate for answering the research question?	2	2	2	2	2	2	2	2	2
3	Is the method of selection of the subjects clearly described?	2	2	1	2	2	2	2	2	2
4	Could the way the sample was obtained introduce bias?	2	2	2	2	2	2	2	2	2
5	Was the sample of subjects representative with regard to the population to which the findings will be referred?	2	2	1	2	2	2	2	2	2
6	Was the sample size based on pre-study considerations of statistical power?	2	2	2	2	2	2	2	2	2
7	Was a satisfactory response rate achieved?	2	2	2	2	2	2	2	2	2
8	Are the measurements likely to be valid and reliable?	2	2	2	2	2	2	2	2	2
9	Was the statistical significance assessed?	2	2	2	2	2	2	2	2	2
10	Are confidence intervals given for the main results?	2	2	2	2	1	2	2	2	2
11	Could there be confounding factors that haven't been accounted for?	2	2	2	2	2	2	2	2	2
12	Can the results be applied to your organization?	2	2	2	2	2	2	2	2	2
	Total	**24**	**24**	**24**	**22**	**23**	**24**	**24**	**24**	**24**

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 (CI 95%)
1	Dhakal et al. (2017)	Kongo	Cross-sectional	1,145	Mothers with baby <5years	ANC Visit	No ANC Visit	Exclusive breastfeeding	1.76 (0.74–4.16)
2	Li et al. (2020)	China	Cross-sectional	9,745	Mothers	ANC Visit	No ANC Visit	Exclusive breastfeeding	1.24 (0.77-1.98)
3	Lindau et al . (2014)	Italy	Cross-sectional	605	Mothers	ANC Visit	No ANC Visit	Exclusive breastfeeding	0.57 (0.35–0.95)
4	Mekuria and Edris (2015)	Ethiophia	Cross-sectional	423	Mothers	ANC Visit	No ANC Visit	Exclusive breastfeeding	2.44 (1.53 - 3.91
5	Seid et al. (2013)	Ethiophia	Cross-sectional	819	Mothers with baby < 12 months	ANC Visit	No ANC Visit	Exclusive breastfeeding	5.44 (2.39-12.40)
6	Seifu et al. (2014)	Ethiophia	Cross-sectional	422	Mothers	ANC Visit	No ANC Visit	Exclusive breastfeeding	1.2 (1.06 - 4.08)
7	Shiferaw et al. (2017)	Ethiophia	Cross-sectional	765	Mothers with baby <6 months	ANC Visit	No ANC Visit	Exclusive breastfeeding	1.46 (1.06 - 1.98)
8	Solomon et al. (2021)	Ethiophia	Cross-sectional	565	Mothers with baby <6 months	ANC Visit	No ANC Visit	Exclusive breastfeeding	2.31, (1.31,4.71)
9	Tariku et al. (2017)	Ethiophia	Cross-sectional	5,227	Mothers with baby <5years	ANC Visit	No ANC Visit	Exclusive breastfeeding	1.41; (1.23,1.61)

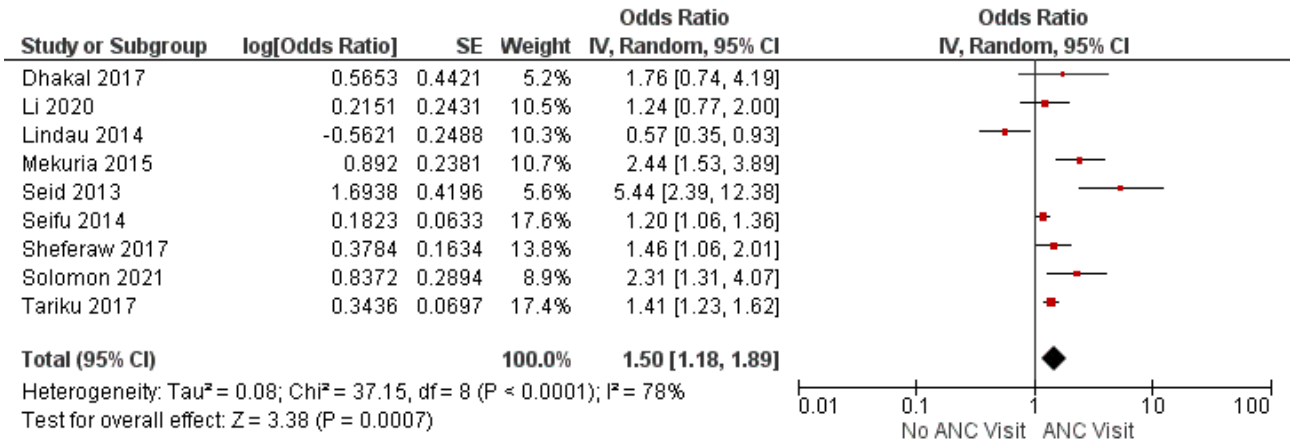

Figure 4. Forest Plot of Exclusive Breastfeeding in mother do Antenatal Care Visit

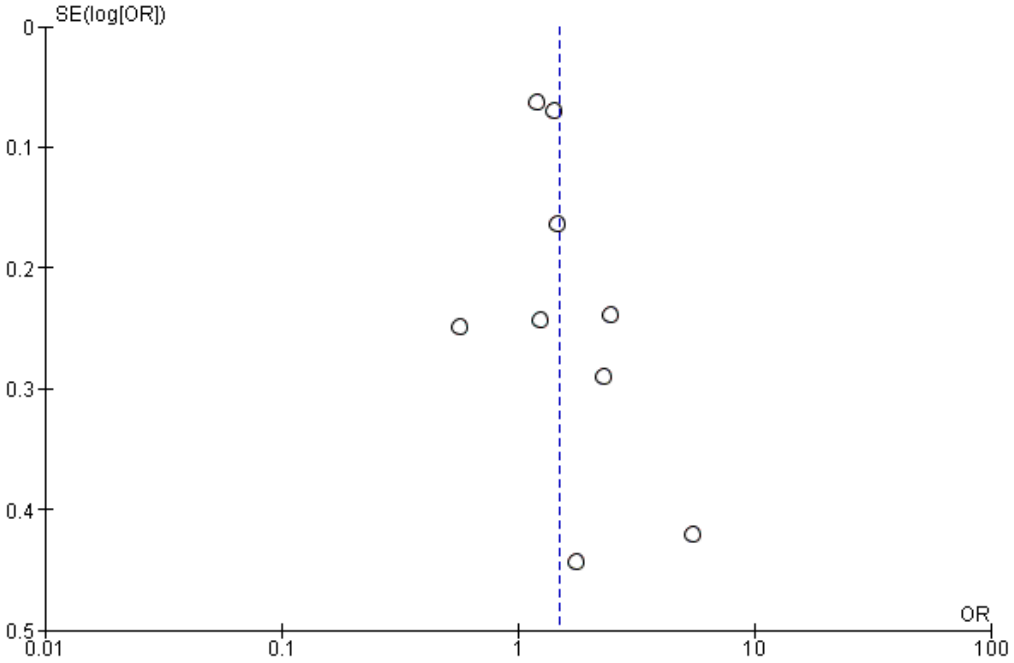

Figure 4. Funnel Plot Community Trust in the Implementation of COVID-19 Vaccination based on the Health Belief Model Theory

DISCUSSION

This systematic study and meta-analysis of this study increased exclusive breastfeeding for mothers who had antenatal care visits. This study discusses antenatal care visits by mothers which are considered important because they are one of the factors that can increase exclusive breastfeeding for their babies.

In this study, there were 9 articles regarding the relationship between antenatal care visits by mothers during pregnancy and exclusive breastfeeding which were processed using the Revman 5.3 application. Based on the results of the forest plot, a cross sectional study showed that mothers who had antenatal care visits increased 1.50 times for exclusive breast-

feeding compared to pregnant women who did not visit antenatal care (aOR = 1.50; 95% CI = 1.18 to 1.89), and the results were statistically significant (p < 0.001).

Antenatal care visits can increase exclusive breastfeeding for mothers for their babies. This is in line with the research of Seid et al. (2013) revealed that Antenatal Care visits during pregnancy increased the practice of exclusive breastfeeding. Every mother who made antenatal care visits was recommended to have a plan for exclusive breastfeeding (aOR = 5.44; 95% CI = 2.39 to 12.40).

Another finding from a cross-sectional study in China that included 9,745 mothers who had antenatal care visits, also revealed an influence between antenatal care visits during pregnancy and the practice of exclusive breastfeeding. Among mothers who had antenatal care visits had an increase in exclusive breastfeeding (aOR= 1.24; 95% CI=0.77 to 1.98) (Li et al., 2020).

In the study of Shiferaw et al. (2017) mothers who visited ANC services were found to be more likely to exclusively breastfeed than their peers (aOR= 1.46; 95% CI= 1.06 to 1.98). Counseling services provided regarding proper infant and child feeding practiced by health professionals from maternal and child health clinics may be a possible explanation for this.

The results of this study are not in line with (Lindau et al., 2015) which showed that antenatal care visits to mothers during pregnancy reduced exclusive breastfeeding (as a protective effect). Where mothers who did antenatal visits or classes stopped giving exclusive breastfeeding before the baby was 4 months old compared to mothers who did not do antenatal care visits or classes.

As a result, providing knowledge and benefits in antenatal care visits to mothers during pregnancy increases exclusive breastfeeding for their babies. The limitations of this study are that there is a language bias because it only uses English articles, a publication bias shown in the funnel plot results, and a search bias because it only uses three databases.

AUTHOR CONTRIBUTION

Aurina Firda Kusuma Wardani and Asrori Ibnu Utomo together choose a topic, find and collect research data, analyze data and review research documents.

FUNDING AND SPONSORSHIP

This study is self-funded.

CONFLICT OF INTEREST

There is no conflict of interest in this study.

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