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Meta-Analysis

Effects of Marital Status and Social Support on Antenatal Depression: A Meta-Analysis

Meita Tyas Nugrahaeni[1)], Hanung Prasetya[2)], Bhisma Murti[1)]

[1)]Master's Program in Public Health, Universitas Sebelas Maret
[2)]Study Program of Acupuncture, Health Polytechnics, Ministry of Health Surakarta

ABSTRACT

Background: Pregnancy is a period of increased vulnerability to depression incidence, especially if the pregnancy is accompanied by additional demands. Antenatal depression is depression that occurs during pregnancy characterized by certain symptoms, namely anxiety, distress, confusion, and excessive fear. The study aims to estimate the effect size of marital status and social support on the incidence of antenatal depression in pregnant women.
Subjects and Method: The study used systematic review and meta-analysis with PICO, Population: pregnant women; Intervention: marital status and strong social support; Comparison: unmarried marital status and weak social support. Outcome: antenatal depression. The articles used were obtained from several databases namely Google Scholar, Pubmed, SpringerLink, and Science Direct. The article search keywords were "Antenatal Depression" AND "Marital Status" AND "Social Support" AND "Pregnant Women". The inclusion criteria for the articles were full-text articles in English using cross-sectional observational study design, published between 2012 and 2022, the study subject was pregnant women, and the size of the association was presented in adjusted Odds ratio (aOR). The data were analyzed using Review Manager app (RevMan 5.3).
Results: A total of 17 cross-sectional articles originated from Asia and Africa including Qatar, Thailand, China, Ethiopia, Tanzania, Nigeria, and Rwanda for systematic review and meta-analysis with a total population of 8,723 pregnant women. Pregnant women with unmarried marital status could contribute to the worsening condition of pregnant women that generated antenatal depression (aOR= 2.76; 95% CI= 1.75 to 4.36; p< 0.0001). Meanwhile, pregnant women with weak social support could contribute to the worsening of the condition of pregnant women that generated antenatal depression (aOR= 2.22; 95% CI= 1.42 to 3.46; p= 0.005).
Conclusion: Marital status and social support can improve the prevention of antenatal depression in pregnant women.

Keywords: marital status, social support, pregnant women, antenatal depression.

Correspondence:
Meita Tyas Nugrahaeni. Master's Program in Public Health, Universitas Sebelas Maret. Jl. Ir. Sutami 36A, Surakarta 57126, Central Java. Email: meitatyas04@gmail.com. Mobile: +628597-4825459.

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BACKGROUND

The mental health condition of pregnant women is closely related to the health and well-being of the fetus in the womb (Rwakarema et al., 2015). The most common mental disorder during pregnancy is depression, which is significantly a public health problem concerning the mental health

of Women of Reproductive Age in both developing and developed countries (Dadi et al. 2020b). Pregnant women with depression are at a higher risk of experiencing decreased well-being during pregnancy and quality of future generations (Naja et al., 2021).

Pregnancy is a time of increased vulnerability to anxiety and depression events. Especially if the pregnancy is accompanied by additional demands (Thompson and Ajayi, 2016). Women during their pregnancy experience several changes in terms of physiological, psychological, hormonal, and social. The changes occur may generate escalated emotional disorders and psychological distress during the adaptation process (Dın et al., 2016).

Depression that occurs during pregnancy is called antenatal depression¬ (Zelalem et al., 2020). Antenatal depression is characterized by early depressive symptoms in pregnant women that range from mild to severe (Dadi et al., 2020c). Without timely intervention, antenatal depression may have an impact on maternal health problems leading to maternal and fetal death by suicide attempts, either directly or indirectly as the result of desperation. The impact is not only restricted to the pregnant woman but can also extend to families and the larger community (Zelalem et al., 2020). Furthermore, antenatal depressive symptoms are more likely to recurrence in subsequent pregnancies (Dadi et al., 2020a).

WHO estimates in 2017, among 322 million people who live with depression, about 29.9 million people or 9% live in Africa. The prevalence of depression globally increased by 18.4% between 2005 and 201 5 (Dadi et al., 2020b). Based on the systematic review and meta-analysis conducted in developed countries, indicates that the prevalence of antenatal depression in the first trimester is 7.4%, the second trimester is 12.8%, and the third trimester is 12%. The meta-analysis conducted across the world also reports the prevalence of antenatal depression that ranges from 0.5% to 51%. In addition, a study from low and middle income countries also indicates the prevalence of antenatal depression turns to 15.6% (Dadi et al., 2020b).

A study conducted in Turkey reports that 14.5% of symptoms of antenatal depression are found in women with unmarried marital status, who are more at risk of depression than married women with 8.5%. Whereas 24.0% of women are depressed because they do not feel support from influential persons. This suggests that factors such as marital status and lack of social support during pregnancy can lead to an increased rate of antenatal depression incidence in pregnant women (Keliyo et al., 2021).

Based on this background, it requires conducting a comprehensive study of various primary studies on the effect of marital status and social support on the incidence of antenatal depression. This study aims to estimate the effect size of marital status and social support on the incidence of antenatal depression in pregnant women.

SUBJECTS AND METHOD

1. Study Design

The study used systematic review and meta-analysis. The articles used in this study were obtained from several databases namely Google Scholar, Pubmed, SpringerLink, and Science Direct published between 2012 to 2022. Article selection was conducted using a PRISMA flowchart. The keywords for searching the article were "Antenatal Depression" AND "¬Marital Status" AND "Social Support" AND "Pregnant Women".

2. Step to do Meta-Analysis

The meta-analysis was carried out in five steps as follows:

a. Formulate research questions in the PICO format (Population, Intervention, Comparison, Outcome).
b. Search for primary study articles from various electronic and non-electronic databases.
c. Conduct screening and critical assessment of primary research articles.
d. Perform data extraction and synthesize effect estimates into RevMan 5.3.
e. Interpret and conclude the results

3. Inclusion Criteria

The inclusion criteria in this research article are: full-text articles using cross-sectional observational study design, the subjects of the study were pregnant women who obtained interventions in the form of married marital status and strong social support, the results of the study were antenatal depression, used multivariate analysis with adjusted Odds ratio (aOR) to measure the estimated effect.

4. Exclusion Criteria

The exclusion criteria in this research article were articles published in non-English languages, statistical results reported in the form of bivariate analysis, articles published before 2012, and articles with interventions, not in the form of married marital status and strong social support.

5. Operational Definition of Variables

Antenatal depression is depression experienced during pregnancy, which is characterized by several symptoms such as the emergence of feelings of anxiety, distress, confusion, and excessive fear.

Marital Status is a strong commitment in a relationship. Marital status is divided into two conditions, namely married and unmarried.

Social Support is a condition that can be observed through the relationship between the pregnant woman and her surroundings such as emotional, instrumental, affectionnate, and real social support from her surroundings.

6. Instruments

This systematic review was carried out following the PRISMA flow diagram guidelines, with an assessment of the quality of the articles using the critical assessment published by CEBM University of Oxford (CEBM, 2014):

a. Do the research objectives clearly address the focus/problem of the research?
b. Is the research method (research design) suitable for answering the research question?
c. Is the research subject selection method clearly written?
d. Does the sampling method give rise to bias (selection)?
e. Does the research sample take represent the designated population?
f. Was the sample size based on pre-study considerations?
g. Is the measurement method achievable?
h. Are the research instruments valid and reliable?
i. Was statistical significance assessed?
j. Was a confidence interval given for the main outcome?
k. Are there any confounding factors that have not been taken into account?
l. Are the results applicable to your research?

7. Data Analysis

The data in the study were analyzed using the Review Manager application (RevMan 5.3). The results of the systematic study and meta-analysis were presented in the form of forest plots and funnel plots. The fixed effect model was used for homogeneous data, while the random effect model was used for heterogeneous data across studies.

RESULTS

The article selection process used the PRISMA flow diagram which can be seen in Figure 1, where the total articles in the initial search process were 2,306 articles. Furthermore, as many as 873 articles were screened and 241 articles with full text were obtained whose feasibility was tested, so that the total articles obtained were 17 articles. Figure 2 shows the distribution of articles from Ethiophia, Kenya, Tanzania, Qatar, Nigeria, Thailand, Rwanda, and China.

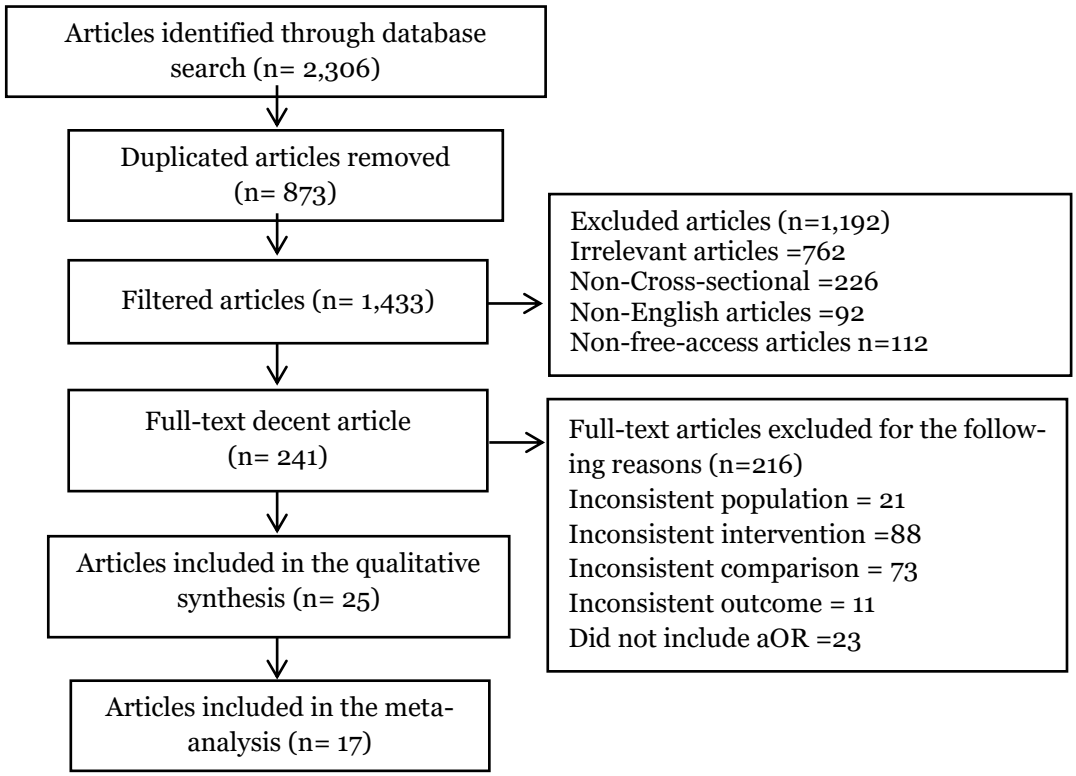

Figure 1. Results of Prisma Flow Diagrams

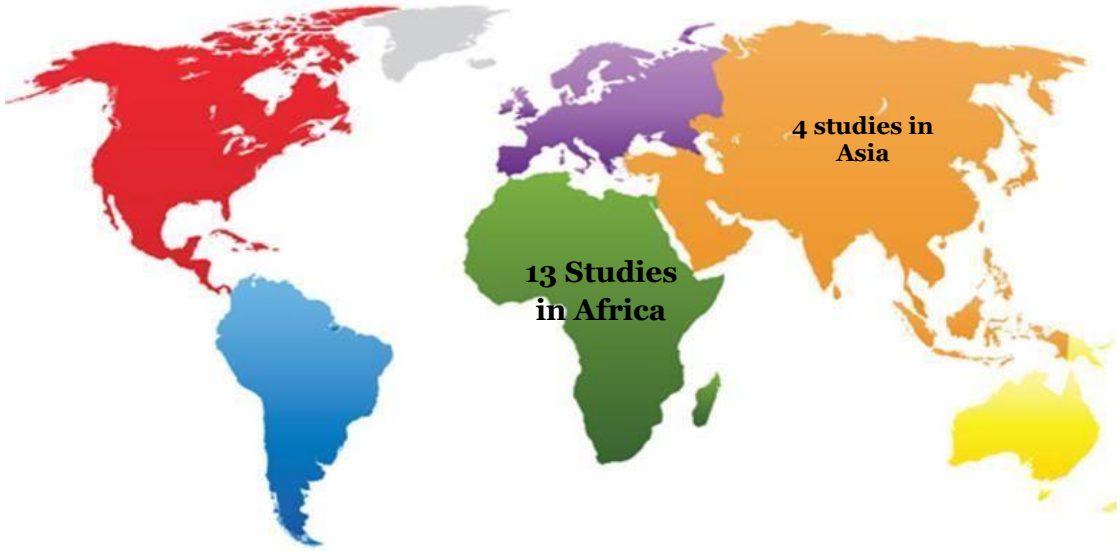

Figure 2. Research Distribution Map

Table 1. Description of primary studies included in the meta-analysis.

Author (Year)	Country	Sample	Study Design	Population	Intervention	Comparison	Outcome
(Ayele et al., 2021)	Northwest Ethiopia	409	Cross-sectional	Pregnant women	Unplanned pregnancy and strong social support	Planned pregnancy and weak social support	Antenatal depression
(Belete et al., 2019)	Northwest Ethiopia	356	Cross-sectional	Pregnant women	Marital status (yes) and unplanned pregnancy	Marital status (no) and planned pregnancy	Antenatal depression
(Biratu dan Haile, 2015)	Addis Ababa, Ethiopia	393	Cross-sectional	Pregnant women	Marital status (yes), unplanned pregnancy, and strong social support	Marital status (no), planned pregnancy, and weak social support	Antenatal depression
(Bisetegn *et al.*, 2016)	Northwest Ethiopia	543	Cross-sectional	Pregnant women	Unplanned pregnancy	Planned pregnancy	Antenatal depression
(Duko *et al.*, 2019)	Ethiopia	317	Cross-sectional	Pregnant women	Unplanned pregnancy and strong social support	Planned pregnancy and weak social support	Antenatal depression
(Keliyo *et al.*, 2021)	Eastern Ethiopia	403	Cross-sectional	Pregnant women	Marital status (yes) and strong social support	Marital status (no) and weak social support	Depression during pregnancy
(Kimbui et al., 2018)	Nairobi Kenya	212	Cross-sectional	Pregnant women	Marital status (yes) and unplanned pregnancy	Marital status (no) and planned pregnancy	Depression during pregnancy
(Lodebo et al., 2020)	South Ethiopia	541	Cross-sectional	Pregnant women	Marital status (yes), unplanned pregnancy, strong social status	Marital status (no), planned pregnancy, and weak social support	Antenatal depression
(Manongi et al., 2020)	Northern Tanzania	1,116	Cross-sectional	Pregnant women	Strong social support	Weak social support	Depression during pregnancy
(Massae et al., 2021)	Tanzania	694	Cross-sectional	Pregnant women (32-40 weeks)	Marital status (yes) and strong social support	Marital status (no), and weak social support	Depression during pregnancy
(Naja et al., 2021)	Qatar	800	Cross-sectional	Pregnant women	Strong social support	Weak social support	Antenatal depression

Author (Year)	Country	Sample	Study Design	Population	Intervention	Comparison	Outcome
(Oboro et al., 2022)	Southern Nigeria	511	Cross-sectional	Pregnant women	Marital status (yes), unplanned pregnancy, strong social status	Marital status (no), planned pregnancy, and weak social support	Depression during pregnancy
(Tuksanawes *et al*, 2020)	Thailand	402	Cross-sectional	Pregnant women	Marital status (yes)	Marital status (no)	Depression during pregnancy
(Umuziga et al., 2022)	Rwanda	396	Cross-sectional	Pregnant women	Unplanned pregnancy and strong social support	Planned pregnancy and weak social status	Antenatal depression
(Yu et al., 2020)	Hunan, China	812	Cross-sectional	Pregnant women (≥28 weeks)	Strong social support	Weak social status	Depression during pregnancy
(Zelalem *et al*, 2020)	Northwest Ethiopia	526	Cross-sectional	Pregnant women	Strong social support	Weak social status	Antenatal depression
(Zeng *et al*, 2015)	China	292	Cross-sectional	Pregnant women (III trimester)	Strong social support	Weak social status	Antenatal depression

Table 2. aOR and 95% CI data of social support for antenatal depression.

(Author, year)	aOR	95% CI	
		Lower Limit	Upper Limit
(Ayele et al., 2021)	5.81	1.12	13.12
(Biratu dan Haile, 2015)	0.81	0.37	1.81
(Duko *et al.*, 2019)	2.14	1.49	3.11
(Keliyo *et al.*, 2021)	3.34	1.50	7.43
(Lodebo et al., 2020)	5.78	2.36	14.13
(Manongi et al., 2020)	2.25	1.26	4.02
(Massae et al., 2021)	0.61	0.37	0.98
(Naja et al., 2021)	3.20	1.70	5.90
(Oboro et al., 2022)	4.70	2.99	7.38
(Umuziga et al., 2022)	4.45	1.83	10.84
(Yu et al., 2020)	2.37	1.20	4.66
(Zelalem *et al*, 2020)	2.07	1.12	3.87
(Zeng *et al*, 2015)	0.92	0.88	0.97

Table 3. aOR and 95% CI data of marital status for antenatal depression.

(Author, year)	aOR	95% CI	
		Lower Limit	Upper Limit
(Belete et al., 2019)	5.10	1.79	14.63
(Biratu dan Haile, 2015)	1.79	0.72	4.44
(Keliyo *et al.*, 2021)	2.91	1.36	6.23
(Kimbui et al., 2018)	0.16	0.01	3.87
(Lodebo et al., 2020)	2.80	1.26	6.22
(Massae et al., 2021)	1.72	1.01	2.91
(Oboro et al., 2022)	5.48	3.48	8.38
(Tuksanawes *et al*, 2020)	2.30	0.57	9.59

Table 4. Critical Appraisal using CEBM

Primary Study	Criteria												
	1	2	3	4	5	6	7	8	9	10	11	12	Total
(Ayele et al., 2021)	2	2	2	2	2	1	2	2	2	2	2	2	23
(Belete et al., 2019)	2	2	2	2	2	0	2	2	2	2	2	2	22
(Biratu dan Haile, 2015)	2	2	2	2	2	0	2	2	2	2	2	2	22
(Bisetegn *et al.*, 2016)	2	2	2	2	2	0	2	2	2	2	2	2	22
(Duko *et al.*, 2019)	2	2	2	2	2	0	2	2	2	2	2	2	22
(Keliyo *et al.*, 2021)	2	2	2	2	2	0	2	2	2	2	2	2	22
(Kimbui et al., 2018)	2	2	2	2	2	0	2	2	2	1	2	2	21
(Lodebo et al., 2020)	2	2	2	2	2	0	2	2	2	2	1	2	22
(Manongi et al., 2020)	2	2	2	2	2	0	2	2	2	2	2	2	22
(Massae et al., 2021)	2	2	2	2	2	0	2	1	2	2	2	2	21
(Naja et al., 2021)	2	2	2	2	2	0	2	2	2	2	2	2	22
(Oboro et al., 2022)	2	2	2	2	2	0	2	2	2	2	2	2	22
(Tuksanawes *et al*, 2020)	2	2	2	2	2	0	2	2	2	2	2	2	22
(Umuziga et al., 2022)	2	2	2	2	2	0	2	2	2	2	2	2	22
(Yu et al., 2020)	2	2	2	2	2	0	2	2	2	2	2	2	22
(Zelalem *et al*, 2020)	2	2	2	2	2	0	2	2	2	2	2	2	22
(Zeng *et al*, 2015)	2	2	2	2	2	0	2	2	2	2	2	2	22

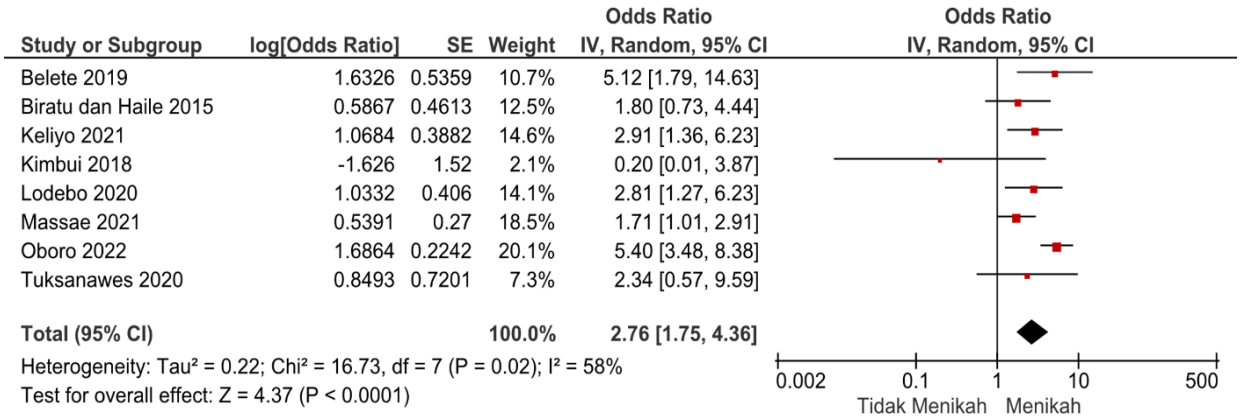

Figure 3. Forest Plot of the Effect of Marital Status on the Incidence of Antenatal Depression

Figure 3. The Forest plot indicates the effect of marital status on the incidence of antenatal depression. Pregnant women with married marital status had a contribution to increasing the condition of pregnant women to avoid the incidence of antenatal depression on average 2.76 times higher than pregnant women with unmarried marital status, and the effect was statistically significant (aOR= 2.76; 95% CI= 1.75 to 4.36; p< 0.001).

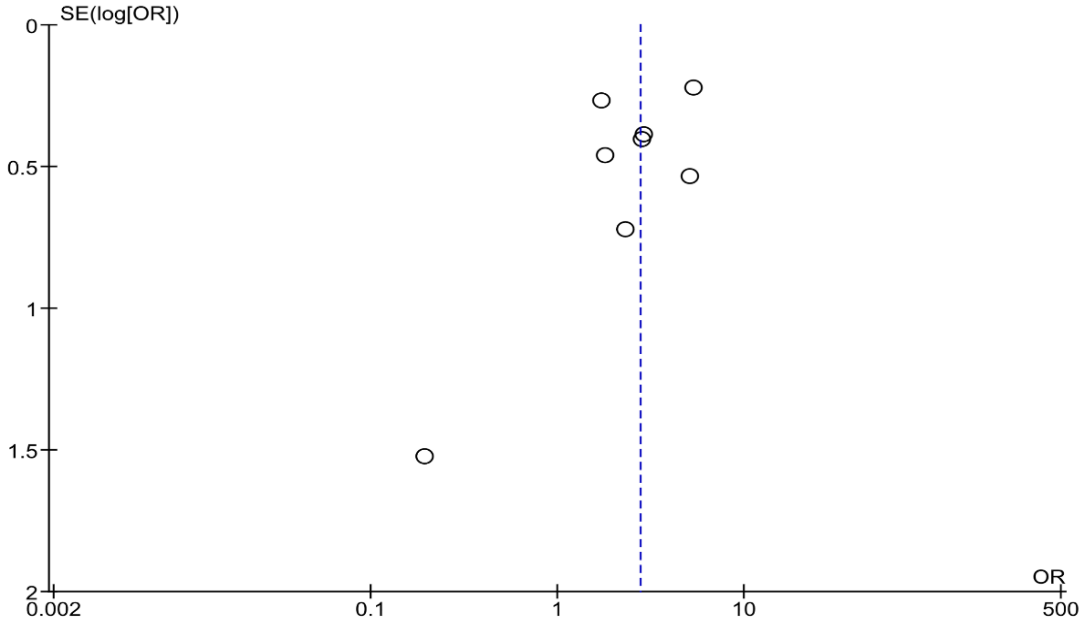

Figure 4. Funnel plot of the Effect of Marital Status on the Incidence of Antenatal Depression

Figure 4. Funnel Plot indicates the asymmetric distribution of the estimated effects between studies in the meta-analysis. The distributions of the estimated effect of marital status in improving maternal condition to avoid the incidence of an¬tenatal depression were more on the left of the average vertical line of the estimated effect than on the right.

Therefore, the funnel plot indicates that there was a publication bias. Because the distribution of estimated effects was more

on the left of the average vertical line than on the right. Hence, publication bias reduced the effect of marital status on antenatal depression incidence (underestimate).

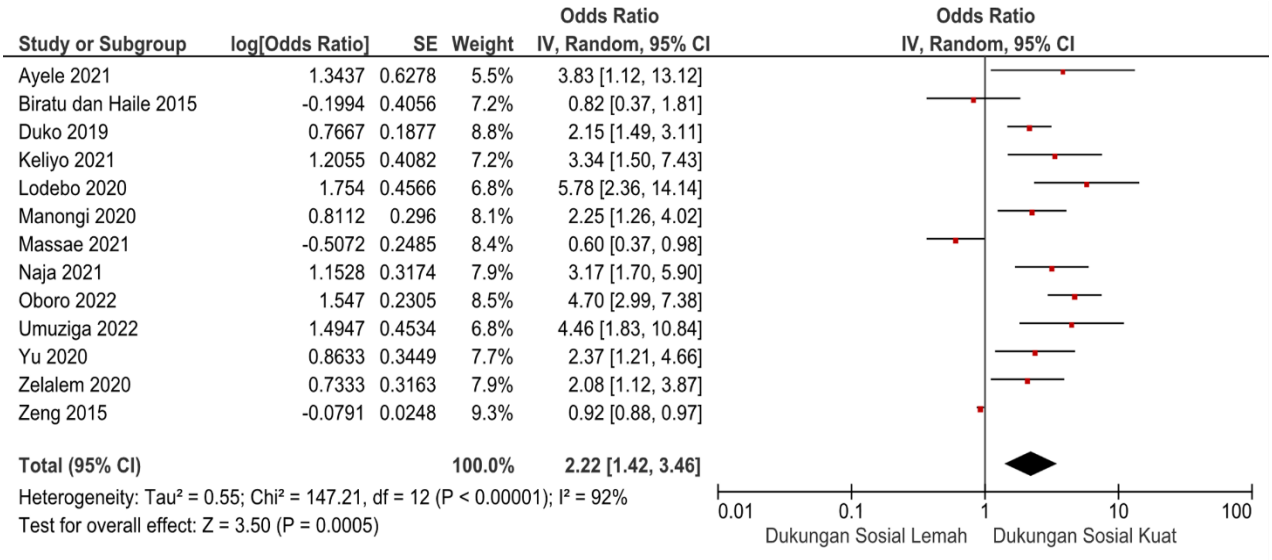

Figure 5. Forest plot of the effect of social support on the incidence of antenatal depression

Figure 5 forest plot indicates the effect of social support on the increased incidence of antenatal depression. Pregnant women with strong social support had a contribution in improving the condition of pregnant women to avoid antenatal depression incidence on average 2.22 units higher than pregnant women who obtained weak social support (aOR= 2.22; 95% CI= 1.42 to 3.46; p< 0.001).

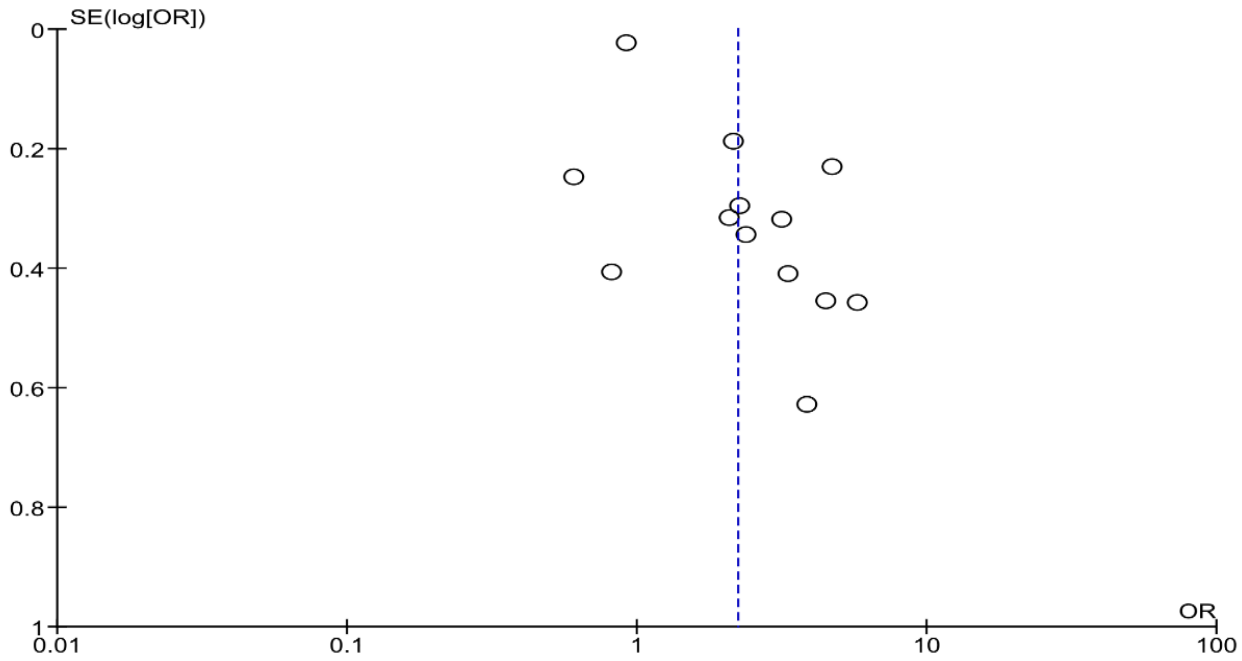

Figure 6. Funnel plot of the effect of social support on the incidence of antenatal depression

The funnel plot in Figure 6 showed the distribution of effect estimates that are not symmetrical. The distribution of effect estimates lies more to the left of the estimated average vertical line than to the right and there is 1 plot that intersects with the vertical line, thus indicating publication bias. Because the distribution of effect estimates lies more to the left of the average vertical line in the funnel plot and the average effect estimate in the forest plot lies to the right of the hypothesis 0 line, this bias minimizes the true effect (under estimate).

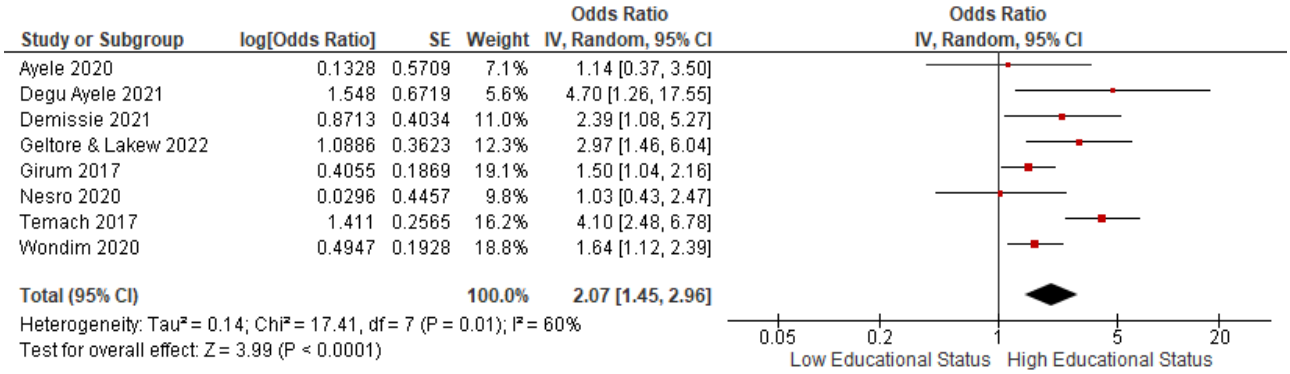

Figure 7. Forest plot of the effect of education level on the use of male contraceptives

Figure 6. funnel plot indicates the asymmetric distribution of the estimated effects between studies in meta-analysis. The distributions of the estimated effect of social support in improving the condition of pregnant women to avoid the incidence of antenatal depression were more on the right of the average vertical line of the estimated effect than on the left.

Therefore, the funnel plot indicates that there was a publication bias. Because the distributions of estimated effect were more on the right of the average vertical line than on the left. It means publication bias reduced the effect of social support on antenatal depression (underestimate).

DISCUSSION

The study was a systematic review and meta-analysis with the topic of the effect of marital status and social support on the incidence of antenatal depression. The analyzed dependent variable was antenatal depression. Antenatal depression is a form of depression that occurs during pregnancy caused by the emergence of feelings of anxiety, worry, and excessive fear about pregnancy, childbirth, baby health, and parenting role in the future (Bedaso et al., 2021). Antenatal depression can occur in pregnant women in the first, second, or third trimesters for which cannot be ascertained when signs appear (Dadi et al., 2020a). There is only a limited number of best and accessible relevant studies, moreover, they also have data access problems (data duplication). Statistical results are often reported in ¬the form of percentages and bivariate analyses, in which confounding factors are not controlled by the researchers.

1. The Effect of Marital Status on Antenatal Depression Incidence

A total of 8 cross-sectional study articles serves as a source of meta-analysis of the effect of marital status on antenatal depression incidence. This study showed that the result of the analysis of married marital status had a contribution to improving the

condition of pregnant women to avoid the - incidence of antenatal depression on average 2.76 units higher than that of pregnant women with unmarried marital status, and the result was statistically significant (aOR= 2.76; 95% CI= 1.75 to 4.36; p< 0.0001). The heterogeneity of the study data indicated I^2= 58%, so the distribution of data was stated as heterogenous (random effect model).

The effect of married marital status can contribute to improving the condition of pregnant women to avoid the incidence of antenatal depression, this result is in accordance with the hypothesis. According to a study by Lodebo et al. (2020), the result of the study suggests that marital status of 2.8 units higher leads to antenatal depression which is statistically significant (aOR= 2.807; 95% CI= 1.268 to 6.227; p< 0.011). The study states that in a traditional environment in Ethiopia, any woman who becomes pregnant without having a husband is considered a free person, and being a single parent is socially unacceptable. Any associated stigma can contribute to the depressed mood of the expectant mother.

Another study by Keliyo et al. (2021) of 403 pregnant women assessed between January and September 2015 shows that marital status is one of the factors that cause antenatal depression incidence. The study states that married marital status in pregnant women is 2.91 units less likely to cause antenatal depression compared to pregnant women with unmarried marital status (aOR 2.91; 95% CI= 1.36 to 6.23).

Marital status symbolizes a strong commitment to a relationship. The presence of a spouse especially a husband, during pregnancy has been proven to be positively related to women's mental health (Akincigil et al., 2010). Women with married marital status have better health behavior, physical health, and emotional well-being. In addition, married women have lower mortality and morbidity rates, are happier, healthier, and feel less stressed-out or depressive symptoms occur. Married women have a possibility of better reproductive health because they diminish unhealthy relationships outside of marriage. Married women have advantages in terms of financial stability, security, and social support (Luthar et al., 2010).

Marital status is an important factor in overcoming the incidence of antenatal depression because unmarried women are five times more likely to have antenatal depression compared to married women. This is due to the absence of social support, poor financial capacity, the culture of unmarried mothers, and psychological problems that can contribute to antenatal depression (Belete et al., 2019).

2. The Effect of Social Support on the Antenatal Depression Incidence

A total of 13 cross-sectional study articles serves as a source of meta-analysis of the effect of social support on the incidence of antenatal depression. This study indicated that the results of a strong social support analysis contributed to improving the condition of pregnant women to avoid the incidence of antenatal depression on average 2.22 units higher than pregnant women who received weak social support and the result was statistically significant (aOR= 2.22; 95% CI= 1.42 to 3.46; p< 0.001). The heterogeneity of the study data showed I^2= 92%, so the distribution of data was stated as heterogeneous (random effect model).

The effect of strong social support is able to contribute to improving the condition of pregnant women to avoid the incidence of antenatal depression, this result is in accordance with a hypothesis. According to a study of Lodebo et al. (2020), the social support was significantly 5.491 units higher to influence the incidence of antenatal dep-

ression in pregnant women (aOR= 5.49; 95% CI= 2.08 to 14.45; p= 0.001). The study states that mothers who obtain poor social support are more likely to experience antenatal depression compared to mothers who obtained strong social support. Obtaining social support from friends and relatives during a time of stress is considered a protective factor against the development of depression. In addition, the women who obtain support during pregnancy are more empowered to handle pregnancy and home responsibilities.

Another study by Oboro et al (2022) of 511 pregnant women assessed between January and July 2018 indicates that social support is 4.07 units higher in affecting the incidence of antenatal depression in pregnant women (aOR 4.70; 95% CI= 2.99 to 7.38). Social support is one of the efforts that can be taken to help prevent or reduce the incidence of pregnancy complications and antenatal depression.

Social support itself can be observed through the relationship between pregnant women and their surroundings such as real emotional, instrumental, affectionate, and social support from their surroundings. Social support aims to increase individuals' positive interaction which can help to reduce depresssion, stress, and anxiety, while also reducing the risk of adverse pregnancy and birth. Social support can also provide an appropriate coping stress mechanism for pregnant women to deal with stressful events (Bedaso et al., 2021).

Lack of social support is a risk factor for depressive symptoms in pregnant women that can lead to antenatal depression. As an important social resource for pregnant women, the function of social support is a social determinant of mental health. Positive social support can cause people to feel cared for, loved and valued, and can improve the quality of life and mental health of pregnant women (Yu et al., 2020)

AUTHOR CONTRIBUTION

Meita Tyas Nugrahaeni was the main researcher who selected topic, searched for, and collected data. Hanung Prasetya and Bhisma Murti contributed to analyzing the study documents, and review data also as research supervisors.

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This study is self-funded.

CONFLICT OF INTEREST

There is no conflict of interest in this study.

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