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The Effect of Pregnant Women's Anxiety Levels on Covid-19 Vaccination

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ABSTRACT

Pregnant women's willingness to receive the COVID-19 vaccine is influenced by multiple factors including family support, societal perception, and health information from the media. Previous studies indicated that knowledge and psychological conditions, such as anxiety, play an important role in shaping vaccination behavior among pregnant women. This study aims to analyze the influence of maternal anxiety levels on COVID-19 vaccination uptake among pregnant women. A literature review was conducted using the PICOS framework. Articles were searched in Google Scholar, ScienceDirect, and PubMed Central (PMC) between 2019 and 2023. Inclusion criteria were studies examining pregnant women, anxiety levels, and COVID-19 vaccination. Ten eligible articles were analyzed. Findings revealed a significant relationship between anxiety levels and vaccination behavior among pregnant women. Higher maternal anxiety was associated with hesitancy toward vaccination, while sufficient knowledge and support systems were linked with increased vaccine acceptance. Antenatal care (ANC) practices during the COVID-19 pandemic emphasized preventive strategies for mothers, infants, and healthcare providers. Managing anxiety through health education and counseling is crucial to improve COVID-19 vaccination participation among pregnant women.

Keywords: anxiety, COVID-19 vaccination, pregnant women

BACKGROUND

The COVID-19 pandemic, declared a global health emergency by the World Health Organization (WHO) in January 2020, has significantly impacted maternal and child health worldwide (Dong et al., 2020). Pregnant women are categorized as a vulnerable group due to their physiological and immunological changes, which increase the risk of infection and adverse pregnancy outcomes (Allotey et al., 2020). In Indonesia, the government identified maternal health as a national priority due to the rising maternal and neonatal mortality rates during the pandemic (Kementerian Kesehatan RI, 2021).

Vaccination is considered one of the most effective interventions to prevent COVID-19 transmission and complications. However, vaccine acceptance among pregnant women has been inconsistent, often influenced by anxiety, misinformation, and cultural beliefs (Skjefte et al., 2021). Anxiety during pregnancy not only affects maternal well-being but also contributes to vaccine hesitancy, reducing the effectiveness of public health interventions (Ravaldi et al., 2021). Therefore, it is essential to examine the role of anxiety in influencing pregnant women's decisions regarding COVID-19 vaccination.

METHODS

This study employed a literature review method guided by the PICOS framework (Population, Intervention, Comparison, Outcomes, Study design). The PICOS approach was selected to provide a structured strategy for identifying, selecting, and analyzing relevant studies systematically. By following this framework, the review ensured clarity in defining the scope of the research and consistency in the selection of eligible articles.

The data sources used in this study included Google Scholar, ScienceDirect, and PubMed Central, which are recognized as comprehensive and reliable databases for scientific literature. These platforms were chosen to provide access to both international and regional research, ensuring a balanced representation of evidence. The search was restricted to articles published between 2019 and 2023 in order to capture the most recent studies relevant to the COVID-19 pandemic period.

Specific keywords were applied during the search process, including "pregnant women," "anxiety," "COVID-19 vaccination," and "antenatal care." These keywords were carefully selected to align with the research objectives and were combined using Boolean operators (AND/OR) to optimize the search results. This strategy ensured that only articles directly related to the relationship between vaccination, anxiety, and antenatal care among pregnant women were retrieved.

To maintain the rigor of the review, inclusion criteria were applied. Articles were included if they (1) focused on pregnant women during the COVID-19 pandemic, (2) analyzed anxiety levels and willingness to receive the COVID-19 vaccine, and (3) were published in English. These criteria ensured that the studies addressed the main variables of interest and were accessible for critical appraisal.

At the same time, exclusion criteria were applied to filter out irrelevant or low-quality studies. Articles were excluded if they did not directly address pregnant women as the study population, if they failed to analyze anxiety or vaccination behavior, or if they were not available in full text. By eliminating such articles, the review strengthened the reliability and validity of the synthesized findings.

After applying both inclusion and exclusion criteria, a total of 10 relevant articles were identified and included in the final review. These articles were thoroughly examined to extract data on the relationship between anxiety, vaccination willingness, and antenatal care among pregnant women during the COVID-19 pandemic. The findings from these studies served as the evidence base for the results and discussion sections of this review.

RESULTS

The review findings revealed a clear relationship between maternal anxiety and the willingness to receive the COVID-19 vaccine during pregnancy. Pregnant women with higher levels of anxiety were significantly less likely to accept vaccination. This was strongly associated with fears surrounding vaccine safety, particularly concerns about potential adverse effects on fetal development (Ayhan et al., 2021; Battarbee et al., 2021).

The primary sources of maternal anxiety included widespread misinformation from social media, doubts regarding vaccine safety, and uncertainty about the long-term effects of COVID-19 vaccination on both mothers and infants. Such concerns created barriers that reduced maternal confidence in making vaccination decisions (Battarbee et al., 2021).

In contrast, pregnant women who possessed adequate knowledge about the benefits and safety of COVID-19 vaccination demonstrated higher levels of vaccine acceptance. Support from family

members and healthcare providers also played a critical role in shaping maternal decision-making, reinforcing the perception that vaccination was both safe and necessary (Skirrow et al., 2022).
Interventions such as health education programs, online maternal classes, and individualized counseling were consistently shown to reduce anxiety levels among pregnant women. By addressing fears and correcting misinformation, these interventions improved maternal trust in healthcare systems and subsequently increased vaccine uptake (Matsuo et al., 2022).
Overall, the synthesis of findings suggests that maternal vaccination behavior is influenced by both psychological factors (such as anxiety and trust) and social support systems (family encouragement and healthcare guidance). Addressing misinformation and strengthening educational outreach are therefore essential in promoting COVID-19 vaccine acceptance during pregnancy.

Table 1. Summary of Findings on Anxiety and COVID-19 Vaccination Acceptance Among Pregnant Women

Determinant of Vaccination Behavior	**Findings**	**References**
High maternal anxiety	Associated with lower vaccination acceptance; driven by safety concerns and fetal risks	Ayhan et al. (2021), Battarbee et al. (2021)
Sources of anxiety	Misinformation on social media, fear of side effects, doubts about vaccine safety	Battarbee et al. (2021)
Adequate knowledge	Increased willingness to accept vaccination	Skirrow et al. (2022)
Family/healthcare support	Strongly correlated with higher acceptance and reduced hesitancy	Skirrow et al. (2022)
Educational interventions	Health education, online classes, and counseling lowered anxiety and improved vaccine uptake	Matsuo et al. (2022)

The table highlights that maternal anxiety acts as a barrier to COVID-19 vaccine acceptance, while knowledge, family support, and healthcare interventions significantly improve maternal willingness to be vaccinated. Social media misinformation and safety concerns were the primary contributors to anxiety, suggesting that targeted education and counseling are crucial strategies to reduce vaccine hesitancy among pregnant women.

DISCUSSION

The findings confirm that anxiety is a critical determinant of vaccine hesitancy among pregnant women. Similar studies highlighted that misinformation amplified through media platforms worsened anxiety and reduced vaccine confidence (Khubchandani et al., 2021). Family encouragement and healthcare provider recommendations were found to mitigate these concerns (Citu et al., 2022).

Furthermore, ANC adaptations during the pandemic, such as telehealth consultations and scheduled clinic visits, supported pregnant women in accessing accurate information while minimizing exposure risks (Liu et al., 2022). Addressing psychological well-being, particularly anxiety, is therefore essential in increasing vaccine coverage among pregnant women.

CONCLUSION

This literature review found a significant relationship between anxiety levels and COVID-19 vaccination willingness among pregnant women. High anxiety contributed to vaccine hesitancy, while supportive interventions and health education reduced anxiety and improved vaccine acceptance. Integrating mental health support into ANC services can play a vital role in enhancing maternal and neonatal health outcomes during the pandemic.

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