Determinants of Antenatal Care for Pregnant Women in Healthcare Facilities during the Covid-19 Pandemic: A Systematic Review

Annisa Aurelia Putri Diah Jaya

Departement of Health Administration and Policy, Faculty of Public Health, Airlangga University, Surabaya, Indonesia
annisaureliap@gmail.com

Kata Kunci	*Abstrak*
Antenatal Care; COVID-19; Determinan; Kesehatan Ibu	Angka kematian ibu merupakan indikator penting yang menunjukkan kemampuan suatu negara dalam menghadapi kondisi kesehatan yang ada. Penurunan AKI sebagai fokus global dapat didukung melalui terwujudnya pelayanan antenatal care yang berkualitas dan berkelanjutan. Penelitian ini bertujuan untuk menganalisis determinan ANC pada ibu hamil di fasilitas kesehatan selama masa pandemi COVID-19. Artikel ditulis berdasarkan kompilasi data melalui metode tinjauan sistematis menggunakan beberapa database seperti ProQuest, Science Direct, Pubmed, SAGE dan Google Scholar. dipilih berdasarkan pedoman PRISMA dan kriteria inklusi, terdapat 9 artikel yang memenuhi kriteria dan dipilih untuk dianalisis lebih lanjut guna menjawab tujuan penelitian. Temuan utama menyatakan bahwa usia, kecemasan ibu tentang pandemi, kondisi kehamilan, riwayat persalinan, kepatuhan, tingkat pendidikan, tingkat pekerjaan, sikap, pengetahuan, dukungan suami, dan akses ke fasilitas kesehatan merupakan determinan ANC pada ibu hamil di fasilitas kesehatan selama pandemi COVID-19.
Keywords	*Abstract*
Antenatal Care; COVID-19; Determinants; Maternal Health	*The maternal mortality rate is an important indicator that shows a country's ability to deal with existing health conditions. The reduction in MMR as a global focus can be supported through the realization of quality and sustainable antenatal care services. This study aims to analyze the determinants of ANC in pregnant women in healthcare facilities during the COVID-19 pandemic. Articles are written based on data compilation through a systematic review method using several databases such as ProQuest, Science Direct, Pubmed, SAGE and Google Scholar. selected based on PRISMA guidelines and inclusion criteria, there were 9 articles that met the criteria and were selected for further analysis to answer the research objectives. The main findings stated that age, maternal anxiety about the pandemic, pregnancy condition, delivery history, compliance, education level, employment level, attitude, knowledge, husband's support, and access to healthcare facilities were determinants of ANC in pregnant women in healthcare facilities during the COVID-19 pandemic.*

Introduction

Antenatal Care (ANC) is one of the efforts that pregnant women can make with the help of healthcare facilities and personnel to reduce the risk of morbidity and mortality, both for pregnant women and fetuses (1). ANC is closely related to handling maternal and infant mortality cases, characterized by high Maternal Mortality Ratio (MMR) and Infant Mortality Ratio (IMR) in several countries globally. Based on WHO records, it is known that there were 295,000 cases of maternal deaths globally in 2017 (2). The importance of reducing MMR is closely correlated with the existence of MMR as an indicator to measure the success of maternal health efforts in several countries in the world.

Various factors that contribute to the increase in MMR originating from internal maternal factors such as age, education level, level of knowledge, income, employment status, and attitudes. External factors such as husband support, family support, and access to healthcare facilities (3). This makes the

need for comprehensive efforts in dealing with this problem. These efforts can be carried out by implementing ANC regularly, which is expected to be optimized for its existence for early detection of health conditions of pregnant women and fetuses and preventing complications or other health problems that can reduce the health status of mothers and babies (4).

ANC is defined as an antenatal examination aimed at checking and detecting pregnancy problems in the mother and the health condition of the fetus on a routine and integrated basis to improve the health status of the mother and fetus, which professional and trained health workers carry out (5). Complete ANC services refer to WHO recommendations, known to be carried out at least four times during pregnancy. ANC services are considered necessary for pregnant women, but the phenomenon in some areas shows that not all pregnant women are aware of the importance of having ANC visits due to several factors (6).

The COVID-19 pandemic, which has not ended until this study was written, has been identified as contributing to the decision of pregnant women to provide ANC services at healthcare facilities (7). This can be caused by the health conditions of pregnant women who are vulnerable and have a higher risk of being infected with the SARS-CoV-2 virus when compared to people who are not pregnant (8). Meanwhile, the increase in COVID-19 cases, such as the emergence of the second wave of pandemics, has an impact on the disruption of services at healthcare facilities (6). This phenomenon can arise due to health workers infected with COVID-19, reduction in the number of patient visits, area restrictions for visitors, and restrictions on operating hours that can hamper health services, including ANC for pregnant women.

Optimally, the COVID-19 pandemic condition should not reduce the quality of services obtained by patients or visitors, including ANC services for pregnant women, which is related to the importance of monitoring and evaluating the condition of pregnancy and the fetus, especially during a pandemic (9,10). Pregnant women are expected to maintain pregnancy status with its correlation to health status during the pandemic by providing ANC services by following applicable health regulations and applying health protocols (11).

This systematic review plays an essential role in identifying and analyzing the factors that influence the decision of pregnant women to continue to perform ANC services. This systematic reviews aims review is to determine the determinants of ANC in pregnant women in healthcare facilities during the COVID-19 pandemic based on the results of a systematic review of studies that have been conducted previously. Based on the explanation stated above, the urgency of conducting the study is to find out the determinants of ANC in pregnant women, which can be reviewed and implemented to increase compliance and awareness of pregnant women regarding the importance of ANC and maintain the quality of ANC services during the pandemic.

Methods
Search Strategy
This systematic review article refers to the Preferences Reporting Item for Systematic Review and Meta-Analysis (PRISMA) guidelines to obtain scientific articles relevant to the research objectives. The strategy used is to search journals through databases such as ProQuest, Science Direct, Pubmed, SAGE, and Google Scholar from September to October 2021 and then updated on March 2022. The search was conducted using keywords in Indonesian and English, namely: Factors AND Determinant AND Pregnant Woman AND Antenatal Care AND COVID-19 AND Pandemic. The author will then select the articles in the search results according to the selection stages based on the PRISMA guidelines.

Inclusion and Exclusion Criteria
The articles used in this study were selected and selected based on pre-defined inclusion and exclusion criteria. The inclusion criteria were: articles discussing the determinants of ANC during the COVID-19 pandemic; articles using Indonesian and English; articles published from 2020 to 2021; the article included pregnant women as research participants; the article is original research; articles published in full text; and articles are peer-reviewed. Meanwhile, the exclusion criteria are articles that do not use Indonesian and English; articles published before 2020; the article does not include pregnant women as research participants; articles of the type of systematic review, literature review, commentary, or letter to the editor; the article is not published in full text or pre-prints articles.

Data Extraction
The articles that meet the data extraction will be carried out based on the inclusion and exclusion criteria described above. The data extraction in this article was carried out based on the classification: author and year, participants, method (study design), and research results that included the determinants of ANC in pregnant women during the COVID-19 pandemic.

Results

Based on search results with keywords, a total of 287 articles were published. The results of the selection or screening in the early stages were carried out by removing duplicate articles, and the results obtained were 92 articles. The next stage of article selection is done through screening based on the title and abstract, at this stage, there are 65 articles excluded. The 27 articles will then be accessed by downloading in full text to be read and selected based on inclusion criteria, participants, and research results. The final result shows nine articles that are relevant and will be used in this systematic review. The article consists of 4 articles in Indonesian and 5 articles in English.

The risk of bias in this systematic review uses an assessment of the research methods of each study, which consists of several things. First, the theory does not fit, and the credibility is lacking. Second, the set variables were not appropriate in number, controlling for confounding variables and other variables. Third, data analysis is not following standard rules.
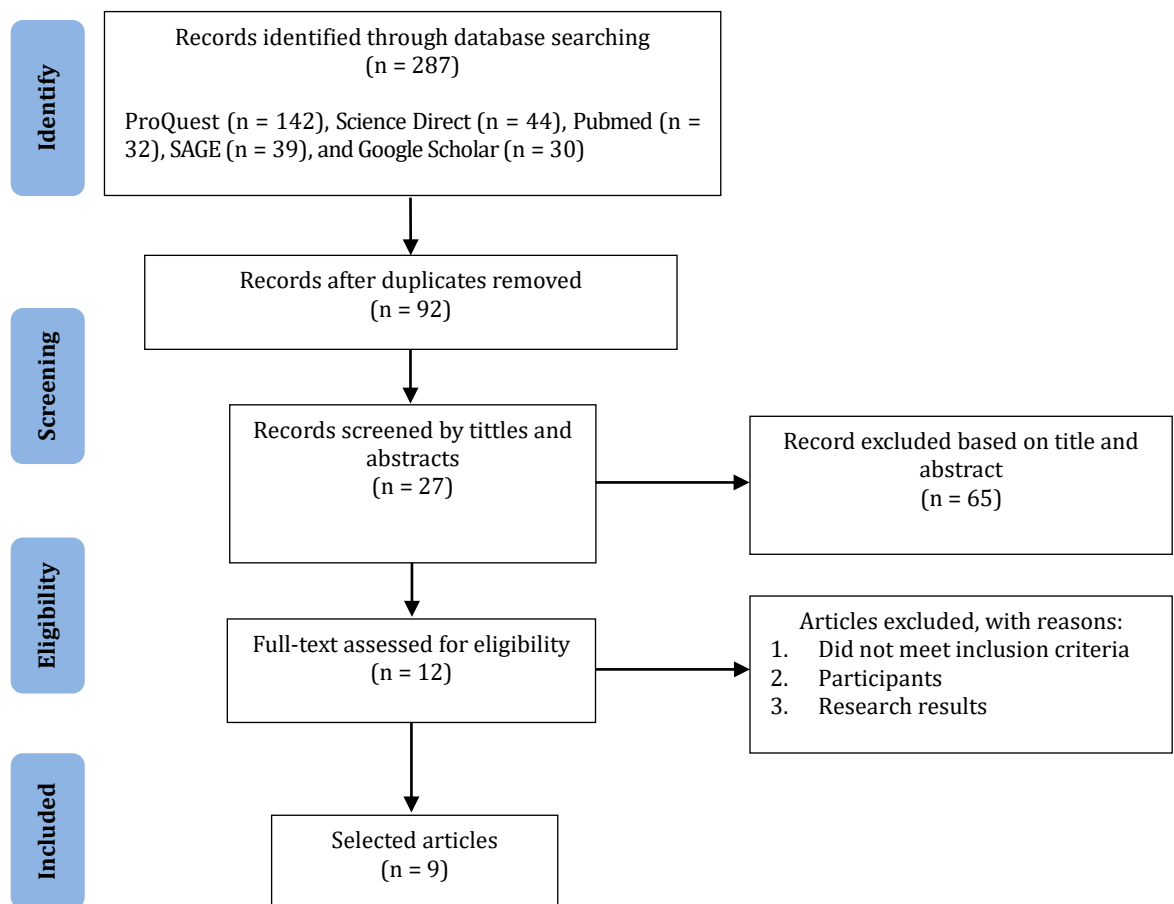

Figure 1. Flow Diagram of PRISMA Selection

The articles used are limited from 2020 to 2021. There are three articles published in 2020, and the remaining six articles published in 2021. The method or study design used is a cross-sectional study. The total number of participants in the study was 1187 respondents who were pregnant women in the first to third trimesters. The research was conducted in several areas in Indonesia and Ethiopia. The results showed several determinants of ANC visits to pregnant women in healthcare facilities during the COVID-19 pandemic, which were influenced by internal and external factors. There are nine selected articles which are described in table 1 to answer the research objectives.

Tabel 1. Summary and research results on the determinants of ANC visits pregnant women in healthcare facilities during the COVID-19 pandemic.

Author and Year	Location	Participants	Method	Result
Ariestanti et al., (2020)	East Jakarta	45 pregnant women	A cross-sectional study	Age, attitude, education, knowledge, and healthcare facilities are determinants of ANC
Cahyati & Susanti (2020)	Sei Langkah Public Health Center, Batam	30 pregnant women	A cross-sectional study	Knowledge, the anxiety of pregnant women, and husband's support are determinants of ANC
Tadesse (2020)	Northwest Ethiopia	389 pregnant women	A cross-sectional study	Age, education level, history of childbirth, anxiety about pandemics, and limited access to transportation are determinants of ANC
Sinambela & Solina (2021)	Talun Kenas Public Health Center, Deli Serdang	50 pregnant women	A cross-sectional study	Education and knowledge are determinants of ANC
Romdiyah & Resmi (2021)	Wonosobo	45 pregnant women	A cross-sectional study	The attitude of pregnant women is a determinant of ANC
Degu et al., (2021)	Debre Tabor General Hospital, Ethiopia	403 pregnant women	A cross-sectional study	Age, education level, employment level, and condition of pregnancy are determinants of ANC
Mugiyati & Rahmayati (2021)	Way Kandis Public Health Center	97 pregnant women	A cross-sectional study	Knowledge, attitude, and compliance are determinants of ANC
Setiyorini et al., (2021)	Panti Rini Hospital, Yogyakarta	32 pregnant women	A cross-sectional study	Family support is a determinant of ANC
Nisma et al., (2021)	Bungadidi Health Center Tana Lili, South Sulawesi	96 pregnant women	A cross-sectional study	Knowledge and attitude are determinants of ANC

Discussion

Based on the results of the analysis of the articles selected in the table above, the discussion that can be raised through this systematic review is the existence of several factors known to be determinants of ANC in pregnant women in healthcare facilities during the COVID-19 pandemic. These determinants include age, maternal anxiety about the pandemic, pregnancy conditions, delivery history, compliance, education level, employment level, attitudes, knowledge, husband's support, and access to healthcare facilities (12–19). These determinants can influence on pregnant women to access ANC services at healthcare facilities, where the determinants that have a negative influence reflect the choice of pregnant women to choose not to access ANC services during the pandemic.

ANC is a visit that can be made by pregnant women, starting from the detection of pregnancy in the first trimester until the last trimester. According to WHO recommendations, ANC visits can be carried out at least once in the first trimester, once in the second trimester, and twice in the third trimester. With the ANC visit, it can detect the health condition of the mother and fetus and a preventive measure so that it does not happen that can worsen the condition of the mother and fetus, thereby reducing the health status of the mother or fetus.

The importance of ANC and its role in improving the health status of mothers and babies has led to a health policy that focuses on implementing integrated ANC, even during the COVID-19 pandemic (16–18). The ANC aims to monitor the health status of the mother and fetus, considering that pregnant women are also one of the people at high risk for COVID-19, so optimal management of health services is needed. However, the decision-making conditions for one pregnant woman and another may vary. This can occur due to differences in the background such as education and knowledge of pregnant women, health conditions, and pregnancy history, to external factors such as socio-cultural factors with various beliefs and values, and factors from the closest environment such as husbands the support provided family (19–21).

Factors that are known to support the decision of pregnant women to continue to perform ANC services at healthcare facilities even though they are in a pandemic period based on the results of the study include age, pregnancy condition, compliance, education level, work level, attitude, knowledge, and husband's support. Meanwhile, other determinants such as maternal anxiety about the pandemic, history of childbirth, and access to healthcare facilities are known to have a negative effect on ANC visits of pregnant women to healthcare facilities during the pandemic (28).

Demographic Characteristics

The determinant of age explains the influence of the age of pregnant women with the decision to access ANC services in health care facilities, where those who are too young, i.e., under 20 years old and too old, i.e., above 35 years, tend not to perform complete ANC. This condition occurs because at a young age, sometimes the level of knowledge is still relatively low, especially in an environment with a low level of knowledge. This condition occurs because sometimes, the level of knowledge is still relatively low at young age, especially in environment with a low level of expertise. Meanwhile, being too old, especially in certain pregnancies such as the third or fourth, sometimes causes a person to feel very well what to do, so they choose not to have their pregnancy checked through ANC services (29–31). The age factor is not a single factor. However, the condition of the social environment in the place of residence also plays an essential role in this factor, especially during the pandemic where good social support is needed so that pregnant women check themselves with the midwife or the nearest health service facility (32–34).

Another determinant of ANC is the mother's level of knowledge related to access to information. Knowledge is one of the crucial factors in shaping a person's behavior. Good knowledge will form a good attitude that leads to ANC behavior by the provisions (14). Mother's knowledge is influenced by promising access to information, especially for mothers who have low levels of education. For this reason, it is necessary to have good information from health workers or health cadres who serve in the community to pregnant women or prospective mothers to increase knowledge of pregnant women. Good knowledge of pregnant women will eventually form good health behavior, hoping to increase the health status of the mother and fetus.

Other determinants such as the condition of pregnancy are also known to the efforts of pregnant women to check their pregnancy. This is closely related to the level of compliance of pregnant women to perform ANC, where this compliance can be built with the adequacy of the level of knowledge and education possessed by pregnant women (21). Pregnant women with higher education levels tend to be able to access information about pregnancy, including the importance of ANC services, so that if further analyzed, it is known that pregnant women have good knowledge. Meanwhile, these factors cannot be separated from the cooperative attitude of pregnant women in carrying out ANC services at healthcare facilities. Including efforts to maintain the health condition of the fetus and mother and implementing health protocols during visits. The role or support of the husband, in this case, is considered to be very important because a husband who can provide support and trust in pregnant women will tend to make ANC services successful even during a pandemic (22).

Level of Compliance

Another factor determining the visit of pregnant women or ANC is the level of compliance of pregnant women. This compliance relates to the behavior of pregnant women who obediently carry out ANC by visiting health care facilities or health workers to check their pregnancy. This level of compliance is related to knowledge and good environmental support to contribute to the level of maternal compliance to come to ANC. Maternal compliance is an essential factor in the success of ANC, which impacts reducing the risk of maternal and fetal death.

Husband's Support

Environmental support is another factor that influences ANC. Pregnant women sometimes experience unstable psychological or emotional conditions, so they need a positive environment to build a good emotional state. This good condition includes inviting or reminding pregnant women to carry out ANC. The husband has a vital role in providing support and taking good care of the condition of his pregnant wife. In addition, the closest people, such as parents, can also provide various supports to pregnant women. The government, in this case, can increase the target of expanding programs and policies to support ANC, one of which is by providing socialization, education, and approaches to people closest to pregnant women, such as husbands and families of pregnant women. With government policies, husbands and families of pregnant women can contribute to the decision of pregnant women to perform ANC by accessing health services to check their pregnancy condition regularly.

The form of support can be taking the mother for a pregnancy check to a health facility or midwife and constantly reminding the importance of maintaining health protocols during the pandemic. What usually happens is that the husband does not provide a role to participate in ANC, such as not delivering to the health care facility. Simple support to deliver pregnant women can increase the willingness of

pregnant women to carry out ANC. On the other hand, health workers must certainly remind families to take pregnant women for routine pregnancy checks. The higher the social encouragement obtained from the husband and family of pregnant women to visit ANC services, it will improve the health status of the mother and fetus.

Occupational Status

The occupational level is another determinant that influences ANC behavior in pregnant women. Work is related to one's busyness and daily activities, including pregnant women. Pregnant women who have a busy jobs sometimes tend to skip the ANC checkup because they are busy with work and feel tired to do the checkup after work. This condition makes pregnant women not carry out ANC properly, even though working mothers need to check their pregnancy to find optimal fetal health status regularly.

Meanwhile, the determinant that influences pregnant women not to perform ANC in healthcare facilities during the pandemic is the mother's anxiety about the risks, namely being infected with COVID-19 when accessing health services. This is in line with access to healthcare facilities, wherein in some areas, not all healthcare facilities can operate optimally during a pandemic due to some existing limitations. This makes pregnant women tend to feel anxious and worried, so they choose not to do ANC services (23). Other determinants such as birth history can be identified that pregnant women with a history of childbirth without weights or significant problems, in subsequent pregnancies choose not to perform ANC during a pandemic. These determinants correlate with the anxiety of pregnant women about access to adequate and safe health care facilities and confidence because, in previous pregnancies, pregnant women did not experience complications or problems during childbirth.

Anxiety is common when there are things to fear, including during a pandemic. However, excessive anxiety can also harm the health of pregnant women and fetuses. Excessive levels of anxiety will result in stressful events that can adversely affect pregnant women and the fetus. Excessive anxiety will also impact ANC activities regularly for nine months in each trimester. When a person experiences excessive anxiety, they will fear visiting local health facilities for an obstetric check-up. These factors must be a concern for health workers to improve the quality of services and convince the public that the health facilities are safe for them to provide services during the pandemic by applicable regulations.

ANC is an activity that has an essential role in maintaining the health of the mother and fetus so that in the future, it will give birth to a baby who is healthy and has an excellent immune system. However, various factors also affect maternal health, such as the content of nutritious food, the level of maternal health, and the attention needed (9,10). An essential role of antenatal care is to regularly find out the condition of the mother and fetus so that if there are unwanted conditions, they can be immediately identified and prevented to find solutions to existing problems.

The importance of ANC during pregnancy is not wholly-owned by pregnant women, especially during the pandemic because of the vulnerability and anxiety experienced by pregnant women. This is an evaluation material to maintain the quality of ANC services and maintain the coverage of ANC visits to pregnant women during the pandemic by implementing several strategies not to impact the degradation of the health conditions of mothers and babies (24). Strategies can be implemented through health education, making personal approaches to pregnant women, including their closest family, and maintaining the conditions of healthcare facilities that are safe, comfortable, and meet health and safety aspects during the COVID-19 outbreak. The findings of this systematic review need careful consideration, bearing in mind its limitations. the findings are based on the data extracted from observational studies associated with inherent biases.

Conclusion

The review results show that demographic characteristics, level of compliance, husband's support, and level of work are determinants of ANC in pregnant women in health care facilities during the COVID-19 pandemic. Several factors need an optimal government program to facilitate safe, comfortable, and integrated ANC services for pregnant women during the pandemic. Another thing that is considered necessary is to approach the closest family of pregnant women, such as husbands, to support the decision of pregnant women to carry out ANC services. The importance of ANC during pregnancy is not wholly-owned by pregnant women, especially during the pandemic due to the vulnerability and anxiety experienced by pregnant women, so it is essential to maintain the coverage and quality of ANC by implementing several strategies to support optimal ANC implementation

Acknowledgements

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