REVIEW ARTICLE

Determinant factors of antenatal care used by pregnant women in Indonesia: A systematic review

DOI: 10.29063/ajrh2024/v28i10s.27

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Abstract

Pregnancy complications can basically be detected through an Integrated Antenatal Care (ANC). In Indonesia, the Integrated ANC is conducted comprehensively and with quality, targeting all pregnant women. This research employed a systematic review by deriving articles from three databases between 2013 and 2023 using a single keyword: "Antenatal Care" and "Pregnant Women" in Indonesia. Several inclusion and exclusion criteria were applied to determine the articles that can advance to data analysis. Initially, the three databases produced 25,582 studies. After completing the review and excluding duplicated articles, 15 met the criteria. These articles described the ANC behaviour of pregnant women in six major regions in Indonesia. The results presented factors that most influenced ANC behaviour among pregnant women in Indonesia. These factors were divided into three major groups: personal factors, external factor, and social support. In particular, the factors influencing participants' ANC visits were knowledge, education, economic status, husband's support, family support, occupation, parity, and economic status. *(Afr J Reprod Health 2024; 28 [10s]: 226-238)*

Keywords: Antenatal care; pregnant woman; systematic review; determinant

Résumé

Les complications de la grossesse peuvent être détectées grâce à des soins prénatals intégrés. En Indonésie, les soins prénatals intégrés sont menés de manière complète et de qualité, et s'adressent à toutes les femmes enceintes. Cette recherche a utilisé une revue systématique en tirant des articles de trois bases de données entre 2013-2023 en utilisant un seul mot-clé: "Antenatal Care" et "Pregnant Women" en Indonésie. Plusieurs critères d'inclusion et d'exclusion ont été appliqués pour déterminer les articles pouvant être analysés. Au départ, les trois bases de données ont produit 25,582 études. Après avoir terminé l'examen et exclu les articles faisant double emploi, 15 d'entre elles répondaient aux critères. Ces articles décrivent le comportement des femmes enceintes en matière de soins prénatals dans six grandes régions d'Indonésie. Les résultats ont présenté les facteurs qui influencent le plus le comportement des femmes enceintes en matière de soins prénatals en Indonésie. Ces facteurs ont été divisés en trois groupes principaux: facteurs personnels, facteurs externes et soutien social. En particulier, facteurs qui influencent les visites des participantes à la CPN sont les connaissances, l'éducation, le statut économique, le soutien du mari, le soutien de la famille, la profession, la parité et le statut économique. *(Afr J Reprod Health 2024; 28 [10s]: 226-238).*

Mots-clés: Soins prénatals; femme enceinte; revue systématique; déterminant

Introduction

Maternal mortality in developing countries is 15 times higher than in developed countries[1]. Most pregnant women die because they do not have adequate access to health services and emergency care[2]. In Indonesia, the maternal mortality rate (MMR) is also high, especially when compared to other ASEAN countries[3]. According to the 2012 Indonesian Health Demographic Survey (SDKI), the MMR in Indonesia was 359 per 100,000 live births. In 2015, the rate remained high, namely 305 per 100,000 live births. A good trend was shown in 2020, with the MMR at 189. In 2024, the rate is expected to decline to 183 and even lower in 2030 by 70 per 100,000 live births[3].

One of the factors that are considered high risk for maternal death is the low coverage of

antenatal care (ANC). As a consequence, the complications during pregnancy are not detected and handled properly[4]. In fact, about 75% of maternal deaths are caused by complications. The causes include heavy bleeding, infection, high blood pressure during pregnancy (pre-eclampsia and eclampsia), complications from childbirth, and unsafe abortions[5]. In Indonesia, the leading causes of maternal death are bleeding (30.3%), eclampsia/hypertension (27.1%), and infection (7.3%)[6].

Detecting complications during pregnancy and childbirth can basically be done through routine integrated pregnancy examination activities, which are usually called Integrated Antenatal Care (ANC)[7]. In Indonesia, this examination is carried out comprehensively and with quality, targeting all pregnant women (Ministry of Health, 2021)[7]. Integrated ANC is a refinement of ANC services due to the increase in other problematic factors in pregnancy, including pregnant women suffering from infectious diseases (HIV, AIDS, tuberculosis, and syphilis), non-communicable diseases, and malnutrition[7].

Methods

Design

The research aimed to determine factors for using antenatal care among pregnant women in Indonesia by analyzing articles related to the research topic. The research employed a systematic review under the principles of PRISMA 2020 guidelines[8]. The guidelines regulate the researchers in screening articles, determining inclusion and exclusion criteria, and analyzing the data.

Inclusion and exclusion criteria

In order to determine the appropriacy of the selected articles, several inclusion criteria were applied to the articles. The articles should (1) be published in English and Indonesian language, (2) be published between 2013 and 2023, (3) use keywords for the use of ANC by pregnant women in Indonesia, (4) be original research articles only, and (5) have no specific regional criteria. Meawhile, the exclusion criteria were that the articles should (1) not be an editorial, systematic review, literature review, or meta-analysis, (2) articles with only and abstracts, and (3) not be published other than in the years 2013 – 2023.

Search strategy and study identified

To achieve the research objectives, the articles used in this study were obtained through a comprehensive and systematic search system to identify relevant articles as set in the criteria above. Factors influencing ANC in pregnant women were reviewed, including sampling, variables, methods, and research results. The articles were derived from three databases, including Science Direct, Garuda, and Google Scholar. The keywords were applied systematically with clear phrasing, word decapitation, and clear alternative spelling.

Data collation, extraction, and appraisal tools

Data extraction in this research used Microsoft Excel to identify all relevant articles for inclusion into the systematic review. All analyses and reviews of relevant articles were exported to Microsoft Word. The title of the data extraction included the author's name, year of publication, research objectives, research location, research methods (design, sample, analysis, and determinant factors) and research results. Then, the author double-checked to avoid errors in writing the information in the study.

Research sample

Using the PRISMA format, the results identified 15 articles for this review.

Results

A total of 25,582 research articles were identified through Science Direct, Google Scholar, and Garuda databases. The PRISMA flowchart in Figure 1 shows the details of the article selection process. From the initial review process, 210 articles were relevant to the topic, while 25381 irrelevant articles were removed. Then, 82 articles with full texts were selected for assessment, and 119 articles were

Table 1: Summary of the studies that mentioned determinant factors of antenatal care for pregnant women in Indonesia

Authors, Journal Title, Years	Purpose	Location	Research Methods					Result
			Design	Sample	Instrument	Analyze	Determinants	
Novita (2021)[9] *Factors Associated with Pregnant Women's Attitudes Towards Antenatal Care during the COVID-19 Pandemic at Ar-Rahmah Maternity Clinic in 2021*	To determine the factors associated with the behavior of pregnant women in antenatal care during the COVID-19 pandemic.	Ar-Rahmah Maternity Clinic, South Sumatra	Cross Sectional	20 Pregnant Women 3rd Trimester	Questionnaire	Chi-Square	Occupational	Occupation of pregnant women have significant relation with carrying out Antenatal Care during the Covid-19 pandemic with a *p value* < 0.05 with OR 2,25.
Wulan *et al*., (2020)[10] *Factors Associated with Compliance of Pregnant Women in Attending Antenatal Care (ANC) Visits at Syarifah Lubis Health Center in Padangsidimpuan City*	To determine the factors are related to the adherence of pregnant women in antenatal care visits at BPM Syarifah Lubis.	BPM Syarifah Lubis, North Sumatera	Cross Sectional	32 Pregnant Women 3rd Trimester	Questionnaire	Chi-Square	Occupational, Husband Support	There's association employment status (p = 0.002) and husband's support (p = 0.021) with the compliance of pregnant women in attending ANC visits at
Azizah *et al.,* (2021)[11] *Factors Associated with the Frequency of Antenatal Care Visits Among Pregnant Women during the COVID-19 Pandemic at Pekauman Health Center, Banjarmasin*	To determine the factors associated with the frequency of ANC visits during the COVID-19 pandemic at Pekauman Health Center Banjarmasin.	Community Health Center Pekauman Banjarmasin South Kalimantan	Cross Sectional	92 pregnant women in 3rd Trimester	Questionnaire and Observation KIA Book	Chi-Square	Age, Knowledge, Husband's Support, Education, Attitude	There is a relationship between age (p= 0.009), knowledge (p=0.004), husband's support(p= 0,007), education (p=0.027), attitude (p= 0.029) and the frequency of ANC visits.

Iit et al., (2022)[12] *Factors Related To Antenatal Care Visits During The Covid-19 Pandemic At Kampung Bali Community Health Center In 2021*	To analyze the factors related to the visits of pregnant women during the COVID-19 pandemic at the Kampung Bali Health Center in 2021.	Kampung Bali Community Health Center, Bengkulu	Cross Sectional	42 pregnant women 1st-3rd Trimester	Questionnaire	Chi-Square	Occupational, Knowledge and Husband Support	There is a relationship between Occupational (P Value = 0.038) Knowledge (P value = 0.049) husband's support with (P value = 0.032) and visits to pregnant women during the Covid-19 pandemic.
Sahasika et al., (2023)[13] *Factors Associated with Antenatal Care Service Visits Among Pregnant Women at Duduksampeyan Community Health Center in Gresik Regency*	To identify factors associated with visits to antenatal care services for pregnant women from January to March 2022.	Community Health Center Duduksampeyan, Gersik, East Java	Cross Sectional	52 Pregnant Women 1st-3rd Trimester	Questionnaire	Chi Square	Knowledge, Family Support, Distance from residence to community health center	There was a relationship between knowledge (p=0,002), Family support (p=0,004), and distance to community health center (p=0,025) of pregnant women and ANC visits.
Wiratmo *et al*., (2020)[14] *Factors Influencing Antenatal Care Visits Regarding Antenatal Care Behaviors*	To determine factors that influence ANC visits to ANC behavior at Pasar Rebo Community Health Center East Jakarta.	Pasar Rebo Community Health Center East Jakarta	Cross Sectional	117 pregnant women 2nd-3rd Trimester	Questionnaire	Spearman Rho	Age, education, occupational, income, knowledge, family support, attitude	Factors that influence ANC visits to ANC behavior, including age (r = 0.419), a p-value of 0.000; education (r = 0.425), p-value of 0.000; jobs (r = 0.279), p-value of 0.002; income (r = 0.407), p-value of 0.000; knowledge (r = 0.409), p-value of 0.000; husband / family support (r = 0.417), p-value of 0.000; attitude (r = 0.597), p-value of 0.000
Zuchro, *et al.,* (2022)[15] *Analysis of Antenatal Care (ANC) in Pregnant Women*	To analyze the factors that influence antenatal care in pregnant women	Community Health Center Bnadar Jaya, Lahat, South Sumatera	Cross-sectional	62 Pregnant Women 1st-3rd Trimester	Questionnaire	Chi Square and Multiple regression logistic analysis	Education, parity, maternal age, and Knowledge	There is relationship between education (p=0.000; OR 2.625), parity (p=0.002; OR 0.153), maternal age (p=0.003; OR 0.119) and

								knowledge (p=0.000; OR 13.2) with ANC. The results of the multiple logistic regression test the most dominant variable is knowledge (P=0.001; OR 16.906)
Rohi et al., (2022)[16] *Analysis of Factors Affecting Antenatal Care Visits among Pregnant Adolescents at Kupang City Community Health Center.*	To analyze factors associated with teenage pregnancy ANC Health Center in the city of Kupang.	Community Health Center Kupang City, East Nusa Tenggara	Cross Sectional	81 pregnant teenagers 1st-3rd Trimester	Questionnaire	Chi-square and multiple regression test	Perseption, family support, knowledge, education, health care providers, facilities and infrastructure	A significant relationship between perception (p= 0,000), family support (p=0,048), knowledge (p=0,006), education (p=0,000), health care providers (p=0,001) facilities and infrastructure (p=0,007) with the implementation of the ANC.Negative perception will decrease ANC visit by 2.800 times and low education will decrease ANC visit by 5.375 times.
Tunny (2022)[17] *Factors Affecting Antenatal Care (ANC) Visits Among Pregnant Women at Rijali Community Health Center in Ambon City*	To determine the factors associated with Antenatal Care (ANC) visits to pregnant women at the Rijali Health Center in Ambon City.	Rijali Community Health Center, Ambon, Maluku	Cross Sectional	95 Pregnant Women 3rd Trimester	Questionnaire	Chi Square	Age and Knowledge	There was an effect of the age p=0.017 (p<0.05), knowledge p=0.030 (p<0.05) with ANC.
Siregar et al., (2022)[18] *Factors Associated With Intention to Revisit Antenatal Care at the Pratama Sahabat Bunda Clinic in 2022*	To analyze the factors associated with interest in ANC visits at Pratama Sahabat Bunda Clinic	Sahabat Bunda Primary Clinic, North Sumatera	Cross Sectional	40 pregnant women 1st-3rd Trimester	Questionnaire	Chi Square	Knowledge, attitude, occupational, economic status, husband support.	There is relation between Knowledge (p= 0,012), attitude (p=0,028), occupational (p=0,028), economic status (0,012), husband support (p=0,012) with ANC

Eliwarti (2020)[19] *Factors Related To The Visit Antenatal Care For Pregnant Women At Lubuk Buaya Health Center Padang*	To determine the factors of visit Antenatal care in pregnant women	Lubuk Buaya Padang Community Health Center, Padang, West Sumatera	Cross Sectional	58 pregnant women 3rd Trimester	Questionnaire	Chi-Square	Knowledge, Attitude, family support	There is significant relation between Knowledge (p = 0,001), attitudes, (p =0,005) and family support (p = 0,001) to ANC
Tinamonga et al., (2018)[20] *Factors Related To Utilization Antenatal Care Services In The Working Area Of The Sawang Health Center, Siau District, Tagulandang Biaro*	To analyze the factors related to utilization ANC	Sawang Community Health Center, Siau Tagulandang Biaro District, North Sulawesi	Cross Sectional	59 pregnant women 3rd Trimester	Questionnaire	Chi Square	Knowledge, attitude, and husband support	knowledge (p value = 0.026), attitude (p value = 0.011), husband support (p value = 0.064)related to ANC Visit
Sabanari (2017)[21] *Factors Related To Antenatal Care Visits For Pregnant Women In The Gemeh Health Center, Kepulauan Talaud District*	To analyze the factors that related to antenatal care visit	Gemeh Community Health Center, Kepulauan Talaud, North Sulawesi	Cross Sectional	40 Pregnant Women 1st-3rd Trimester	Questionnaire	Chi square	Knowledge, attitude, family support	The results found that the knowledge (p=0.001), Attitude (p= 0.001) family support (p = 0.000) related to ANC visit
Putri (2021)[22] *Determinants of Antenatal Care Visit Coverage During the Covid-19 Pandemic at Kassi-Kassi Health Center, Makassar in 2021*	To determine the determinants of Antenatal Care visit coverage during the Covid-19 pandemic at Kassi-Kassi Health Center, Makassar City.	Kassi-Kassi Community Health Center, Makassar City, South Sulawesi	Cross Sectional	30 pregnant women 3rd Trimester	Questionnaire	Fisher exact test	Education	The education factor has a significant on ANC visits with a (p-value of 0.014)
Sibero et al., (2021)[23] *Factors Influencing Mother's Compliance With Antenatal Care (Anc) Visits At Bumi Sehat Meulaboh Clinic, West Aceh District, 2020*	To determine the factors influencing maternal compliance with ANC visits at bumi sehat clinic in meulaboh, west aceh district in 2020.	Bumi Sehat Clinic Meulaboh West Aceh District, Nangroe Aceh Darussalam	Cross Sectional	43 Pregnant Women 1st-3rd Trimester	Questionnaire	Chi Square and Multiple regression logistic analysis	Family income, distance to community health center, husband support, and parity	There is a correlation between family income (p = 0.001), distance to health facilities (p = 0.022), husband's support (p = 0.000), and parity (p = 0.001) with maternal compliance in attending ANC visits. with the highest regression coefficient of 6.087.

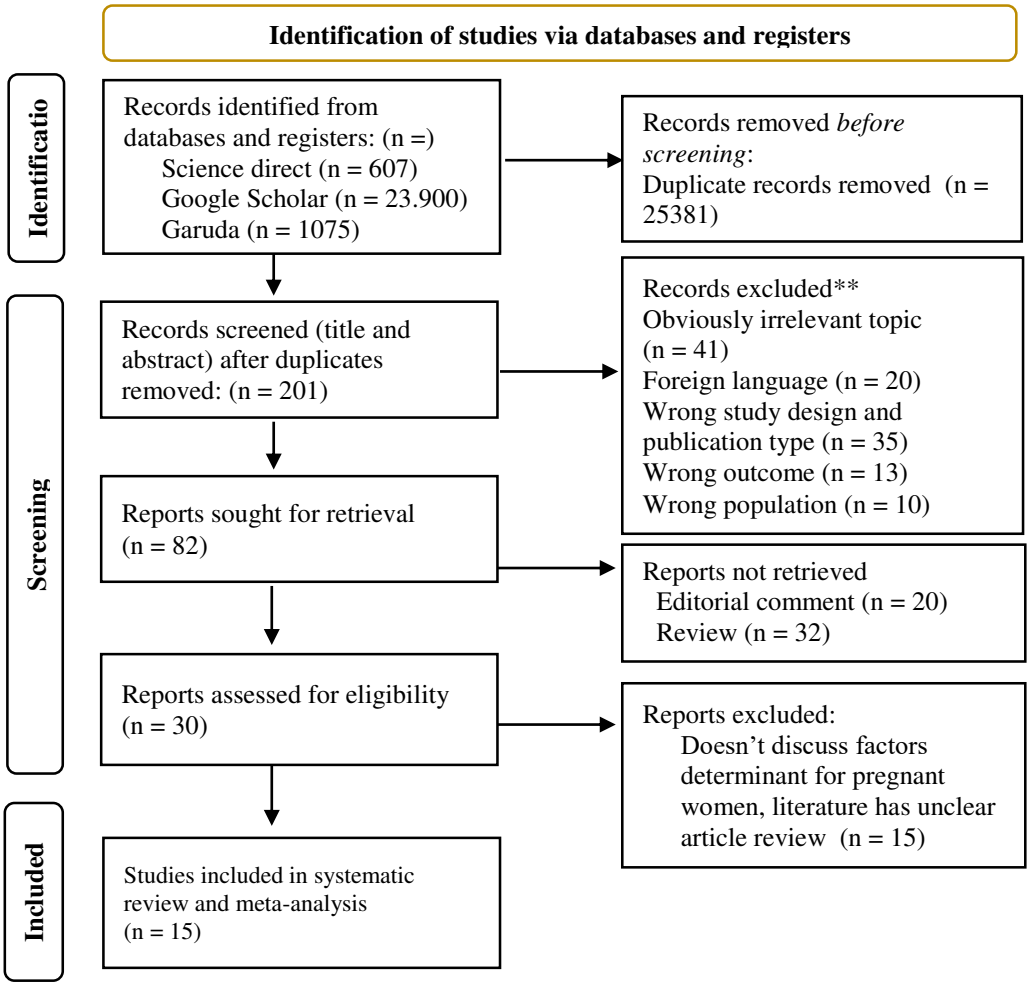

Figure 1: Flow of information in the article selection

Table 2: Distribution of geographical research location

No	Regional	Article	%
1	Sumatera	Novita (2021); Wulan et al., (2020); Iit et al., (2022); Zuchro, et al., (2022); Siregar et al., (2022); Eliwarti (2020) ; Sibero et al., (2021)	47
2	Kalimantan	Azizah et al., (2021)	7
3	Jawa	Sahasika et al., (2023); Wiratmo et al., (2020)	13
4	Nusa Tenggara	Rohi et al., (2022)	7
5	Maluku	Tunny (2022)	7
6	Sulawesi	Tinamonga et al., (2018); Sabanari (2017); Susanto (2021)	20

removed because they did not meet the inclusion criteria. After that, 52 articles had titles and abstracts only. In addition, editorial comment articles were excluded, leaving 30 articles for eligibility assessment. Fifteen studies were disqualified. Thus, there were 15 articles included in this systematic review. From 15 articles selected, we extracted information based on their geographical location and determinant factors of antenatal care in Indonesia. After assessing the details of the article, the results show that the chosen articles were published in national journals from 2013-2023. Regarding geographical location, the articles came from various regions in Indonesia. Most of the research

Table 3: Distribution of determinant factors for antenatal care among pregnant women in Indonesia

No	Determinant Factor	Article
1	Social Support	Wulan et al., (2020); Azizah et al., (2021); Iit et al., (2022); Sahasika et al., (2023); Wiratmo et al., (2020); Rohi et al., (2022); Siregar et al., (2022); Eliwarti (2020) ; Tinamonga et al., (2018); Sabanari (2017); Sibero et al., (2021)
2	Knowledge	Azizah et al., (2021); Iit et al., (2022); Sahasika et al., (2023); Wiratmo et al., (2020); Zuchro, et al., (2022); Rohi et al., (2022); Tunny (2022); Siregar et al., (2022); Eliwarti (2020) ; Tinamonga et al., (2018);
3	Age	Azizah et al., (2021); Wiratmo et al., (2020); Tunny (2022); Zuchro, et al., (2022); Siregar et al., (2022);
4	Education	Azizah et al., (2021); Wiratmo et al., (2020); Zuchro, et al., (2022); Rohi et al., (2022); Putri (2021)
5	Occupational	Novita (2021); Wulan et al., (2020); Iit et al., (2022); Wiratmo et al., (2020); Siregar et al., (2022);
6	Attitude	Azizah et al., (2021); Wiratmo et al., (2020); Eliwarti (2020) ; Tinamonga et al., (2018); Sabanari (2017);
7	Economic	Wiratmo et al., (2020); Siregar et al., (2022); Sibero et al., (2021)
8	Parity	Zuchro, et al., (2022); Sibero et al., (2021)
9	Distance	Sahasika et al., (2023); Sibero et al., (2021)
10	Others (Perception & Facilities)	Rohi et al., (2022)

was conducted in Sumatra. The distribution of the article's geographical locations is presented in Table 2.

After looking at their locations, the research summarized the design used by the articles. Overall, the research designs were dominated by cross-sectional. The techniques of data analysis were varied. Ten articles used chi-square analysis, one used Spearman Rho, one used Fisher's exact test, and three used two analyses, chi-square and multiple analytical regression. The study population was mostly pregnant women in the third trimester. There were only a few articles that covered all pregnant women from the first to the third trimesters. Based on the analysis, Table 3 shows the determinant factors influencing antenatal care for Indonesian pregnant women.

The results in Table 3 show that the determinant factors influencing ANC use among pregnant women in Indonesia are social support, knowledge, age, education, occupational, attitudes, economic, parity, distance, and other factors (perception and facilities). Of the 15 articles, social support was the most determinant factor affecting ANC among pregnant women. Social support was obtained from husbands, families, and health providers such as midwives, doctors, and nurses. In particular, seven articles[10–12,18,20,22,23] assessed husband support, five articles[13,14,16,21] included family support, and one mentioned health care provider support[16]. According to House (1980), there are three forms of social support provided by husbands, families, and health providers: instrumental, emotional, and informational. As reported in several studies[10–12], the form of instrumental support by husbands is exemplified by taking pregnant women to ANC and buying them pregnancy milk or vitamins. Emotional support is shown by giving attention and listening to their feelings[12]. Meanwhile, informative support is indicated by reminding them of the schedule for ANC[10–12]. Social support provided by the family is typically instrumental and informative. Sahasika[12] and Wiratmo[13] studies showed that the closest family would accompany pregnant women to health services if the husband could not accompany them. They would recommend places for medical and non-medical pregnancy care. On the other hand, health providers provided informative support by reminding pregnant women through text messages

one day before the ANC schedule and providing education about maternal and infant pregnancy health[16].

Another factor that might influence pregnant women's visits is their knowledge. It is the information that pregnant women know about ANC, including the definition, purpose, and examinations that should be obtained according to gestational age. Based on the article review, several studies[11–15,17,20,22] showed that most respondents had good knowledge, and just four articles[16,18,19,21] stated that respondents' knowledge was poor. Another determinant factor was maternal age. In the article, maternal age was categorized into two: high-risk age (< 25 and > 35 years) and non-risk age (25-35 years). Majority of studies[9–12,14,15,17,20–22] reported that knowing the of pregnant women is not a risk factor. However, some pregnant women were teenagers[16]. Prior studies[9,11,12,14,15,17,20,22] showed that the latest education level of pregnant women was mostly in high school and college. Studies by Riwoe Rohi[15] and Sabanari[20] even mentioned lower educational levels. Occupation was another factor related to ANC use. as reported by several studies[9,14,16–18,20–22]. According to the articles, most pregnant women were housewives. The next factor was attitude. There were five articles that assessed pregnant women's attitudes towards ANC. Three articles[18,19,21] stated that pregnant women had negative attitudes to ANC. The other two studies by Azizah[10] and Wiratmo[13] mentioned positive attitudes on ANC visits. Four articles[14,16,18,23] that included economic level said that all of them have a low economic level with family income below the regional minimum wage. Following that, this research considered parity as one factor that influences the ANC visit. Three articles[11,15,17] showed three primiparous, one multiparous[21,] and one grade multiparous pregnant women[22]. Of the three articles, studies by Riwoe Rohi[15] and Sibero et al. [22] mentioned the long distances between home and healthcare facilities, while the study by Sahasika[13] reported shorter distances. Other factors associated ANC with perceptions and health care facilities[16].

Discussion

The objective of this study was to determine the determinant factors of antenatal care for pregnant women from the first to the third trimester. The review identified 12 determinant factors that influence antenatal care in Indonesia. We classified the factors into three categories: personal factors, external factors, and social support. Personal factors covered age, knowledge, education, occupation, economic level, parity, attitude, and perception. External factors included the distance to health facilities. Social support consisted of family support and healthcare providers.

Personal factors

In this review, knowledge was the most mentioned personal factor in 15 articles as a determinant of ANC. The knowledge about ANC is associated with the frequency, attendance, and timeliness of ANC visits. Pregnant women who are educated about ANC will receive better quality of ANC[15]. As stated by several studies[11–15,17,20,22], pregnant women knowledgeable about ANC are more likely to attend ANC at healthcare facilities regularly. They understood and realized that ANC visits were not just to fulfill an obligation but a necessity during pregnancy.

Maternal age was also related to the frequency of ANC visits. Prior studies[9–12,14,15,17,20,22] showed that pregnant women of low-risk age are more likely to use routine antenatal care because they have strong motivation and good psychological readiness in committing to ANC. They want to have healthy children, and healthy conditions during pregnancy and delivery. Following that, age is also mentioned in this research. In comparison with older pregnant women, teenage pregnant women do not use antenatal care optimally[16]. Adolescent mothers (15-19 years old) are three times less likely to utilise ANC than adult mothers[24]. Other influencing factors included low socio-economic circumstances and lack of confidence. In addition, some prioritise the convenience of facilities and services of healthcare providers because they feel they need more privacy from others[25]. They prefer not to attend ANC regularly because they feel worried about how people perceive them rather than their own and their baby's health.

Furthermore, the level of education determines the level of ANC knowledge among

pregnant women[14]. Pregnant women with a high level of education have a stronger understanding of pregnancy and related health issues[26]. Thus, maternal education is important as it is associated with the utilization of health services. Pregnant women with a high level of education and economics have more preference to choose the desired pregnancy health services according to their needs[14]. Economic level and education were major determinants of financial autonomy[27]. This statement is in accordance with the results of several studies[9,11,12,14,15,17,20,22], stating that the higher education of pregnant women, the better their ANC visits. Meanwhile, pregnant women with low education levels mostly depend on others to determine their attitudes on antenatal care[16].

This research also highlights occupation as it can affect the frequency and timeliness of ANC visits[28]. Based on the reviewed studies, pregnant women who work full-time every day will face difficulties in attending ANC. They have are struggling to spare time because they put work as a priority[10]. Different studies have shown that pregnant women who do not work do not attend ANC regularly; economic factors are the reason[9,16,18,21]. Pregnant women with family income below the regional minimum wage prefer to use the funds for daily needs rather than attending ANC[23]. Pregnant women with these two conditions will only do ANC if there are pregnancy problems and pregnancy complications.

The results of this study also indicate that parity or the number of live births experienced by a mother affects ANC visits. Several studies[11,15,17] report that primigravid mothers have more complete ANC visits than multigravid mothers. Mothers with high parity (multigravida and grand multigravida) often feel that they already have experiences about pregnancy, including how to deal with maternal complaints and care. Therefore, they are less motivated to make ANC visits[22]. In contrast, primigravid mothers, often feel excited to undertake pregnancy check-ups. As the first pregnancy, they are often are afraid that something go wrong with their pregnancy. They are more likely to regularly attend ANC to monitor fetal growth and development.

The attitude of pregnant women to ANC visits is influenced by knowledge and support from their persons[29]. The studies by Azizah[10] and Wiratmo[13] showed that pregnant women with positive attitudes have strong desires for ANC visits. A good attitude and acceptance of ANC reflects the mother's concern for the health of herself and the fetus. By contrast, three studies [18,19,21] reported that pregnant women with negative attitudes find it difficult to make use of routine ANC visits.

Perception is how an individual is motivated to act, perception also determines how pregnant women behave[30]. Perceptions of pregnant women can be influenced by previous pregnancy experiences and experiences of others, motives or intentions, and environmental factors[16]. Pregnant women with good perception of ANC will make the decision to do ANC[31]. On the other hand, according to reviewed articles, a negative perception of ANC makes the frequency and timeliness of ANC visits less optimal[16].

External factors

The external factor involves the distance between home and healthcare facilities. It is reported to determine the frequency of ANC visits. Distance is related to accessibility. Pregnant women who want to utilize ANC services will consider the distance to health services, available means of transport, and time efficiency to reach health services[13]. Research by Riwoe Rohi[15] and Sibero et al.,[22] explains that long distances will increase mothers' motivation to access health facilities for ANC.

Health care facilities are also related to the number of visits by pregnant women for ANC. If health care facilities can provide good service, pregnant women will feel comfortable to come back because they feel safe in doing ANC. Inadequate healthcare facilities make pregnant women less interested and avoid doing routine pregnancy checks[16].

Social support

Social support can be obtained from family or health providers. Forms of social support can be physical or non-physical, such as instrumental support,

emotional support, and information support. In this way, they will feel accepted, valued, and loved[32]. The results of the article review found that husband support is very important for pregnant women to do ANC. Earlier studies[10–12,18,20,22,23] showed that pregnant women who receive full support from their husbands tend to have a positive attitude towards ANC. They feel cared for and loved by the support provided by the husband. Such actions increase their motivation to come to health services. In addition, support from family such as parents and siblings is also important for pregnant women. If the husband cannot provide full support for ANC, the support of the closest family is needed to maintain the motivation and enthusiasm of pregnant women to attend ANC regularly[13].

Health providers also have a role in providing support to pregnant women. The support is given in the form of informative support[16]. Health professionals such as doctors, psychologists, or counsellors can provide social support in the context of health care. A good relationship between health workers and pregnant women will help the implementation of the ANC program successfully in this case health workers in addition to giving informational support can also direct to routinely carry out pregnancy checks. Therefore, early screening can be done to detect complications that may occur during pregnancy[16].

Conclusion

This research reviewed articles that involved participants from Sabang to Merauke throughout the Indonesian archipelago. Based on the analysis, there are three determinant factors that influence pregnant women to attend ANC, namely personal factors, external factors, and social support. Social support was the most commonly mentioned determinant in 15 articles. It was then followed by the personal factors, represented by knowledge, age, and education level as most influenced variable in this factor. There was also external factor, exemplified by the distance to health services that was also associated with women making regular ANC visits.

Contribution of authors

Kartika : conceptualized and designed the study
Shrimarti Rukmini Devy: conceptualized and edited the paper
Setya Haksama: conceptualized and edited the paper
Ismuntania: wrote the methodology and edited the paper
Fakhryan Rakhman: wrote the discussion and edited the paper

Acknowledgement

First, the authors gratefully acknowledge to thank the Doctoral Department Faculty of Public Health, Airlangga University as an educational institution where the author studied until getting doctoral degree. Second, the author would like to thank LPDP (education fund management institutions) that has financed the entire study process. Third, the author would like to thank STIKes Medika Nurul Iman, Indonesia as the educational institution where the author works, which has supported the author in providing enthusiasm to immediately complete the study.

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