

**Original Research**

## **Factors Affecting Antenatal Care Visit Obedience during the Covid-19 Pandemic in Konawe District, Southeast Sulawesi**

**Ayut Merdikawati<sup>1\*</sup>, Eka Nurjannah<sup>2</sup>, Asti Melani Astari<sup>3</sup>, Muladefi Choiriyah<sup>4</sup>**

<sup>1,2,3,4</sup>Nursing Department, Faculty of Health Sciences, Universitas Brawijaya

**\*Corresponding author:**

Ayut Merdikawati

Nursing Department, Faculty of Health Sciences, University of Brawijaya

Jl. Puncak Dieng, Kalisongo, Kecamatan Dau Malang, Telp: +62-341-5080686

Email: [ayut.fk@ub.ac.id](mailto:ayut.fk@ub.ac.id)

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**ABSTRACT**

The Covid-19 pandemic impacts both the access and quality of health services resulting in many restrictions on almost all routine services—the coverage of antenatal care visits in Indonesian public health centers decreases. Research on the factors affecting antenatal care visits of pregnant women during the Covid-19 pandemic in the eastern Indonesian population is currently limited. This study aims to analyze the factors affecting ANC visits of pregnant women during the covid-19 pandemic. This research implements a cross-sectional design by conducting the study on the coverage area of Pondidaha Health Center, Konawe, in January 2021. Respondents fulfilling the criteria included pregnant women residing in Konawe, experiencing the third trimester of pregnancy (28–40 weeks), having a personal Maternal-Child Health book, and recording the pregnancy visit at Pondidaha Public Health Center or Integrated healthcare center. The exclusion criteria included a mother who did not complete the questionnaires. The data analysis implements the Spearman rank test. Forty-six respondents participating in this study (with most of Pondidaha's pregnant women) were found to have incomplete ANC visits. Factors affecting incomplete ANC visits included knowledge, attitude, health care system, and health workers' support. The result indicated that the level of knowledge, mothers' attitude, healthcare, and health workers' support significantly indicated the positive outcome of ANC visits during the COVID-19 pandemic. In conclusion, the level of knowledge exhibited the highest correlation to the obedience of ANC visits.

## Introduction

Antenatal care (ANC) applies functions and activities for which health services are responsible for providing services to clients encountering issues with their maternal health during pregnancy. ANC aims to maintain the health of mothers and babies during pregnancy, childbirth, and postpartum and minimize maternal morbidity and mortality (Fitrayeni *et al.*, 2017). Mothers must conduct ANC care to ensure their normal and healthy pregnancies and prevent problems or complications from previous ones (Mandriwati *et al.*, 2017).

Before the pandemic, ANC coverage in Indonesia generally increased in the previous two years, from 87.30% to 88.40% in 2019 (Kementerian Kesehatan RI, 2019). ANC coverage in Southeast Sulawesi Province and in Konawe District in 2019 reportedly reached 70.3% and 60.32%, respectively. Twenty-nine health centers in Konawe recorded Pondidaha Health Center as a working area with low ANC coverage of 33.67% (Kementerian Kesehatan RI, 2019). However, in 2020, due to the COVID-19 pandemic, data showed that ANC coverage in Pondidaha Health Center fell to 23.2% (52 pregnant women (4<sup>th</sup> visits) from the target number of 224 pregnant women) from January to October. Overall, ANC coverage in Indonesian public health centers is likely to dwindle.

The Covid-19 pandemic affects health services, both access, and quality, in conjunction with limitations on almost all routine services leading to restraining visits to health centers due to the fear of being contaminated by the virus, pregnancy class delays, and the unpreparedness of services in terms of personnel and infrastructure, including personal protective equipment (Kementerian Kesehatan RI, 2020).

Case studies in five regions in Indonesia by the SMERU Research Institute (2020) on the impact of the Covid-19 pandemic on maternal and child nutrition and health services found a decline in the number of visits to pregnancy screening services during the Covid-19 pandemic. Previous studies in various countries describe the effect of pandemics on health services. There was

reportedly 50% and 32% alleviation of antenatal visits and childbirth by health workers during the Ebola outbreak in Liberia (Li *et al.*, 2017). Hence, decreased ANC visits of pregnant women during the Covid-19 pandemic occurred (Nur *et al.*, 2020). The low ANC visits of pregnant women indicate that their pregnancy screening behavior has not met the national expectations and targets. It is essential to examine what factors affect pregnant women's visits to ANC to determine the intervention method to convince them to routinely make ANC visits.

The Covid 19 pandemic affected ANC visits in terms of shortage in availability and access to services, lack of appropriate and comprehensive services, and increased risk of infection among health care workers. The Indonesian government recommends staying at home, working from home, social distancing, avoiding direct physical contact not to mention crowds. Consequently, pregnant women have not completed pregnancy health services as they fear contracting the Coronavirus (Du *et al.*, 2020). This occurrence is also described by another researcher widely researching ANC in pregnant women in Indonesia. Conversely, research on the factors affecting antenatal care visits in pregnant women during the Covid-19 pandemic is still limited, especially in the eastern Indonesia population. Based on the above phenomenon, this study aims to analyze factors that affect ANC visits in pregnant women during the covid-19 pandemic.

## Method

This study employed a cross-sectional design in which the researchers surveyed the coverage area of Pondidaha Health Center, Konawe District, in January 2021, involving respondents qualifying the criteria: pregnant women who lived in Konawe, had the third trimester of pregnancy (28–40 weeks), had a personal Maternal-Child Health book, and recorded the pregnancy visit at Pondidaha Public Health Center or Integrated healthcare center, with the exclusion of a mother not completing the questionnaires.

The data were collected from the respondents' responses to the distributed questionnaires on personal data, knowledge, mothers' attitudes, perception of health care systems, health worker support, and the number of ANC visits. The knowledge and attitude questionnaire was adopted from Maria Yosefa P *et al.* (2018), and modified by the researchers. The knowledge questionnaire

consists of 12 true-false questions with a maximum point of 12, as illustrated in Table 1. Then, the score was divided into three criteria: good, moderate, and poor.

The mothers' attitude questionnaire consists of 10 questions measured by a Likert scale (1-5), as seen in Table 2. The attitude was then divided into two categories: positive and negative.

**Table 1. Knowledge's Questionnaire of ANC Visits During the Covid-19 Pandemic**

Parameters and Questions
<b>Aim</b>
1. Pregnancy check-ups during the Covid-19 pandemic are essential to ensure that both mother and baby are healthy.
2. Health care providers advise the pregnant women to continue routine pregnancy check-ups during the Covid-19 pandemic.
<b>Procedure</b>
3. Pregnancy check-ups must be conducted at least six times during the Covid-19 pandemic.
4. The first pregnancy examination must be conducted at the Public Health Center to see any risk factors for pregnancy.
5. Unless any complaints/risks/ signs of danger occur, pregnant women may proceed to consult for prenatal care in the second trimester (4-6 months) over the telephone/online.
6. Pregnancy examination in the third trimester (7-9 months) is carried out one month before the estimated delivery by appointment at the Public Health Center.
7. Pregnancy examination in the third trimester (7-9 months) determines the plan for the delivery place
<b>Standard of service</b>
8. Pregnant women must wear masks when visiting a health center for antenatal care.
9. Pregnant women are advised to monitor active fetal movements in the third trimester of pregnancy (7-9 months).
10. Pregnant women must consume a minimum of 90 tablets for blood during pregnancy.
11. A swab examination is a must for pregnant women who will give birth without any signs of Covid-19. If not available, a rapid test or blood test may apply.
12. Approaching delivery, mothers are advised to self-isolate at home for 14 days for preparation.

**Table 2. Mothers' Attitude Questionnaire of ANC Visits During the Covid-19 Pandemic**

Parameters and Questions
<b>Advantages</b>
1. Routine pregnancy check-ups during the Covid-19 pandemic help detect complications in pregnancy
<b>Procedure</b>
2. During the Covid-19 pandemic, at least six face-to-face pregnancy check-ups are conducted.
3. Pregnant women are advised to continue routine pregnancy check-ups despite service modifications such as social distancing and making an appointment over the telephone or online prior to the examination.
4. An advance appointment should be made over the telephone or online prior to a pregnancy check-up for screening for risk factors and symptoms of Covid-19
<b>Standard of service</b>
5. Suspected confirmed Covid-19 pregnant women in self-isolation will still receive the same antenatal care services.
6. During pregnancy check-ups, mothers must wear masks and keep their distance
7. Pregnant women are advised to monitor the active movements of the fetus independently in the third trimester of pregnancy (7-9 months).
8. If no pregnancy disorders occur, face to face a pregnancy check-up is not necessary. Instead, consultations take place over the telephone or online
9. Approaching delivery, mothers are advised to self-isolate at home for 14 days for preparation.
10. A swab examination is a must for pregnant women who will give birth without any signs of Covid-19. If not available, a rapid test or blood test may apply.

The perception of health care system questionnaires, particularly for Public Health Center services developed by the researchers, consists of 13 questions measured by a Likert

scale (1-5), as presented in Table 3. The score was then divided into three criteria: good, moderate, and poor.

**Table 3. Perception of Health Care System Questionnaire of ANC Visit During Covid-19 Pandemic**

Parameters and Questions
<b>The flow of examination procedures for the patient</b>
1. Applying a one-way flow system for different gates of entryway and exit way and installing a transparent barrier made of fabric or other material for a single gate of entryway-exit way
2. Clear explanation of guidance for pregnancy check-ups
<b>Screening and triage</b>
3. Screening/checking body temperature, contact history, and travel history are carried out adjacent to the entrance.
<b>Health protocol</b>
4. Health workers wear personal protective equipment such as masks, face shields, etc.
5. Handwashing facilities with soap and running water/hand sanitizer are available.
6. Implementing the seating/queuing distance between visitors of at least 1 meter
<b>Obedience to covid-19 isolation</b>
7. A transparent barrier between patients and staff
8. Good air circulation in the examination room with wide-open windows
9. Clean patient-examination room
10. Online examination registration
11. Quick check queue timing
12. Advanced appointment for a health check
<b>Information technology utilization</b>
13. Online health consultation and monitoring

**Table 4. Health Care Support Questionnaire of ANC Visit during Covid-19 Pandemic**

Parameters and Questions
<b>Advice on pregnancy examination</b>
1. Health workers (midwives, nurses, doctors) suggest that pregnancy check-ups be carried out routinely during the Covid-19 pandemic.
<b>Education on a standard of pregnancy examination</b>
2. Health workers provide knowledge about preventing the transmission of Covid-19 to pregnant women.
3. Health workers constantly remind the mother of the schedule for the subsequent examination.
4. The health worker instructs the mothers to study the MCH handbook
5. Health workers explain to pregnant women about cough etiquette and maintain personal and environmental hygiene at home and when visiting health facilities.
6. Maternal health workers to conduct consultations over the telephone or online (e.g., WhatsApp messenger, etc.) when in-person check-ups do not prevail
7. Health workers explain clearly the steps and results of pregnancy check-ups during the Covid-19 pandemic.
<b>Service and hospitality</b>
8. Even though they use masks (personal protective equipment), health workers are demanded to keep friendly.
9. Health workers explain service modifications during the Covid-19 pandemic, such as online check-up registration.
<b>Becoming a role model during the Covid-19 pandemic</b>
10. Health workers use personal protective equipment during antenatal care services.

Researchers modified the health workers' support questionnaire adopted from Awaliyah (2018), as presented in Table 4. The questionnaire consists of 10 yes/no questions with a maximum point of 10. Then the score was divided into three criteria: good, moderate, and poor. The researchers have filled out the obedience questionnaire of ANC visits during the Covid-19 Pandemic by

counting the number of ANC visits in a personal Maternal-Child Health book. Then the frequency of the result was divided into two groups: complete and incomplete. Complete means that the frequency of ANC visits complies with the schedule, while incomplete is the opposite. The researcher conducted the validity test on knowledge, mothers' attitudes, perception of health care

systems, and health worker support showing the results of 0.370-0.634, 0.459-0.764, 0.383-0.806, 0.434-0.628, respectively. The reliability test on the questionnaire resulted in 0.745, 0.817, 0.800, and 0.669, respectively.

The data were analyzed by the Spearman Rank Test, and the health research ethics committee of Universitas Halu Oleo, Sulawesi Province, approved the ethical clearance of this research.

## Results and Discussion

**Table 5. Characteristics of Pregnant Women on ANC Visits during the Covid-19 Pandemic**

Variables	N (46)	%
Age (years)		
< 20	9	19.6
20-30	30	65.2
> 35	7	15.2
Education		
Primary (elementary; junior high school)	30	65.2
Secondary (senior high school)	15	32.6
Higher (diploma, bachelor)	1	2.2
Family income		
< IDR 2.500.000	32	69.5
≥ IDR 2.500.000	24	30.5
Occupation		
Housewife	37	80.4
Seller	4	8.7
Farmer	5	10.9

**Table 6. Topics For Maternal-Child Health Education Purposes in The Covid-19 Pandemic**

Questions	N	%
What is Covid-19 and how is it transmitted?	31	7%
Preventing the spread of COVID-19 to pregnant, maternity, and postpartum women	46	11%
Routine check-up services for pregnant women during the Covid-19 pandemic	45	10%
Health care for pregnant women confirmed or suspected Covid-19	43	10%
Maternity services during the Covid-19 pandemic	46	11%
Postpartum health services during the Covid-19 Pandemic	46	11%
Health services for a newborn during the Covid-19 Pandemic	46	11%
Handling of newborns confirmed or suspected of Covid-19	43	10%
Contraceptive services during the Covid-19 Pandemic	43	10%
Breastfeeding during the Covid-19 Pandemic	45	10%

Table 5 illustrates the characteristics of forty-six respondents participating in this research. Based on Table 5, the respondents were dominated by homemakers aged between 20 and 30 with primary education backgrounds and family income under IDR 2,500,000. Table 6 presents topics for maternal-child health education purposes during the COVID-19 pandemic. Table 6

reveals that the health education topics most respondents favored included preventing the spread of COVID-19 to pregnant, maternity, and postpartum women; maternity services during the Covid-19 pandemic; postpartum health services during the Covid-19 Pandemic; health services for a newborn during the Covid-19 Pandemic. Table 7 reveals that most Pondidaha pregnant women had incomplete

ANC, in which poor knowledge, enough healthcare system and health workers' support, and a positive attitude are among the contributing factors, all of which indicated significance on the Spearman rank test. It

implies that the level of knowledge had the highest correlation to the obedience of ANC visits.

**Table 7. Factors Affecting Pregnant Women's Antenatal Care Visits (ANC) In the Covid-19 Pandemic**

Variables	Antenatal Care Visits				P-value	Coef. correlation (r)
	Complete		Incomplete			
	N	%	N	%		
Level Knowledge						
Good	16	34.8	0	0.0	0.000	0.907
Moderate	1	2.1	6	13.0		
Poor	0	0	23	50.0		
Attitude						
Positive	17	36.9	20	43.5	0.010	0.378
Negative	0	0.0	9	19.6		
Healthcare System						
Good	11	23.9	0	0.0	0.000	0.716
Moderate	6	13.0	18	39.1		
Poor	0	0	11	23.9		
Health worker's support						
Good	12	26.0	2	4.3	0.000	0.695
Moderate	5	10.8	20	43.5		
Poor	0	0	7	15.2		

### Effect of Pregnant Women's Knowledge Level on ANC Visits

The pregnant women's levels of knowledge about ANC visits during the Covid-19 pandemic were mainly poor. Whereas they made antenatal care, mostly the visits are incomplete. The Spearman Rank test in this study showed a positive influence between complete and incomplete ANC visits during the Covid-19 pandemic with a correlation coefficient value of 0.907. This value indicates a strong influence on the level of knowledge of pregnant women during antenatal care visits. It implies that the poor level of pregnant women's knowledge equals fewer ANC visits and vice versa.

The factors of age, education level, occupation, and family income influenced the level of knowledge in this study, following Budiman & Riyanto (2013) describing that age, level of education, work, interests, experiences, sources of information, socioeconomic, culture, and environment

influenced knowledge.

The majority of the respondents in this study ranged from 20 to 35 years old. While on the subject, age affects an individual's level of knowledge as it determines a person's physical and psychological aspects. It is, in fact, supported by research conducted by Agus & Horiuchi (2012), showing a relationship between age and the knowledge of pregnant women during ANC visits.

The study results exhibited that most pregnant women held primary education certificates. Educational backgrounds are associated with how a person digests information, thus, rendering that a higher level of education leads to better knowledge (Budiman & Riyanto, 2013). As such, education contributes to 59% of one's understanding of the importance of health. Faradhika's (2019) research suggests a significant relationship between education and pregnant women's knowledge of ANC visits obedience. One's low level of education

does not affirm their lower knowledge level as it is attainable through formal and non-formal education. Speaking of which, pregnant women with little knowledge about ANC visits were likely to have incomplete examinations. Conversely, highly educated pregnant women better-understood health problems that affected their attitude toward their pregnancy and nutritional fulfillment during pregnancy. The previous study shows a relationship between knowledge and ANC (Citrawati & Laksmi, 2021).

### **Effect of Pregnant Women's Attitudes on Antenatal Care Visits (ANC)**

Despite the majorly positive attitude of pregnant women, according to this study results, towards ANC visits, their ANC visits during the Covid-19 pandemic were incomplete. The Spearman Rank test in this study disclosed a significant influence on the attitude of pregnant women towards ANC visits with the correlation coefficient value of 0.378, implying that the better the attitude of the pregnant women, the more the antenatal care (ANC) visits were likely to complete. Meanwhile, despite the most respondents' positive attitude in this study, incomplete ANC visits were still the case, a phenomenon rendered by several factors that influenced attitude.

The education level and support of health workers influenced the attitude of pregnant women in this study. These findings approve the theory on factors affecting an individual's attitude, including education, personal experience, culture, mass media, and emotion (Azwar, 2012). Education essentially provides moral concepts and determines a person's belief system. Individuals with a high level of education tend to gain more knowledge gained. The individual's knowledge of the domain determines how the individual will behave.

Influences from the surroundings, such as the support of husbands, health workers, friends, etc., also affect individuals' attitudes. Support from an essential person is related to the onset of motivation or encouragement in pregnant women. In this study, the health workers' support sufficed, material or

immaterial. Other factors around the individual are parts of the social components that support the creation of attitudes (Azwar, 2012).

Pregnant women who completed the ANC visits, regardless of their negative attitudes, showed appreciation for the provided information and managed to carry on motherhood activities. Meanwhile, those who had a positive attitude did ANC visits for a good reason and received support from their husbands or health workers. A lack of support from their husbands or family or taking the complication possibility for granted led them to have a positive attitude toward incomplete ANC visits.

### **Effect of the Health Care System on Antenatal Care Visits (ANC)**

With the health care system in Indonesia that relies on science and technology, community value malleability, legal and ethical aspects, economics, and politics, it is recorded that antenatal care visits (ANC) reached the moderate result of more than 50% with incomplete visits during the Covid-19 pandemic. The health care system plays an important role in health improvement, in which its success depends on various components, including nurses, doctors, and other health teams that support one another. This system will provide quality health services, an essential part of health services (Abram *et al.*, 2017). The Covid-19 pandemic has changed the maternal-child care regulation incorporated in the health care system, includes procedure adaptation, limitations to contact with the health facilities, and technology improvement creating telemedicine. Hence, this new regulation changes pregnant women's behavior during ANC visits, leading to decreasing ANC visit obedience despite the moderate level health care system.

### **Effect of Health Worker Support on ANC visits**

Although the level of support of health workers was moderate, the ANC visits of pregnant women during the Covid-19 pandemic were recorded mainly incomplete.

The effect of health worker support on ANC visits could result from several factors. Pregnant women with inadequate health worker support, such as limited-time consultation sessions, or improper personal protective equipment use, were likely to have incomplete antenatal care visits. This phenomenon posed discomfort, if not fear of being contaminated by the virus during examination visits. Conversely, pregnant women who had good support from health workers tended to complete ANC visits and feel safe during examinations. Accordingly, there was a relationship between health worker support and the utilization of antenatal care (Singh & Jha, 2016; Sriwahyu, 2013). During pregnancy examinations, pregnant women treated in comfort were encouraged to make periodic antenatal visits. Support from health workers provided better emotional responses and psychological conditions (Melani Astari *et al.*, 2021). Likewise, pregnant women with support from health workers have a 7.4 times chance of making a complete ANC visit instead of those who do not have the support from health workers (Sary & Ekasari, 2014).

### Conclusion

Level of knowledge, mothers' attitude, healthcare, and health workers' support significantly and positively affected ANC visits during the Covid-19 pandemic. The level of knowledge had the highest correlation to the obedience of ANC visits. On that note, it is suggested that future research analyze family support and obedience to ANC visits in high-risk pregnancies during the Covid-19 pandemic.

### Limitations of the study

The limitation of this research is in the data collection process due to the health protocol of the Covid-19 pandemic. The researcher had limited time to physically contact the respondents during direct fulfill the data through home visits.

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### Conflict of Interest

The authors declare they have no competing interests in this study.

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