Analysis of Compliance with Antenatal Care for Expectant Mothers Confirmed with COVID-19 in Tomohon City, North Sulawesi Province

Indra Adi Susianto1, Perigrinus Hermin Sebong1,3, La Venice Tarakanita Tuera1, Ferry Santoso1,2, Edward Hartono4
1 Medical Faculty, Universitas Katolik Soegijapranata, Semarang, Indonesia
2 Obstetric Gynecology Department of Medical Faculty, Universitas Katolik Soegijapranata, Semarang, Indonesia
3 Public Health Department of Medical Faculty, Universitas Katolik Soegijapranata, Semarang, Indonesia
4 Anatomy Department of Medical Faculty, Universitas Katolik Soegijapranata, Semarang, Indonesia

ABSTRACT

Background: The COVID-19 pandemic affected everyone, especially the expectant mothers. This phenomenon became one of many reasons for the existing obstacles to the implementation of antenatal care (ANC) for expectant mothers, especially those confirmed with COVID-19. Data on ANC visits of expectant mothers at Anugerah Hospital, Tomohon City, from 2021 to 2022 showed that 2,455 expectant mothers visited the hospital and 67 people were confirmed positive with COVID-19. The importance of ANC visits had not been a top priority regarding their pregnancy. The factors that can influence the behavior of ANC visits are divided into predisposing factors, reinforcing factors, and enabling factors. Methods: Quantitative research was done to determine the relationship between the number of pregnancies, comorbidities, literacy profiles, family support, and compliance with ANC visits. Results: The results showed that the number of pregnancies, comorbidities, maternal literacy profile, and family support were significantly associated with compliance with antenatal care visits (p-value < 0.001). Conclusion: From this study, it can be concluded that there was a significant relationship between the number of pregnancies, comorbidities, maternal literacy profile, family support, and compliance with ANC visits for expectant mothers confirmed with COVID-19.

Keywords: Expectant Mother, Antenatal Care, Number of Pregnancies, Comorbidities, Literacy Profile, Family Support

INTRODUCTION

The COVID-19 pandemic was one of the obstacles that emerged during the implementation of ANC for expectant mothers, especially those who were infected by COVID-19. Information about COVID-19 in pregnancy is still limited which can affect the health of expectant mothers. During the COVID-19 pandemic throughout the world, there were significant changes in health services, especially for expectant mothers (Aziz, 2020).

The COVID-19 pandemic situation has placed many restrictions on almost all routine essential services including maternal and neonatal health services, and it happened to expectant mothers who become reluctant to go to health facilities for antenatal care services (Aziz, 2020; Lassi et al., 2021).

The importance of ANC visits had not been the top priority for some expectant mother regarding their pregnancy, especially in Indonesia. Several researchers have researched to find out the factors that can influence a mother's ANC
visits during her pregnancy. Several theories state that factors divided into predisposing factors, reinforcing factors, and enabling factors can influence a person's behavior, as well as the behavior of an expectant mother’s compliance with ANC visits. Predisposing factors include age, education, occupation, number of pregnancies (parity), and literacy profile (knowledge and attitudes). Enabling factors include the distance to their homes, family income, and information media. Reinforcing factors include support from the husband and family, as well as from the available healthcare workers (Akbar et al., 2022; WHO, 2017).

SARS-CoV-2 infection in pregnancy is associated with a higher risk of morbidity and mortality for the mother and fetus compared to uninfected expectant mothers. Complications that can generally be experienced by expectant mothers confirmed with COVID-19 include a greater possibility of premature rupture of membranes, premature birth, acute respiratory distress syndrome (ARDS), intrauterine growth restriction, fetal tachycardia, fetal distress, miscarriage, and even death of pregnant mothers (Mota et al., 2022).

The increased risk in pregnancy renders pregnant women more susceptible to the SARS-CoV-2 variant, which is the delta variant. In addition, maternal vaccination rates are still quite low among many expectant mother populations, and ensuring that expectant mothers confirmed with COVID-19 get the appropriate care timely, and evidence-based care will continue to be critical in the future. Diagnosis and treatment of COVID-19 in pregnancy are mostly the same as what non-pregnant patients get. However, important examinations such as chest radiography and computed tomography (CT) of the lungs are often not performed considering the status of the pregnancy, due to groundless reasons about the safety of the fetus (Liu et al., 2021; Nana et al., 2022).

Antenatal Care is one of the supporting factors to reduce maternal mortality. Appropriate and early ANC will prevent maternal and infant mortality and it can improve the quality of expectant mothers. Mortality and complications in pregnancy can be reduced by having regular ANC which is useful for monitoring the health of Expectant mothers and their babies (Bashir et al., 2023).

The World Health Organization (WHO) recommends that the obligation for having an ANC visit during a normal pregnancy is a minimum of four visits with a predetermined time standard. However, the number of ANC visits can increase if, during pregnancy, the mother has indications of a disease that requires special attention or more follow-up, then at least expectant mother's visits will increase according to the regulation by the Ministry of Health of the Republic of Indonesia (WHO, 2017).

During the COVID-19 pandemic, there were modifications to antenatal care for expectant mothers. The recommendation for handling the Coronavirus (COVID-19) in maternal given by the Indonesian Association of Obstetrics and Gynecology in 2020 is a minimum of 6 face-to-face meetings, i.e. once in the first trimester, twice in the second trimester, and three times in the third trimester. Most maternal deaths can be prevented, as healthcare solutions to prevent or manage complications are well understood (McGowan et al., 2023).

The service types provided for expectant mothers include 10T, such as body weight and height measurement; blood pressure measurement; upper arm circumference measurement; uterine fundal height measurement; fetal presentation and fetal heart rate determination; immunization according to the status of immunization; iron tablets at least 90 tablets administration: laboratory test; case management/handling; as well as interviews or counseling and mental health assessments (Aziz, 2020; Badan Pusat Statistik Indonesia, 2020).

WHO recommends antenatal care for every pregnant woman to prevent morbidity in pregnancy and to reduce high mortality. According to the data from the Ministry of Health of the Republic of Indonesia, the coverage rate for ANC in 2015, K1 (First Visit) reached 95.75% and K4 (Fourth Visit) reached 87.48%. Then in 2016, ANC K1 in Indonesia reached 100.00% and K4 only reached 85.35%. In 2017, ANC K1 reached 95.40% and K4 increased from the previous year to 87.30% (Ayuningtyas, 2020; WHO, 2017).

The highest ANC K1 coverage in North Sulawesi Province in 2015 was achieved by North Minahasa Regency (107.12%). Furthermore, the highest K4 coverage in North Sulawesi Province in 2015 was in Tomohon City (101.50%). Also in 2016, the highest ANC K1 coverage was achieved by Tomohon City (107.40%). Then, for the highest coverage of ANC K4 was again also achieved by the Tomohon City (102.80%) (Anjani et al., 2019).

This study aimed to analyze the factors related to compliance with ANC for expectant mothers confirmed with COVID-19 at RSUD Anugerah, Tomohon City.
RESEARCH METHOD

This study used an explanatory sequential design from the interview results which will later be used to explain the results of quantitative data analysis (Utarini, 2020). At the beginning of the study, researchers collected medical record data related to the number of pregnancies and comorbidities. Recently, no previous studies aimed to investigate the level of antenatal visit compliance during the COVID-19 pandemic. Hence, there was a gap in real-time evidence to protect expectant mothers during the pandemic. In summary, the research question of our study was whether there was any association between clinical and social demographic factors that caused the level of compliance in antenatal care visits during the COVID-19 pandemic in North Sulawesi.

RESULTS

Here are the characteristics of an expectant mother confirmed with COVID-19 at RSUD Anugerah, Tomohon City, from 2021 to 2022:

Table 1. Age Distribution of Expectant Mothers Confirmed with COVID-19 in 2021-2022

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;20 years old</td>
<td>1</td>
<td>3.00</td>
</tr>
<tr>
<td>20-35 years old</td>
<td>26</td>
<td>87.00</td>
</tr>
<tr>
<td>&gt;35 years old</td>
<td>3</td>
<td>10.00</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100.00</td>
</tr>
</tbody>
</table>

It is shown in Table 1 that the majority was around 20-35 years old (87.00%), followed by ages >35 years old (10.00%), and ages <20 years old (3.00%). Most of the respondents (20 mothers) had multigravida pregnancies. Meanwhile, there were only 8 mothers with primigravida pregnancies and 2 with grand multipara pregnancies.

Compliance with ANC visits described the number of visits done by expectant mothers according to the MCH handbook. The ANC visit compliance category was divided into good, moderate, and poor. The level of compliance with ANC visits for the 2021-2022 period is presented in the following (Figure 1).

Figure 1 shows that 21 people fell into the good category with the number of ANC visits ranging from 7-11 visits during pregnancy. It also shows that there were 6 expectant mothers who were in the moderate category and only 3 in the poor category with 3-5 visits.

Figure 1. The Number of ANC Visits by Expectant Mothers Confirmed with COVID-19 at Anugerah Hospital, Tomohon City, in the Period of 2021-2022
Table 2. Crosstabulation of the Number of Pregnancy and Compliance with ANC Visits

<table>
<thead>
<tr>
<th>Compliance with ANC Visits</th>
<th>Poor</th>
<th>%</th>
<th>Moderate</th>
<th>%</th>
<th>Good</th>
<th>%</th>
<th>Total</th>
<th>%</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Pregnancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primigravida</td>
<td>1</td>
<td>3.00</td>
<td>2</td>
<td>7.00</td>
<td>5</td>
<td>17.00</td>
<td>8</td>
<td>27.00</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Multigravida</td>
<td>2</td>
<td>7.00</td>
<td>4</td>
<td>13.00</td>
<td>14</td>
<td>47.00</td>
<td>20</td>
<td>67.00</td>
<td></td>
</tr>
<tr>
<td>Grande multipara</td>
<td>0</td>
<td>0.00</td>
<td>0</td>
<td>0.00</td>
<td>2</td>
<td>7.00</td>
<td>2</td>
<td>7.00</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>10.00</td>
<td>6</td>
<td>20.00</td>
<td>21</td>
<td>70.00</td>
<td>30</td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

Based on Table 2, the results of the Kolmogorov-Smirnov test analysis on the relationship between the number of pregnancies and compliance with ANC visits obtained a significance value (p-value) of <0.001, meaning that there was a significant relationship between the number of pregnancies and compliance with ANC visits.

Table 3. Crosstabulation of Comorbidity and the Compliance with ANC Visits

<table>
<thead>
<tr>
<th>Compliance with ANC Visits</th>
<th>Poor</th>
<th>%</th>
<th>Moderate</th>
<th>%</th>
<th>Good</th>
<th>%</th>
<th>Total</th>
<th>%</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comorbidity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0</td>
<td>0.00</td>
<td>0</td>
<td>0.00</td>
<td>4</td>
<td>13.00</td>
<td>4</td>
<td>13.00</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>3</td>
<td>10.00</td>
<td>6</td>
<td>20.00</td>
<td>17</td>
<td>57.00</td>
<td>26</td>
<td>87.00</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>10.00</td>
<td>6</td>
<td>20.00</td>
<td>21</td>
<td>70.00</td>
<td>30</td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

Based on Table 3, the results of the Kolmogorov-Smirnov test analysis on the relationship between comorbidity and compliance with ANC visits obtained a significance value (p-value) of <0.001, meaning that there was a significant relationship between comorbidity and compliance with ANC visits.

DISCUSSION

This study shows that most expectant mothers were categorized as having a good level of compliance for the number of ANC visits. ANC visit data also showed that there were 3 less compliant expectant mothers with a total of 3-5 visits (less than 6 visits). There were 6 expectant mothers who were categorized as moderate for the ANC visits compliance (6 visits). From these results, it was indicated that the majority of expectant mothers were compliant with ANC visits based on the applicable standards, especially in Indonesia (Fauziah et al., 2023; Gupta et al., 2014).

The literacy profile of an expectant mother is the knowledge or understanding regarding pregnancy health to help themselves and monitor the health of the fetus. Mother’s literacy can be obtained through information when they read, write, or listen to information from various printed as well as audio media and from individuals, in this case, healthcare workers. The mother’s literacy profile will increasingly influence her decision-making in every piece of information that the mother receives. If the mother receives the information and implements it, various considerations will be taken to assess any possibility that may affect her health during pregnancy (Ko et al., 2021; Overton et al., 2022).

CONCLUSION

From this study, it can be concluded that there was a significant relationship between the number of pregnancies, comorbidities, maternal literacy profile, family support, and compliance with ANC visits for expectant mothers confirmed with COVID-19. Future studies are needed to capture demand-driven ANC compliance factors in health crisis settings with the simulation of modifiable health service systems to anticipate system shock (Galang et al., 2021; Guler et al., 2021).
ACKNOWLEDGEMENTS
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CONFLICT OF INTEREST
There is no conflict of interest in this study.

REFERENCES


