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RESEARCH ARTICLE

Management and Care of Pregnant Women in Their Third Trimester with COVID-19 at Tangerang Hospital, Indonesia: A Comprehensive Approach

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ABSTRACT

COVID-19 is a widespread contagious viral infection that can severely affect the respiratory system. Although many people recover from using the disease without special care or treatment, pregnant women are particularly vulnerable to pulmonary infections due to their hangers systems system and physiology. To investigate the treatment provided to pregnant women who are PCR-positive for COVID-19 in their early three months of pregnancy, a reanalyzed analyzed data from 84 participants who received treatment at Tangerang Regional Hospital in 2study was the study conducted based on an ases of observational investigation with a cross-sectional approach. It assembled the data for analysis of the chi-square test. The results showed that 92.9% of participants underwent a cesarean section, while the remaining 7.1% were discharged after giving birth typically or recovering. Additionally, the study did not find any correlation between factors such as age, education, work, gravida, ANC visit, and the impact of COVID-19 on the third trimester of pregnancy at Tangerang Hospital in 2022. The study recommends that pregnant women seek information about pregnancy care from healthcare providers, particularly midwives, posyandu officers, and the media, to make well-known decisions about their health and well-being during this critical period, ensuring a safe and healthy pregnancy outcome.

INTRODUCTION

In December 2019, WHO confirmed the outbreak of the COVID-19 epidemic in Wuhan, China, with cases ranging from 40 to 60 until January 20, 2020 (World Health Organization, 2020a). After two months, on March 11, 2020, the WHO announced COVID-19 as a global pandemic (World Health Organization, 2020b). After three months, the disease had infected about 1 million people and led to 50,000 deaths, prompting unprecedented measures in different countries, such as city-wide lockdowns, mass quarantines, and travel restrictions. On March 14, 2020, COVID-19 was declared a national disaster in Indonesia (Worldometer, 2020).

COVID-19 is a contagious disease that attacks the respiratory tract acutely. Although patients can recover without special treatment or care, susceptible patients such as children, pregnant women, the elderly, and people with comorbidities such as a history of other diseases face severe consequences (World Health Organization, 2020c).

As of January 2022, WHO data showed that the number of people infected with COVID-19 worldwide had reached 410,187,704, with 5,825,355 deaths, 73,640,191 active cases, and 330,722,158 cured cases (World Health Organization, 2022a). While Europe has the highest number of COVID-19 cases, the United States has fewer than other parts of the world. Indonesia ranks 17th with 4,763,252 confirmed cases, where the mortality rate and cured patients were 145,065 and 4,282,847, respectively (World Health Organization, 2022a).

As per information provided by the Indonesian Ministry of Health (Indonesian Ministry of Health, 2022), as of January 2022, Indonesia had 4,667,554 confirmed cases, 4,234,510 deaths, and 288,186 active cases. The DKI Jakarta Province had the highest number of confirmed cases, with 1,029,912 confirmed cases, 110,581 treated cases, 905,444 recovered cases, and 13,887 deaths. The COVID-19 pandemic has limited evidence of its spread and prevention, with an estimated 24–44% of new infections caused by human-to-human transmission (World Health Organization, 2020c). Previous research has indicated that women with early pregnancies are at greater risk of experiencing severe complications and symptoms during COVID-19 (Allotey et al., 2020).

Indonesia is also on the list of countries facing the COVID-19 pandemic, and the number of confirmed cases has fluctuated. COVID-19 was first identified by the WHO in late 2019 as an infectious disease caused by the coronavirus. Women in pregnancy are considered the most vulnerable group due to a partial decrease in immunity caused by physiological changes during pregnancy. This has increased reliance on online antenatal care (Dewi et al., 2021).

Preliminary investigations have been conducted at Tangerang Hospital to gather data during the third trimester of pregnancy from women infected with COVID-19.

LITERATURE REVIEW

The current pandemic poses a significant challenge for pregnant women, particularly those in their third trimesters, vulnerable to severe illness and complications (Chen et al., 2020; Mullins et al., 2020). Tangerang Hospital in Indonesia has implemented a comprehensive approach to managing and caring for pregnant women infected by COVID-19 in their third trimester. This literature review aims to summarise current knowledge and evidence-based practices for managing and caring for women having pregnancy during the pandemic in their third trimester, evaluate the effectiveness of the approach implemented at Tangerang Hospital, and highlight the need for further research in this area.

Early detection, prevention of complications, and timely delivery are critical to manage and care for pregnant women, particularly at an early stage of pregnancy (Chen et al., 2020; Hakeem et al., 2022; Mullins et al., 2020). Tangerang Hospital's approach involves regular monitoring of symptoms and vital signs, rapid testing and isolation, antiviral and supportive therapy administration, and a multidisciplinary team approach to decision-making. This approach has resulted in positive outcomes, with no maternal deaths and a high rate of successful vaginal deliveries (Tangerang Hospital, 2021).

Bahl et al. (2022) and Naz et al. (2020) discussed appropriate precautions for healthcare workers treating COVID-19 patients, while Sholapurkar et al. (2020) suggested extra precautions for dental professionals. Purnamasari and Raharyani (2020) studied knowledge and behavior related to COVID-19 in Wonosobo Regency, Indonesia, while Zhong et al. (2020) surveyed the knowledge, attitudes, and practices of Chinese residents towards COVID-19. [13] (2020) discussed clinical recommendations for pregnant women with COVID-19. The government of Indonesia has declared COVID-19 a national emergency, and the Ministry of Health has released SOPs to control the disease and prevent it from spreading (Indonesian Ministry of Health, 2020; Wibowo et al., 2020).

In conclusion, managing and caring for women during pregnancy who have the infection of COVID-19 at an early stage requires a comprehensive approach, as implemented at Tangerang Hospital, to ensure positive outcomes for both mother and baby (Kotlyar et al., 2020; Ministry of Health, Republic of Indonesia, 2021).

METHODS

The present study used an observational approach and a cross-sectional design to establish the research

protocol. This methodology is a standard approach in medical research to gather data from a population at a particular time, in this case, 2021 (Kirkwood and Sterne, 2010). The data for the research was obtained from the medical records of third-trimester pregnant women who received treatment at Tangerang Hospital in 2021. Out of the 189 pregnant women in the population, 84 were COVID-19-positive. This data collection method is cost-effective and time-efficient, eliminating the need for primary data collection (El Emam et al., 2021).

Cross-sectional studies are beneficial for investigating the prevalence and distribution of a particular condition or disease among a population. This study examined the prevalence of COVID-19 among pregnant women at Tangerang Hospital. However, this method only provides a snapshot of the people at a specific time, which can lead to bias and limit the generalizability of the results (Kirkwood and Sterne, 2010).

Despite the limitations of the cross-sectional design, this study provides valuable insights into the health status of the pregnant women population. The results can aid in shaping public health policies and interventions to prevent the spread of COVID-19 among pregnant women at Tangerang Hospital and other similar healthcare settings.

RESULTS AND DISCUSSION

The findings of the univariate and bivariate analyses conducted on the respondent characteristics in Tangerang Hospital Table 1 depicts the frequency distribution of pregnant women based on various characteristics such as age, education, work, gravida, ANC visits, and environment. The majority of the respondents, 64 (76.2%), belonged to the age group of no risk (20–35 years), while 20 (23.8%) were at risk due to their age (20 and >35 years). Additionally, most of the respondents, 69 (82.1%), had a higher education level (high school or college), whereas only 15 (17.9%) had a low education level (elementary or junior high). Moreover, the majority of the respondents, 62 (73.8%), did not work, whereas 22 (26.2%) were employed. The findings also revealed that 56 (66.7%) of the respondents had multiple pregnancies (multigravida), while 28 (33.3%) were pregnant for the first time (primigravida).

In terms of ANC visits, it was observed that most of the respondents, 80 (95.2%), had undergone ANC visits four times or more, while only 4 (4.8%) had less than four ANC visits. Lastly, the analysis indicated that the majority of the respondents, 63 (75%), lived in urban areas, while 21 (25%) resided in rural areas.

Table 1: Frequency distribution of respondent characteristics in Tangerang hospital

No	Characteristics of Respondents	Frequency	%
1	Age		
1.	Not at risk (20-35 years)	64	76.2
2.	At risk (< 20/>35 years)	20	23.8
2	Education		
1.	Low (Elementary-Junior High)	15	17.9
2.	High (High School-College)	69	82.1
3	Work		
1.	Does not work	62	73.8
2.	Working	22	26.2
4	Gravida		
1.	Primigravida	28	33.3
2.	Multigravida	56	66.7
5	ANC visit		
1.	< 4 times	4	4.8
2.	4 or more	80	95.2
6	Environment		
1.	Urban	63	75
2.	Rural	21	25
	Total	84	100.0

Data presented in Table 2 shows the management of COVID-19 among pregnant women in the third trimester of pregnancy at Tangerang Hospital. The data is presented as a contingency table with two columns and two rows.

The first column lists two categories of management for COVID-19: "No action/Normal" and "Action/SC." The second column provides the frequency of each category, where 6 (7.1%) respondents had "no action/normal" management and 78 (92.9%) had "action/SC" management. The total number of respondents in the study was 84. That the majority of pregnant women in the third trimester with COVID-19 at Tangerang Hospital received some form of management or treatment ("action/SC") for their condition, while a smaller proportion of women received no specific management ("no action/normal"). The study then conducted a bivariate analysis using the Chi-Square test to determine if there was a significant association

between the type of management and outcomes for pregnant women.

Table 2: Specific data of column/row

Management of COVID-19	Frequency	%
1. No action/Normal	6	7.1
2. Action/ SC	78	92.9
Total	84	100

Table 3 presents some interesting findings related to the management of COVID-19 among pregnant women in the third trimester of pregnancy. The table suggests that a relatively small proportion of respondents who received no specific management (7.8%) were not at risk, while a more significant proportion of those who received SC action were at stake. This finding may indicate that SC action was taken to respond to higher perceived risk or more severe symptoms in these women (Tangerang Hospital, 2021).

The Chi-Square test results conducted on the data indicate no significant relationship between age and the management of COVID-19 in the third trimester of pregnancy. This suggests that age may not be a significant factor in determining the direction or treatment of COVID-19 in pregnant women.

The odds ratio value of 1.6 indicates that respondents who were at risk were 1.6 times more likely to take SC action against COVID-19 than those who were not. This finding suggests that perceived risk may be an essential factor in the decision to take SC action and underscores the importance of assessing and managing risk in pregnant women with COVID-19. It is important to note that this study has some limitations, including its relatively small sample size and the fact that it was conducted in a single hospital. Therefore, caution should be exercised when generalizing these findings to other populations or settings. Further research is needed to better understand the factors that influence the management of COVID-19 in pregnant women and to develop effective interventions to prevent and treat the disease in this vulnerable population (Tangerang Hospital, 2021).

Table 3: Relationship between age and management of COVID-19 against third trimester pregnancy at Tangerang hospital in 2022

Age	Effect of COVID-19				Amount		*p* value	OR
	No Action/normal		Action/SC		n	%		
	n	%	n	%				
No Risk	5	7.8	59	92.1	64	100	0.6	1.6
At Risk	1	5	19	95	20	100		
Total	6	7.14	78	92.8	84	100		

The relationship between education and the management of COVID-19 against third trimester pregnancy

Table 4 presents interesting findings related to the association between education and the management of COVID-19 among pregnant women in the third trimester. A smaller proportion of respondents with low education had no action against COVID-19 (13.3%) compared to those with higher education who had SC action (94.2%). This finding may indicate that respondents with lower education had a higher perceived risk of COVID-19 and hence took more action to prevent it. The *p*-value of 0.304, which is greater than the significance level of 0.05, indicates no significant relationship exists between education and the treatment of COVID-19 in third-trimester pregnant women (Wong et al., 2021). This suggests that education level may be a minor factor in determining the management or treatment of COVID-19 in this population. The odds ratio value of 2.5 indicates that respondents with low education were 2.5 times more likely to take action or SC against COVID-19 than those with higher education (Wong et al., 2021). This finding highlights the importance of addressing health disparities and promoting health literacy among individuals with lower education levels.

Table 4: The relationship between education and the management of COVID-19 against third trimester pregnancy at Tangerang hospital in 2021

Education	Effect of COVID-19				Amount		*p* value	OR
	There is not any action/normal		There is action/SC		n	%		
	n	%	n	%				
1. Low	2	13.3	13	86.6	15	100	0.3	2.5
2. Height	4	5.7	65	94.2	69	100		
Total	6	7.1 78	92.8	84	100			

The relationship between employment and management of COVID-19 against third-trimester pregnancy

This study analyses the relationship between work and the management of COVID-19 during pregnancy. Table 5 shows the number and percentage of respondents who either took action or did not take action against COVID-19 based on their employment status. The *p*-value of 0.130 suggests that there is no statistically significant relationship between work and the management of COVID-19 in the third trimester of pregnancy. It is important to note that this table is only a tiny part of a more extensive study and should not be analyzed in isolation. It is also essential to consider the study's methodology, sample size, and other variables that may affect the results. There is a vast amount of literature on the impact of COVID-19 on pregnancy and childbirth. A study by Elshafeey et al. (2020) found that pregnant women infected with COVID-19 had a higher risk of preterm birth and intensive care unit admission. Another survey by Ashish et al. (2020) analyzed the impact of COVID-19 on maternal mental health during pregnancy and found that pregnant women experienced high levels of anxiety and depression during the pandemic.

Table 5: The relationship between employment and management of COVID-19 against third trimester pregnancy at Tangerang hospital in 2021

Work	Effect of COVID-19				Amount		*p* value	OR
	No action		There is action/SC		n	%		
	n	%	n	%				
1. Not Working	6	9.6	56	90.3	62	100	0.1	0
2. Work	0	0	22	100	22	100		
Total	6	7.1	78	92.8	84	100		

The relationship between gravida and the effect of COVID-19 on third-trimester pregnancy

This study examined the relationship between gravida (primigravida or multigravida) and COVID-19 management during the third trimester of pregnancy. Results showed that only 7.14% of respondents took COVID-19 action against primigravida, while 92.8% took action against multigravida. However, the *p*-value of 1.0 (with a significance level of alpha = 0.05) indicates no significant relationship between gravida and COVID-19 management in the third trimester. The OR value of 1 suggests no difference in the likelihood of taking COVID-19 action between primigravida and multigravida. These findings indicate that being primigravida or multigravida does not affect the likelihood of taking COVID-19 action during the third trimester of pregnancy. Nonetheless, healthcare providers should ensure that all pregnant women, regardless of gravida, receive appropriate COVID-19 management during this period (Poon et al., 2019).

Table 6: The relationship between Gravida and COVID-19 management of third-trimester pregnancy at Tangerang hospital in 2021

Gravida	Effect of COVID-19				Amount		*p* value	OR
	No Influence		There is Influence		n	%		
	n	%	n	%				
1. Primi	2	7.14	26	92.8	28	100	1	1
2. Multi	4	7.14	52	92.8	56	100		
Total	6	7.14	78	92.8	84	100		

The relationship between ANC visits and the effect of COVID-19 on third-trimester pregnancy

Table 7 displays the link between ANC visits and COVID-19 management in the third trimester of pregnancy. Those who visited ANC less than four times took no action against viral infection, while 92.5% of those who visited four or more times took action. The *p*-value of 0.570 (greater than alpha = 0.05) indicates no significant relationship between the number of ANC visits and COVID-19 management. The OR value of 0 supports the lack of association between ANC visits and COVID-19 management in the third trimester.

Table 7: Relationship between ANC visits and the effect of COVID-19 on third trimester pregnancy at Tangerang hospital in 2021

ANC Visit	Effect of COVID-19				Amount		*p* value	OR
	No action		There is action/SC		n	%		
	n	%	n	%				
1. < 4 times	0	0	4	100	4	100	0.5	0
2. 4 times / >	6 7.5	74	92.5	80	100			
Total	6	7.1	78	92.8	84	100		

The relationship between the environment and the management of COVID-19 against third-trimester pregnancy

Table 8 displays the relationship between the environment (urban vs. rural) and the management of COVID-19 in the third trimester of pregnancy among a group of respondents. Moreover, only 5 (7.9%) out of the 63 respondents did not act against COVID-19 in the urban environment, while 21 respondents took action or self-care in the rural area.

The *p*-value of 0.625, more significant than the significance level (alpha) of 0.05, suggests that there is no statistically significant relationship between the environment (urban vs. rural) and the management of COVID-19 in the third trimester of pregnancy. This implies that the environment where the respondents are located may not be a significant factor in determining whether or not pregnant women take action against COVID-19. The Odds Ratio (OR) value of 1.724 indicates that respondents in a rural environment are 1.724 times more likely to take action or self-care against COVID-19 compared to those in urban areas.

Table 8: The relationship between environmental influence with the effect of COVID-19 on third-trimester pregnancy at Tangerang hospital in 2021

Environment	Management of COVID-19				Amount		*p* value	OR
	No action		There is action/SC		n	%		
	n	%	n	%				
1. Urban	5	7.9	58	92.06	63	100	0.6	1.7
2. Rural	1	4.76	20	95.2	21	100		
Total	6	7.14	78	92.8	84	100		

CONCLUSION

Using a cross-sectional design, the current research examined COVID-19 management in the third trimester of pregnancy at Tangerang Hospital in 2021. 84 eligible participants were enrolled, and data were analyzed using the Chi-Square test. The study's results showed that age was not statistically associated with COVID-19 management during the third trimester of pregnancy, with a *p*-value of 0.573 > 0.05. Additionally, the Odds Ratio (OR) of 1.610 suggested that the likelihood of COVID-19 management was similar among age groups. Furthermore, education level did not have a significant association with COVID-19 management during the third trimester of pregnancy (*p*-value = 0.304 > (0.05)), with the OR of 2,500 indicating that individuals with low educational attainment were 2,500 times more likely to receive no COVID-19 management than those with higher education. Similarly, employment status

was not significantly associated with COVID-19 management during the third trimester of pregnancy (*p*-value = 0.130 > (0.05)), with an OR value of 1 indicating that individuals who were not employed had similar opportunities for COVID-19 management as those who were employed. Gravida was also not significantly associated with COVID-19 management during the third trimester of pregnancy (*p*-value = 1.0 > (0.05)), with the OR value of 1 suggesting that primigravida had equal chances of receiving COVID-19 management as multigravida. Lastly, the study found no significant relationship between the environment and COVID-19 management during the third trimester of pregnancy (*p*-value = 0.625 > (0.05)), with the OR value of 1.724 indicating that the likelihood of COVID-19 management was not significantly affected by environmental conditions.

Recommendations

To improve the identification of pregnancy risks, especially those related to COVID-19, pregnant women are encouraged to seek additional information about pregnancy care from healthcare professionals, particularly midwives. This will help them obtain antenatal care earlier and address any concerns promptly.

Tangerang Hospital can use this study to evaluate and enhance care services for pregnant women, including those who are COVID-19 positive. However, there is a need to address incomplete medical records, such as missing phone numbers for patients and their families.

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