

## Relationship between Knowledge and Covid-19 Preventive Measures among Pregnant Women

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### ABSTRACT

Covid-19 is an acute respiratory tract infection caused by the SARS-CoV-2 virus and has become a pandemic worldwide. Covid-19 has infected the entire world population including pregnant women. The vulnerability of pregnant women to infectious diseases is due to changes in body physiology and immune response mechanisms. One of the causes of transmission of Covid-19 in pregnant women is the lack of knowledge regarding Covid-19 and its prevention. This study mainly aims to determine the relationship between knowledge and Covid-19 preventive measures among pregnant women in Jambi City. This was an analytical observational study with cross-sectional design. The study population involved all pregnant women in Jambi City, with a total sample of 100 pregnant women, who were selected using a purposive sampling technique based on inclusion and exclusion criteria. Data were collected using online questionnaire from December 2020 to March 2021. Data were analyzed using Chi-Square test. Results of this study showed that knowledge had a significant relationship with Covid-19 preventive measures among pregnant women in Jambi City with a p-value of 0.001 (OR=4.943). Based on the results of this study, it is expected that healthcare workers can provide health education to prevent the risk of Covid-19 transmission among at-risk groups.

*Covid-19 merupakan gangguan saluran pernapasan akut yang disebabkan oleh virus SARS-CoV-2 dan telah menjadi pandemi di seluruh dunia. Covid-19 telah menjangkit seluruh penduduk dunia tidak terkecuali ibu hamil. Kerentanan ibu hamil mengalami penyakit infeksi dikarenakan adanya perubahan fisiologi tubuh dan mekanisme respon imun didalam tubuhnya. Salah satu penyebab penularan Covid-19 pada ibu hamil adalah kurangnya pengetahuan terhadap Covid-19 dan pencegahannya. Tujuan penelitian ini adalah untuk mengetahui hubungan pengetahuan dengan tindakan pencegahan Covid-19 pada ibu hamil di Kota Jambi. Penelitian ini merupakan studi observasional analitik dengan rancangan cross-sectional. Populasi dalam penelitian ini adalah seluruh ibu hamil di Kota Jambi, dengan jumlah sampel sebanyak 100 ibu hamil, menggunakan teknik purposive sampling yang memenuhi kriteria inklusi dan tidak termasuk kriteria eksklusi. Pengumpulan data menggunakan kuesioner daring pada bulan Desember 2020 sampai Maret 2021. Analisa data menggunakan uji Chi-Square. Hasil penelitian terdapat hubungan pengetahuan dengan tindakan pencegahan Covid-19 pada ibu hamil di Kota Jambi dengan nilai p-value = 0,001. Dari hasil penelitian ini diharapkan bagi petugas kesehatan dapat memberikan pendidikan kesehatan pencegahan resiko penularan Covid-19 pada kelompok yang berisiko rentan.*

## Introduction

Pregnant women are a group that is vulnerable to experiencing health problems, especially infectious disease due to changes in immune response mechanisms and body physiology during pregnancy (Nurdianto et al., 2020). Since the first case of COVID-19 was found in Wuhan-China, the National Health Commission of China identified as many as 118 pregnant women with COVID-19 from 50 Hospitals across the city of Wuhan from December 8, 2019 to March 20, 2020. Based on the Chinese Clinical Guidance for COVID-19 Pneumonia Diagnosis and Treatment, of the 118 COVID-19 cases found, there were 84 (71%) pregnant women with PCR test results positive for SARS-CoV-2 and the

remaining 34 (29%) people showed an image of infiltrates in the lungs based on CT scans. Based on the data, the number of pregnant women with COVID-19 contributed 0.24% of the number of COVID-19 cases at that time. A total of 75 (64%) pregnant women with COVID-19 were in the third trimester. 13.7% of pregnant women were more likely than those who were not pregnant to be infected with Covid-19, according to data from the Jakarta-based Indonesian Obstetrics and Gynecology Association (POGI) (Rohmah & Nurdianto, 2020).

SARS-CoV-2 exposure among pregnant women can occur in the first, second, and third trimesters. In the early stages of pregnancy, although vertical transmission of SARS-CoV-2 from mother to fetus has not yet been demonstrated, SARS-CoV-2 infection may potentially affect organogenesis and fetal development. It is certain that the earlier the occurrence of cases of infection, the greater the risk of abortion because the women's condition that decreases can affect the flow of nutrients and oxygen that are crucial for fetal development through the placenta (Chen et al., 2020). Mortality rate due to complications in pregnant women diagnosed with Covid-19 is lower compared to SARS or MERS, but there are also complications in the fetus, including miscarriage (2%), intrauterine growth retardation (IUGR; 10%), and premature birth (39%) (Dashraath et al., 2020).

Based on the case study regarding Covid-19 in pregnant women, a number of important facts were presented, including: (1) The most Covid-19 cases in pregnant women were mild, followed by moderate (severe), and critical (critical); (2) The results of symptom observations, laboratory examination results, and CT scans showed that Covid-19 in pregnant women was generally the same as other Covid-19 patients; (3) The potential for spontaneous abortion of pregnant women with Covid-19 was very low; (4) Obesity conditions and the presence of comorbidities in pregnant women with Covid-19 could increase the risk of premature birth and even death; (5) the earlier the gestational age at the time of Covid-19 infection, the higher the potential for spontaneous abortion; (6) Obesity in pregnant women with Covid-19 had the potential to cause pulmonary embolism, (7) Hormonal changes in pregnant women could affect changes in immunity status to become more susceptible to viral infections but were able to inhibit organ damage by the production of anti-inflammatory cytokines (Rohmah, 2020).

A person's health is influenced by two main factors, namely non-behavioral factors and behavioral factors. According to B. Bloom, there are three domains of behavior, namely attitude, knowledge and practice. Meanwhile, these health behaviors, are influenced and determined by three factors, namely reinforcing factors, enabling factors, and predisposing factors (Notoatmodjo, 2014). Regarding predisposing factors, people have various socio-demographic factors such as age, gender, occupation,, marital status, place of residence, education, health status and income. These socio-demographic characteristics can affect people's behavior regarding the Covid-19 preventive measures (Jadoo et al., 2020). Covid-19 is a newly discovered disease, therefore knowledge related to prevention is still limited. Prevention keys include breaking the chain of transmission by isolation, carrying out basic protection, and early detection (ACOG, 2020).

A study conducted by (Nurhasanah et al., 2021) among 40 pregnant women who visited Pratama Arsy Medika Clinic in Cirebon Regency for pregnancy check-up showed that most of respondents (80%) had poor knowledge about Covid-19 and most of pregnant women (70%) had poor Covid-19 preventive measures. The widespread acceptance of information about Covid-19 in the community can support good knowledge. Knowledge about Covid-19 possessed by pregnant women can provide the ability to receive, maintain, and use correct information. Further, it will lead to a reaction that gives a tendency to act or behave.

Based on the results of a preliminary survey conducted in Jambi City, 60% of women had poor knowledge about the prevention of COVID-19 transmission during pregnancy. There were still many pregnant women found in some settings, such as markets, other public places they did not take preventive measures. The most obvious findings were not wearing masks, not caring too much about social distancing and rarely washing hands. This needs to be considered since normal pregnant women has certain health challenges and there is still a high mortality and morbidity rate, coupled with a pandemic situation. Many pregnant women also have not implemented a clean and healthy lifestyle, and this will cause an increase in maternal and neonatal morbidity and mortality. This study aims to determine the relationship between knowledge and Covid-19 preventive measures among pregnant women in Jambi City.

## Methods

This was an analytical observational study with a cross-sectional design. The population in this study involved all pregnant women in Jambi City, with a total sample of 100 pregnant women. The samples were selected using a purposive sampling technique based on exclusion and inclusion criteria. Inclusion criteria included: 1) pregnant women who were domiciled in the Jambi City area, 2) pregnant women who were willing to take part in online research. On the other hand, the exclusion criteria included: 1) pregnant women who did not have a smartphone or had a smartphone but could not operate it, 2) pregnant women who were confirmed positive for Covid-19, 3) pregnant women who could not read and write. Data on Covid-19 knowledge and preventive measures were collected with an online questionnaire which had been tested for validity and reliability. The questionnaire was then made in a google form which could be accessed via a smartphone. Data collection was carried out from December 2020 to March 2021. Data analysis was carried out with the Chi-Square test which was processed using SPSS version 16.0.

## Results

**Table 1.** Distribution of Respondents' Characteristics

Characteristic	Sum (%) N = 100
<b>Age</b>	
20-35 years	88
> 35 years	12
<b>Level of Education</b>	
Elementary School	1

Characteristic	Sum (%)
	N = 100
Senior High School	28
Higher Education	71
<b>Occupation</b>	
Housewife	46
Private Employees	34
Entrepreneur	9
Government Employees	11
<b>Parity</b>	
≤ 2	96
> 2	4
<b>Gestational Age</b>	
Trimester I (1-3 Months)	37
Trimester II (> 3-6 Months)	23
Trimester III (> 6-9 Months)	40
<b>Information Access</b>	
Print Media (Newspapers, Magazines, Posters)	13
Electronic Media (Television/News)	56
Online Media (Facebook, Instagram, WhatsApp)	31

The characteristics of respondents presented in table 1 showed that most of them were in the age range of 20-35 years, had a higher education, housewife, had more than 2 children, in the 3<sup>rd</sup> trimester of pregnancy (> 6-9 months), and had information access from electronic media.

**Table 2.** Distribution of Knowledge and Covid-19 Preventive Measures among Pregnant women

Variable	Sum (%)
	N = 100
<b>Knowledge on Covid-19</b>	
Good	74
Poor	26
<b>Covid-19 Preventive Measures</b>	
Good	69
Poor	31

The results of the study presented in table 2 revealed that 74% of pregnant women in Jambi City had good knowledge on Covid-19. This finding is supported by a study conducted by (Kumbeni et al., 2021) that more than two-thirds of pregnant women (85.6%) had good knowledge on Covid-19.

**Table 3.** Relationship between Knowledge and Covid-19 Preventive Measures among Pregnant Women

Knowledge of Pregnant Women	Covid-19 Preventive Measures			P value	OR 95% CI
	Good	Poor	Total		
Good	58	16	74	0.001	4.943 (1.903-12.843)
Poor	11	15	26		
Total	69	31	100		

The results of the statistical test analysis obtained a p value of 0.001. Such finding indicated that there was a significant relationship between knowledge of pregnant women and covid-19 preventive measures in Jambi City. Based on the odds ratio value, it was found that pregnant women with good knowledge tended to have good Covid-19 preventive measures 4,943 times greater than pregnant women with poor knowledge.

## Discussion

Knowledge is the understanding of the given topic. Knowledge is the ability to receive, retain and use information, which is influenced by skills and experience. The majority of a person's knowledge comes from personal and other experiences, the environment, mass media, and formal and informal education (Siltrakool, 2018). Good knowledge on Covid-19 is related to the provision of intense information through other media and platforms. Since the emergence of this disease, there has been a variety of information about Covid-19 that is provided constantly by governments, community organizations, and individuals through social media, television, radio and announcements via car. Health education about Covid-19 has also taken place in various health facilities. The role of healthcare workers in disseminating information related to Covid-19 in health facilities is very important (Nwafor et al., 2020). In this study, some (56%) access to information for pregnant women came from electronic media (television / news). Therefore, it can be assumed that pregnant women received good information about Covid-19.

A similar study conducted by (West et al., 2021) also showed similar finding that 81.4% of pregnant women had a good knowledge on Covid-19. Age, level of education, employment, and parity were significantly related to a good knowledge of Covid-19. Therefore, health education related to the prevention of Covid-19 to the community and at-risk groups such as pregnant women must continue to be carried out when pregnant women had Antenatal care (ANC) as well as through television, radio, and other social media.

The results of this study further revealed that 54% of pregnant women in Jambi City had good actions related to Covid-19 prevention. Such finding is in line with a study conducted by (Kamal et al., 2020) which showed that 92.7% of pregnant women had good Covid-19 preventive measures. Covid-19 preventive measures were illustrated by the results that 93.7% of pregnant women had never visited a crowd, 99% of pregnant women maintained social distancing, and 99.4% of pregnant women washed their hands with soap regularly.

Good Covid-19 prevention was associated with age. Pregnant women aged 28 years and over were more likely to engage in good Covid-19 preventive measures compared to women aged 18-22 years. In this study, most of pregnant women (88%) were in the age range of 20-35 years. Older age is a risk factor for severe complications and even death from Covid-19. In addition, education is also associated with good Covid-19 preventive measures. Pregnant women who had good education were more exposed to health information, especially about Covid-19. The level of education of pregnant women in this study was mostly higher education (71%) is a college. Therefore, pregnant women tended to take positive steps to protect themselves from diseases including Covid-19. Poor Covid-19 preventive measures might be due to several reasons, including non-available masks, water and soap for washing hands and the high cost of hand sanitizer (Kumbeni et al., 2021).

The general public needs to receive health education on Covid-19 preventive measures through social media, newspapers, television, and government health institutions, particularly at-risk groups like pregnant women. Government also needs to support the implementation of Covid-19 preventive

measures such as by enforcing social distancing, restrictions on movement, mandatory areas for wearing masks, and routine health checks (antenatal care for pregnant women) by local healthcare workers (Kamal, 2020).

This study's findings are consistent with those of Dewi's (2020) study, which showed that there was a significant relationship between pregnant women's knowledge and their use of covid-19 prevention measures (p-value of  $0.000 < \alpha 0.05$ ). A comparable study carried out by Nwafor (2020) also showed that 60.9% of pregnant women had a good knowledge on Covid-19. In this study, it was demonstrated that there is a significant link between knowledge and Covid-19 prevention measures. Preventing Covid-19 necessitates knowledge of pregnant women. Knowledge has a significant impact on the management of Covid-19 prevention, preparation, and readiness.

Knowledge cannot be separated from the actions of a person, including pregnant women. Pregnant women with good knowledge will be able to take appropriate covid-19 preventive measures. Information about the prevention of Covid-19 can be obtained by pregnant women through mass and electronic media, both print and non-printing. Governments, community organizations, and individuals have continuously provided information about Covid-19 via social media, television, radio, and car announcements since the disease's emergence. Various health facilities have also conducted Covid-19 health education. In health facilities, healthcare workers play a crucial role in disseminating information about Covid-19 (Nwafor et al., 2020).

Knowledge-based behaviors are more likely to endure than ignorance-based ones. Awareness, interest, evaluation, trial, and adoption are all steps in the process of changing a person's behavior. Improved preventive behavior requires knowledge. A person's behavior can be influenced by the stages of knowledge known as knowledge, comprehension, application, analysis, synthesis, and evaluation. (Notoatmodjo, 2014). Knowledge cannot necessarily change Covid-19 preventive measures if it is not filtered correctly. In addition, the implementation of Covid-19 preventive measures needs support for from various parties, including families and the surrounding community. In general, Covid-19 can have an impact on the concerns of pregnant women towards their pregnancy and good treatment is expected to minimize adverse impacts on maternal and fetal health (Marliandiani, 2021).

WHO recommendations regarding the prevention of Covid-19 among pregnant women include hand hygiene using hand sanitizer (alcohol) or washing hands with soap and running water, application of proper coughing and sneezing etiquette, wearing a mask, maintaining a distance (at least 1 meter) from others, avoiding touching parts of the face (such as, eyes, nose, and mouth), replacing handshake by waving, elbow greetings or smile, eating nutritious food, drinking enough water, and performing regular ANC visit to midwife (ACOG, 2020).

The government through (Ministry of Health of the Republic of Indonesia, 2020) has also mentioned some efforts that can be made to prevent Covid-19 among pregnant women as follows: (1) Wash hands with soap and running water for at least 20 seconds, if soap and water are unavailable, use an alcohol-based hand sanitizer that contains at least 70% alcohol, wash hands especially after defecation, urination and before eating; (2) Wash your hands before touching the mouth, nose, and

eyes.; (3) Keep away from sick people as much as possible; (4) Use an effective medical mask; (5) When coughing or sneezing, according to cough etiquette, cover your mouth and nose with a tissue; (6) Disinfect and clean surfaces and objects that are frequently touched frequently; (7) Postpone the pregnancy examination to the healthcare workers if there are no signs of danger in pregnancy; (8) Avoid contact with animals such as bats, rats, ferrets or other animals carrying COVID-19 and avoid to go to the animal market; (9) If there are symptoms of COVID-19, it is expected to contact the available emergency services telephone (COVID-19 Hotline: 119 extension 9); (10) Avoid going to countries/regions infected with COVID-19, if it is urgent to go, it is expected to first consult with an obstetric specialist or proper health practitioner; (11) Seek the right and correct information about COVID-19 on trusted social media. Health education related to the prevention of Covid-19 to the community and at-risk groups such as pregnant women must continue to be carried out when pregnant women had Antenatal care (ANC) as well as through television, radio, and other social media.

The limitation in this study was regarding data collection that was carried out online using a google form accessed via smartphone so that only pregnant women who had smartphones and internet access could participate. In addition, Covid-19 prevention was only assessed using questionnaires without direct observation.

## Conclusion

It was proven that there was a relationship between knowledge and Covid-19 preventive measures among pregnant women in Jambi City. It is expected that healthcare workers can provide health education regarding the prevention of Covid-19 to at-risk groups such as pregnant women intensely during antenatal care as well as through mass and electronic media so as to prevent the risk of covid-19 transmission among pregnant women.

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