

CLINICAL SYMPTOMS OF PREGNANT WOMEN WITH COVID 19: A SCOPING REVIEW

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DOI: [10.5281/zenodo.12705384](https://doi.org/10.5281/zenodo.12705384)

Abstract

Objective: To find out the number of incidents of pregnant women infected with COVID-19 and the clinical symptoms experienced by pregnant women. Method: Scoping review adapts Arksey and O'Malley's framework. There were 10 articles found from 103 articles selected based on criteria. Results: Pregnant women infected with COVID-19 are spread across several developed and developing countries in varying numbers and on average experience symptoms such as coughing, fever, lack of smell and shortness of breath, symptoms of myalgia, chills, fatigue. Conclusion: Pregnant women infected with COVID-19 experience several aggravating symptoms and some even experience abortions.

Keywords: Pregnant Women, COVID-19.

INTRODUCTION

The World Health Organization (WHO) announced an outbreak of the Corona Virus (Covid-19) disease precisely in March 2020, as a pandemic that first emerged in Wuhan. Corona Virus Disease 2019 (Covid-19) is an acute respiratory disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). [1,2] In 2021, 219 cases of Covid-19 were identified and specifically in Indonesia there were 4 million cases. The global death rate due to Covid-19 reached 2.02%, and in Indonesia itself it reached 3.38%. [1,2]

Covid-19 attacks all ages, including pregnant women. During pregnancy a woman will experience anatomical and physiological changes as well as changes in the immune system with the presence of the fetus so that pregnancy is associated with an increased risk of infection. [3,4] Pregnancy is a unique immunological condition. The mother's immune system faces various major challenges, namely maintaining and establishing tolerance to the allogenic fetus while having to maintain the body's defenses against microbial attacks. The success of pregnancy is very dependent on the ability of systemic and local adaptation. In pregnancy, the mother's immunological conditions adapt actively to the growth and development of the fetus throughout the pregnancy.

Data on cases of Covid-19 infection in pregnancy in the United States shows that the total is 18,040 with a death rate of 2.16%. Indonesia itself reported that in 2020, as many as 64,958 people were infected with Covid-19 and around 30% were pregnant women. [5,6] Covid-19 is transmitted through droplets, contact or oral contact, which resembles acute respiratory distress syndrome. Likewise, pregnant women have the potential to cause clinical symptoms, but there are also those who do not show clinical symptoms. [7] Based on the background above, the author is interested in describing the clinical symptoms of pregnant women who have been identified as Covid-19 cases.

METHOD

A scoping review is a literature review that aims to explore the breadth of available evidence by mapping the concepts underlying the research area, sources of evidence and the types of evidence available. The preparation of this scoping review was developed by Levac (2010) with five stages, namely:

1. Identify research questions

In this review, the way to determine the ideas that will be discussed is by using the Population, Exposure, Outcome, and Study Design (PEOS) Framework. The following table shows the PEOS system. On this review is used *Population, Exposure, Outcome, Study Design Framework* (PEOS). The PEOS system can be seen in the table below.

Table 1: PEOS Framework

P (Population)	E (Exposure)	O (Outcome)	S (Study Design)
Covid-19 in Pregnant Women Characteristics of Pregnant Women with Covid-19 Clinical Symptoms of Pregnant Women with Covid-19	Characteristics of Covid-19 Clinical Symptoms of Pregnant Women with Covid-19	Characteristics Clinical Symptoms	All research studies/study design related Clinical Symptoms of Pregnant Women with Covid-19

So the research question in this review is the clinical symptoms of pregnant women with Covid-19?

2. Identify relevant articles

Identifying relevant articles is carried out using the following steps, namely selecting a database, determining article criteria such as the form of article to be used, namely original articles and also reviewing articles with meta analysis, whereas for theses, theses and dissertations are not included in the criteria. The articles used are from the last 4 years, namely from 2020 to 2023, and finally determine the type of research from the article.

Table 2: Article search keywords

Databases	Keyword Search
PubMed	(covid-19) OR ("characteristic covid-19") OR ("clinical symptoms of covid-19") AND (pregnant women with covid-19) OR ("characteristic pregnant women with covid-19") OR ("clinical symptoms of pregnant women with covid-19")
ScienceDirect	(covid-19) OR ("characteristic covid-19") OR ("clinical symptoms of covid-19") AND (pregnant women with covid-19) OR ("characteristic pregnant women with covid-19") OR ("clinical symptoms of pregnant women with covid-19")
EBSCO	(covid-19) OR ("characteristic covid-19") OR ("clinical symptoms of covid-19") AND (pregnant women with covid-19) OR ("characteristic pregnant women with covid-19") OR ("clinical symptoms of pregnant women with covid-19")
Google Scholar	(covid-19) OR ("characteristic covid-19") OR ("clinical symptoms of covid-19") AND (pregnant women with covid-19) OR ("characteristic pregnant women with covid-19") OR ("clinical symptoms of pregnant women with covid-19")

3. Selection/selection of articles

Data selection was carried out by determining the relevance of the research from the search results which found 120 articles. Then 10 articles were obtained that met the criteria. The article search diagram is drawn as below:

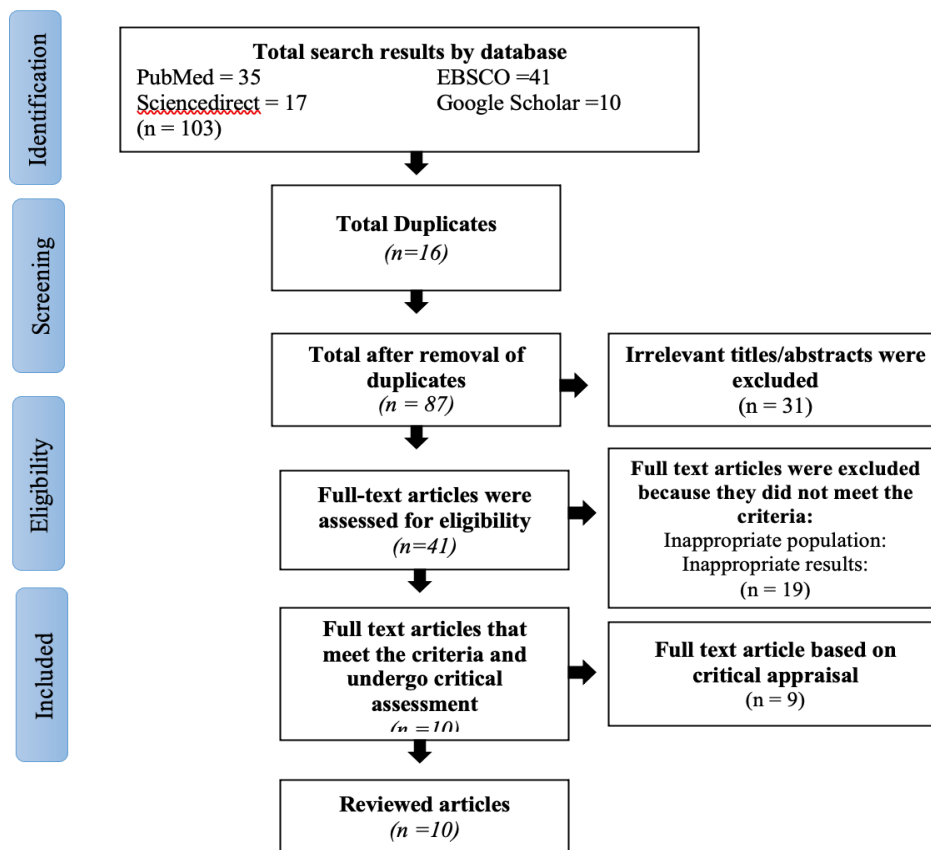


Figure 1: Article search diagram

4. Charting data

Based on the 14 selected articles, data charting was then carried out to include several key points from the articles such as author, location, research objectives, methodology, sample size and research findings.

Table 3: Data Charting

No	Title/Researcher, Year	Objective	Method	Participants	Results
A1	Clinical Manifestation Comparison in Hospitalized Pregnant and Non Pregnant Women With Covid 19 at Mataram University Hospital, Mataram, Indonesia. Putu Siah Ananda Putri Atmaja, et al. 2022	To find out the comparison of clinical symptoms in pregnant women and non-pregnant women with Covid-19 who are hospitalized at Mataram University Hospital	Observational Descriptive	Pregnant and non-pregnant women based on medical records who were confirmed positive for Covid-19 by RT-PCR.	Of the 145 women confirmed with Covid-19, 89 were pregnant women and 56 were not pregnant. In symptomatic pregnant women the most common clinical symptoms were nausea, vomiting, coughing and headaches, and in symptomatic non-pregnant women the most common

					clinical symptoms were coughing, anosmia and headaches.
A2	Clinical Overview in Pregnancy with Covid-19 at Prof. Dr. IGBG Ngoerah Hospital Period of April 2020-March 2021. Anak Agung Ngurah Jaya Kusuma, et al. 2022 [9]	To find out the demographic and clinical characteristics of pregnancy with Covid-19 at Prof.Dr.IGNG Ngoerah Hospital, Bali, Indonesia	Descriptive Cross Sectional	Pregnant women aged 26-30 years.	Of the 275 patients, 197 gave birth, 84.77% underwent CS and 66.55% without oxygen therapy. Around 69.69% experienced complications and the death rate was 1.09%.
A3	Clinical Features and Outcomes of pregnant Women with Covid-19: a Systematic Review and meta-Analysis. Yi Jie Gao, et al. 2020. [10]	To provide an overview of the characteristics of maternal and newborn outcomes at Ibu Surakarta Hospital	Cohort	Pregnant women with confirmed Covid-19	A total of 62 pregnant women were confirmed to have Covid-19, 38 of whom experienced symptoms of cough, fever, lack of smell and shortness of breath, the remaining 24 were asymptomatic.
A4	Clinical Profile of Pregnant Women with Covid-19 Hospitalized in Regional Referral Hospital. Juminten Saimin, et al. 2021. [11]	Knowing the clinical picture of pregnant women with Covid-19 who are admitted to the Covid-19 Referral Hospital	Descriptive	41 pregnant women were identified as Covid-19	Of the 41 pregnant women with Covid-19, 3 of them had asymptomatic and mild symptoms such as fever and cough.
A5	Clinical Characteristics of Pregnant Women with Covid -19 in Japan: A Nationwide Questionnaire Survey. Tatsuya Arakaki, et al. 2021. [12]	To determine the clinical characteristics and final outcomes of pregnant women suffering from COVID-19 on a national scale in Japan.	Descriptive	1,418 pregnant women	There were 72 pregnant women diagnosed with COVID-19, 58 of whom showed symptoms and 5 of them experienced severe infections and 1 person died.
A6	Clinical Characteristics And Outcomes Of Pregnant Women With COVID-19 And The Risk Of Vertical Transmission: A Systematic	To determine the clinical picture and outcomes of mothers infected with COVID-19, including the possibility and	Descriptive	230 pregnant women	Of the 230 who experienced COVID-19, 154 were in labor, 66 were in pregnancy and 10 had abortions.

	Review. Jianhua Chi, et al. 2020. [13]	evidence of vertical transmission.			
A7	Characteristics Of Maternal Death Due To SARS-Cov-2 Infection In East Java Indonesia. Darmie Tumangger, et al. 2021. [14]	To describe the characteristics of maternal deaths due to SARS-CoV-2 infection	Descriptive	7 Pregnant women	A total of 7 pregnant women experienced COVID 19 and died due to severe clinical symptoms accompanied by comorbidities.
A8	Clinical Characteristics And Outcomes Of Pregnant Women With COVID-19 And Comparison With Control Patients: A Systematic Review And Meta-Analysis, Maryamsadat, et al. 2020. [15]	To determine the clinical characteristics and outcomes of pregnant women infected with COVID-19.	Descriptive	128,176 patients were not pregnant and 10,000 patients were pregnant	75.5% of pregnant women experience COVID-19 by showing symptoms of myalgia, chills, fatigue.
A9	Clinical Characteristics And Laboratory Results Of Pregnant Women With COVID-19 In Wuhan, China. Zhiqiang Wang, et al. 2020. [16]	To evaluate the clinical picture and laboratory examination results in pregnant women with COVID-19 disease	Retrospective	72 women consisting of 30 pregnant women and 42 non-pregnant women.	White blood cell levels, number and percentage of neutrophils, C-reactive protein, procalcitonin, and D-dimer were significantly lower compared with pregnant women.
A10	Epidemiological And Clinical Characteristics Of Pregnant Women And Neonates With COVID-19 In Northwest Mexico. Nidia Leon Sicairos, et al. 2022. [17]	To study chest CT images and clinical characteristics of COVID-19 pneumonia in pregnant patients to determine the correlation.	Retrospective	23 patients were pregnant women	15 patients were asymptomatic with ground glass opacities and 8 patients had symptoms of uneven ground glass shadows, consolidation, and fibrous lines.

5. Compile, Summarize and Report Results

Describing article characteristics and thematic analysis can be used to organize, summarize, and report review results, as did Levac.

RESULTS

Article Characteristics

This article review is based on articles published between 2020 and 2022. These articles come from several developed and developing countries. Of the 10 articles, 7 are original articles and 3 are review articles. With a descriptive and retrospective research design.

Thematic Analysis

Of the 10 articles that have been read, there are 2 themes that emerged from this scoping review, namely the incidence of COVID 19 in pregnant women and the characteristics of the clinical symptoms of pregnant women experiencing COVID 19.

Table 4: Characteristics of the clinical symptoms of pregnant women experiencing COVID 19

Theme	References
The incidence of COVID 19 in pregnant women.	Articles 1,2,3,4,5,6,7,8
Characteristics of clinical symptoms of pregnant women experiencing COVID 19.	Articles 1,2,3,4,5,7,8,9,10

Theme 1: Prevalence of COVID-19 in Pregnant Women

From 10 articles, the COVID 19 incident occurred, starting in China, precisely in Wuhan, then developing in several regions. The incidence of COVID-19 in pregnant women at Mataram Hospital was 145 people, while at Prof. Hospital. Dr. IGBG Ngoerah found that 197 pregnant women had COVID-19. At the Surakarta Mother's Hospital there were 62 pregnant women who had COVID-19, this number was smaller than at the Bau-Bau Regional Hospital with 19 people. In developing countries like Japan, pregnant women who experienced COVID-19 were also not spared, as many as 72 pregnant women were found to be 58 infected. In Iran, 230 people were found to be infected with COVID-19. In one hospital in East Java, 7 pregnant women were found to have COVID-19. In Canada, there are 128,176 pregnant women, 75.5% of whom have been infected. And finally in the Wuhan region of China in 2021 there were 72 pregnant women experiencing COVID-19, this figure is smaller than in the Mexican region where 23 pregnant women were indicated. [18, 19]

Theme 2: Clinical Symptoms of Pregnant Women with COVID-19

Symptoms experienced by pregnant women infected with COVID-19 include symptomatic pregnant women, the most common clinical symptoms being nausea, vomiting, coughing and headaches. Apart from that, there are several who receive oxygen assistance. Experiencing symptoms of cough, fever, lack of smell and shortness of breath. Myalgia symptoms, chills, fatigue. Laboratory examinations showed that white blood cell levels, number and percentage of neutrophils, C-reactive protein, procalcitonin and D-dimer were significantly lower compared to pregnant women. Apart from showing symptoms of turbid ground glass and symptoms of uneven ground glass shadows. [20, 21]

DISCUSSION

Of the 10 articles that have been reviewed, all of the articles describe how many pregnant women experience COVID-19, from Indonesia to developed and developing countries. Based on several theories which explain that pregnant women and babies are very vulnerable to COVID-19 because physiological changes in pregnancy involve the cardiorespiratory and immune systems, which can result in changes in the response to SARS-CoV-2 infection in pregnancy (Wastnedge, 2021). Clinical experience of pregnancies complicated by other coronavirus infections such as Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome, has led pregnant women to be considered potentially susceptible to severe SARS-CoV-2 infection. Physiological changes during pregnancy have a significant impact on

the immune system, respiratory system, cardiovascular function, and coagulation which have positive or negative effects on the development of COVID-19 disease. [19, 22] Twenty-six of 56 pregnant women with COVID-19 had more than one symptom and 10 patients had 1 symptom. The most common symptoms experienced by patients are coughing and fever. Coughing is a reflex that acts as part of the body's defense system to protect itself from pathogens or foreign objects. The most common cause of cough in adults is viral upper respiratory tract infections, including COVID-19 (S. Sharma et al, 2021). Cough is the most common symptom of COVID-19. A study shows that it is possible that SARS-CoV-2 infects the sensory nerves that mediate coughing, causing neuroinflammation and neuroimmune interactions as a mechanism of cough hypersensitivity. [23, 24].

CONCLUSION

From the ten articles that have been reviewed, it was found that the symptoms experienced by pregnant women infected with COVID-19 are coughing, fever, lack of smell and shortness of breath, symptoms of myalgia, chills, fatigue. Laboratory examinations showed that white blood cell levels, number and percentage of neutrophils, C-reactive protein, procalcitonin and D-dimer were significantly lower compared to pregnant women. Apart from showing symptoms of turbid ground glass and symptoms of uneven ground glass shadows.

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