

How to Cite:

Malik, F. H., Aate, D. S., Hasan, A. A., Bkhebukh, S. B., & Mansi, Q. H. . (2022). Effect of pregnant mothers Infected with the corona virus 19 on neonate baby. *International Journal of Health Sciences*, 6(S1), 13284–13292. <https://doi.org/10.53730/ijhs.v6nS1.8500>

Effect of pregnant mothers Infected with the corona virus 19 on neonate baby

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Abstract--Background: On March 7, 2020, the World Health Organization (WHO) declared the novel coronavirus illness (COVID-19) a Pandemic after the number of confirmed cases surpassed 100,000. COVID-19 has spread over the planet as of April 21, 2020, resulting in approximately 180,000 deaths out of a total of more than 2 million verified cases. Objective: to assess outcome of pregnant infected with COVID-19 on newborn. Methodology: A descriptive cross sectional study was conducted on newborn of mother infected with COVID-19 during pregnancy at Bint Al-Huda teaching hospital in Nasiriyah. This study started from (3rd January 2022) to (4th April 2022). Method in data collection started from the (9th February 2022) to (23th February 2022). A nonprobability purposive sampling which consists of 20 newborn. The study instrument comprised of three parts: Demographic Data and Information consist of age, trimester, and chronic disease. Clinical feature domain and complication domain. The instrument presented to (5) experts in the different fields. Results: Our study shows that good evaluation at first and second trimester and poor evaluation at third trimester. High score of good evaluation

at (18-22 y) of mothers age and poor evaluation at (33-38 y). Great percent at no chronic disease of good and poor evaluation. Conclusion: The study concludes, common infected pregnant with COVID 19 at second trimester and the most common clinical feature for the neonate baby are dyspnea, poor feeding, fever and need for O2 therapy. Recommendation: Based on previous findings, further studies in other cities are warranted to assess outcome of pregnant infected with COVID-19 on newborn.

Keywords--- pregnant, COVID-19 on newborn, neonate baby.

Introduction

SARSCoV-2 is a novel beta coronavirus that causes COVID-19, a severe infectious respiratory disease. The first case of SARS-CoV-2 was announced in Wuhan, China, on December 31, 2019, and the virus has since spread around the world. The World Health Organization (WHO) proclaimed an International Emergency [1] on January 30th, and a global pandemic [2] on March 11th, 2020. The first confirmed SARS-CoV-2 case in Spain was reported on January 31, 2020. SARS-CoV-2 infection was verified in 40,652,097 people over the world until October 22nd, 2020, with 1,122,036 SARS-CoV-2-related deaths (World Health Organization). Pregnancy-related anatomical, physiological, and immunological changes may make pregnant women more susceptible to viral infections and raise their risk of severe pneumonia [3, 4]. Previous coronavirus infections, such as SARS-CoV or MERS-CoV, have shown that infected pregnant women are more likely to have poor outcomes, such as intubation, ICU hospitalization, renal failure, and mortality [5]. According to Hantoushzadeh et al. [6], pregnant women infected with SARS-CoV-2 during the second or third trimester of their pregnancy may develop clinical difficulties and die. Due to a lack of research, the effects of SARS-CoV-2 infection on pregnant women and pregnancy outcomes remain unknown, as is the prevalence of perinatal disorders. The most common symptoms of SARS-CoV-2 infection in pregnant women have been recorded as fever, cough, dyspnoea, tiredness, and myalgia [7], which are identical to the most typical symptoms in other persons [8]. The severity of disease in adults is connected to many risk factors such as hypertension, obesity, respiratory disease, diabetes mellitus, and cardiovascular disorders [9]. Sentilhes et al. [10] discovered that maternal age, obesity, hypertension, and diabetes may enhance the risk of COVID-19 morbidity in pregnant women, however these characteristics are not detailed in the published series of pregnant women. Severe pneumonia has been reported in a wide spectrum of pregnant women, with rates ranging from 0% to 14% [11]. Perinatal and vertical transmission are still controversial [12]. RT-PCR (Real-Time Polymerase Chain Reaction) has been used in some studies to test newborns from women who were infected during pregnancy [13–16], other publications have reported several cases of SARS-CoV-2 infected newborns [17–22], and potential mechanisms of perinatal transmission have been reviewed [12]. RT-PCR [23, 24] and electron microscopy [25] were used to detect SARS-CoV-2 in the placenta, but no newborns were infected in those investigations. RT-PCR was used to test the vaginal fluid, but no SARS-CoV-2 was identified [26]. According to Salvatore et al. [27], perinatal infection is unlikely provided sufficient hygiene

precautions are taken. There is no conclusive information on the risks of intrauterine and peripartum transmission from mother to child, nor on the mode and timing of delivery [28]. Infection with SARS-CoV-2 in newborns has uncertain consequences. A case of late-onset infection in a baby has been reported, highlighting the importance of monitoring neonates born to mothers who were infected during delivery [19]. It has been suggested that children's strong innate immunity contributes to better infection control at the entry site [29]. The main purpose of the study is to report clinical and analytical aspects of SARS-CoV-2 infection in a group of infected pregnant women during the first wave of the pandemic. The study of birth outcomes and the transmission of SARS-CoV-2 infection during pregnancy and after birth are secondary objectives.

Methodology

Study design

A descriptive cross sectional study was conducted among neonate of mother infected by COVID-19 during pregnancy period at Karbala teaching hospital of children.

Time of data collection

The study is employed through the present study from 25th November, 2021 to 22th April, 2022.

Sampling collection

A purposive sample of (20) neonate of mother infected by COVID-19 during pregnancy period were selected from Hussein teaching hospital of children.

Data collection

The description of the demographic characteristics of study groups that includes the following variables:

1. Demographic characters of mother: (Age of mother, stage of pregnancy trimesters, history of diabetes during pregnancy, Chronic disease during pregnancy).
2. Clinical features of neonate: (Fever, Dyspnea, O₂ therapy, Diarrhea, Poor feeding, Inactive, and Paler color).
3. Effect of COVID-19 on pregnant and neonate: (preterm, Resuscitation, Low birth weight, Cesarean section, and sepsis).

Data were obtained from mother through the utilization of the study instrument, and interview technique for each mother and review their medical records as means of data collection. Tables was used to analyze and assess the results of the study under the application of the statistical package (SPSS) ver. (22.0).

Result

Table (1): Demographic Characters of Mother

Variables		Frequency	Percent
Age of mother	18-22	9	45.0%
	23-27	7	35.0%

	28-32	2	10.0%
	33-38	2	10.0%
	Total	20	100.0%
Trimesters	First	4	20.0%
	Second	9	45.0%
	Third	7	35.0%
	Total	20	100.0%
Chronic disease	Yes	2	10.0%
	No	18	90.0%
	Total	20	100.0%

This table shows that the plurality of age of mother at (18-22) is 9 (45.0%), second trimester is common 9 (45.0%). No chronic diseases during pregnant period is 18 (90%).

Table (2): Clinical Features of Neonate

Variables		Yes	No
Fever	F	8	12
	%	40.0	60.0
Dyspnea	F	14	6
	%	70.0	30.0
Need for O2 therapy	F	10	10
	%	50.0	50.0
Diarrhea	F	2	18
	%	10.0	90.0
Poor feeding	F	11	9
	%	55.0	45.0
Inactive	F	5	15
	%	25.0	75.0
Pale color	F	4	16
	%	20.0	80.0

This table shows that the most common clinical feature for the neonate baby are dyspnea (14), poor feeding (11), need for O2 therapy (10) and fever (8).

Table (3): Risk of COVID-19 Effect on Pregnant and Neonate

Variables		Yes	No
Preterm	F	5	15
	%	25.0	75.0
Resuscitation	F	4	16
	%	20.0	80.0
Low birth weight	F	9	11
	%	45.0	55.0
Cesarean section	F	7	13
	%	35.0	65.0
Sepsis	F	1	19
	%	5.0	95.0

This table shows that the common COVID-19 effect on pregnant and neonate are Low birth weight (9) and Cesarean section (7).

Table (4): outcome and association of COVID-19 effect between demographic characters of mother and clinical features of neonate

Variables		Outcome			
		Good	Fair	Poor	
Trimester	First	0 0.0%	0 0.0%	4 20.0%	d.f= 4 chi= 5.905 sig= .206
	Second	2 10.0%	3 15.0%	4 20.0%	
	Third	3 15.0%	2 10.0%	2 10.0%	
Age of mother	18-22 y	1 5.0%	3 15.0%	5 25.0%	d.f= 6 chi= 8.750 sig= .188
	23-27 y	1 5.0%	2 10.0%	4 20.0%	
	28-32 y	1 5.0%	0 0.0%	1 5.0%	
	33-38 y	2 10.0%	0 0.0%	0 0.0%	
Chronic diseases	Yes	1 5.0%	0 0.0%	1 5.0%	d.f= 2 chi= 1.111 sig= .574
	No	4 20.0%	5 25.0%	9 45.0%	
Mean= 1.75, Std. Deviation=.851 Evaluation= Fair					

D,f= degree of freedom, chi= chi square, sig.= significant, good= 0-2 degree, fair= 3-4 degree, poor= 5-7 degree.

This table shows that poor evaluation at first and second trimester and good evaluation at third trimester. High score of poor evaluation at (18-22 y) of mothers age and good evaluation at (33-38 y). Great percent at no chronic disease of good and poor evaluation.

Discussion

The goal of this study was to see how COVID-19 infection affected the newborns of pregnant women. The implications of the COVID-19 pandemic on healthy pregnant women who are not infected with COVID-19, on the other hand, are unknown. Pregnant women are considered a "vulnerable population" because they are more susceptible to environmental variables, such as stress, than the general public. However, as the pregnancy progresses, women may become less sensitive to the effects of stress. The study focuses solely on uncomplicated singleton pregnancies in women who have not been infected with COVID-19 [30]. Table 1 reveals that the majority of mothers are between the ages of 18 and 22, with 9 (45.0 percent) in the second trimester (45.0 percent). There are no chronic disorders during pregnancy if you are over the age of 18. (90 percent). Labor and

delivery are influenced by a variety of factors, including maternal history, environmental and behavioral factors, as well as socio-demographic factors, according to study [31]. (i.e., race, age, and marital status).

Dyspnea (14), poor eating (11), requirement for O₂ therapy (10) and fever are the most prevalent clinical features for neonates, according to Table 2. (8). The influence of the Gulf of Mexico oil disaster on unfavorable maternal outcomes was studied [32,33,34]. Low birth weight (45%) and cesarean section are the most common COVID-19 effects on expectant and neonates, as shown in Table 3. (35%). Preeclampsia, gestational hypertension, premature rupture of membranes, and preterm birth were not significantly increased during the COVID-19 epidemic as compared to the control period, according to a study [35,36,37].

Table (4) demonstrates that the first and second trimesters received positive feedback, whereas the third trimester received negative feedback. When women are 18-22 years old, they have a high score of negative appraisal and a high score of favorable evaluation (33-38 y). A large percentage of people have no chronic disease, both good and bad. The study indicated that comparing the two groups further confirmed that pregnant women and infants had no detrimental effects during the COVID-19 pandemic [38,39,40]; the outcome of babies during COVID-19 appeared to be better than those in the absence of COVID-19. In comparison to data preceding to the pandemic, the results for newborns during COVID-19 appeared to be better.

Conclusions

Study concludes, common infected pregnant with COVID 19 at second trimester and the most common clinical feature for the neonate baby are dyspnea, poor feeding, fever and need for O₂ therapy.

Recommendations

Based on previous findings, further studies in other cities are warranted to assess outcome of pregnant infected with COVID-19 on newborn. Educational programs should be used to assess outcome of pregnant infected with COVID-19 on newborn.

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