



## Original Article



### Maternal and Perinatal Outcomes in Pregnant Women with Covid-19: A Retrospective Egyptian Study

Ayman Moheb Youssef, Saad EL-Gelany, Mahmoud Hosni Ibrahim and Asmaa Ragab Gedawy \*

DOI: 10.21608/anj.2023.285139

\*Correspondence: Department of obstetrics and gynecology, Faculty of Medicine, Minia University, Egypt

Email: dr\_asmaa\_28@hotmail.com

[Full list of author information is available at the end of the article.](#)

#### Abstract

**Background:** Severe acute respiratory distress coronavirus 2 is the causative agent of the newly identified coronavirus disease 2019 (COVID-19) (SARS CoV-2). Infections caused by coronavirus may produce a wide spectrum of symptoms, from moderate to life-threatening conditions including viral pneumonia accompanying systemic damage. Pregnant women may be more susceptible to developing respiratory infection problems, which may increase the risk of both maternal and fetal morbidity and mortality due to the physiological and immunologic changes that occur during pregnancy. **Aim of work:** to assess maternal and perinatal outcomes in Egypt's isolation hospitals in relation to SARS-CoV-2 infection during pregnancy, hospitalization, and newborn survival. **Patients and methods:** Minia University Hospital's Obstetrics and Gynecology ward was the site of this retrospective cohort research. Between March 2020 и June 2021, 46 pregnant women who've been tested for SARS-CoV-2 were included in the research. **Results:** According to the distribution of trial information among the women who were evaluated, one baby was born with COVID infectious agent and four newborns required admission to the neonatal intensive care unit. Neonatal jaundice was the only minor consequence. Most patients were successfully released from the hospital, and the care of one patient was transferred to a different facility. **Conclusions:** COVID-19 is associated with a greater risk of mortality, mechanical ventilation, and intensive care unit hospitalization among pregnant women. Preterm delivery is common among pregnant women with Covid-19, and their babies often need care in the neonatal intensive care unit (NICU). Therefore, pregnancies with covid-19 should be considered high-risk.

**Key words:** Maternal, perinatal, outcome, Covid-19, pregnancy.

## **Introduction**

New coronavirus illness SARS CoV-2, the causative agent of 2019 COVID-19, emerged in December 2019 and was initially identified in Wuhan, China. Infections caused by coronavirus may produce a wide spectrum of symptoms, from moderate to life-threatening conditions including viral pneumonia and systemic damage. More than 600 million experimentally illnesses and over 6.4 million fatalities were documented globally as of 4 September 2022 [1,2].

On February 14, 2020, Egypt reported the first instance of COVID-19. WHO received reports of 515,264 lab-confirmed of COVID-19 in Egypt between 3 January 2020 and 4 September 2022, with a total of 24,791 fatalities [3]. Pregnant women and their unborn children are particularly vulnerable to the effects of newly emerging illnesses. It has been suggested from the commencement of the COVID-19 outbreak that pregnant women are at a much higher risk of contracting a severe

case of the virus. While maternal death from COVID-19 was unusual, studies showed that pregnant women with the virus were more likely to have respiratory difficulties, hospitalization, and the need for an invasive ventilator [4]. Pregnant women may be more susceptible to developing respiratory infection problems, which may increase the risk of both maternal and fetal morbidity and mortality due to the physiological and immunologic changes that occur during pregnancy. It was known that SARS-CoV and MERS-CoV both increased the risk of death in pregnant women compared to the general population. Since SARS-CoV-2 is quickly expanding, it is fair to assume that pregnant women will get affected [5].

The potential for this virus to be passed from mother to fetus during pregnancy has sparked worldwide alarm. Although COVID-19 has been found in pregnant women, nothing is known about its

clinical features or the probability of vertical or postpartum transmission [6].

Immediate research is needed to determine whether or not pregnant women mostly with COVID-19 experience different symptoms than non-pregnant women, whether or not the incidence of disease-related complications and mortality is higher in early pregnancy women than it is in non-pregnant women, and whether or not there is an increased risk of premature delivery, fetal mortality, or indeed power the entire of the disease [7]. It is essential that these questions be answered in order to effectively care pregnant women infected have COVID-19 [8].

**Aim of the Work:** to assess maternal and perinatal outcomes in Egypt's isolation hospitals in relation to SARS-CoV-2 infection during pregnancy, hospitalization, and newborn survival.

## **Methods**

This retrospective cohort research was carried out in the obstetrics and gynecology wards of Minia university

medical center, Mallawi specialized facility in Minia governorate, and Nasser health unit in El Suef tribal region. Between Early 2020 and June 2021, 46 pregnant women who were positive for SARS-CoV-2 were included in the research. For all patients, we looked at how a mother's diagnosis of COVID-19 was linked to a higher risk of having a child with a serious problem.

Women who met the inclusion criteria and had a hospital delivery throughout the research period were tested for Middle East respiratory syndrome during pregnancy.

Individuals who have any infection besides just COVID 19 are not eligible for participation.

At the time of admission, patients were given a comprehensive physical examination, including a check of their vital signs, a look at their abdomen and chest, and a check for symptoms including pallor, cyanosis, bile, and enlarged lymph nodes.

Testing comprised a clinical laboratory analysis, a complete blood count (CBC), and oxygen saturation measurement. Radiological exams like CT chest and CXR, as well as blood tests including serum ferritin, C-reactive peptide, and D-dimer, and counts and ratios of lymphocytes to neutrophils, platelets to lymphocytes, and CRP to lymphocytes.

### **Ethical considerations**

The study protocol was approved from the ethical committee at faculty of medicine, Minia University and Institutional Review Board (IRB); Ethical approval number MUEB00059

An official permission was obtained from the gynecology and obstetrics department, faculty of medicine, Minia University. The necessary official permission to carry out the study was obtained from the head managers of each included hospitals.

### **Statistical analysis**

SPSS version 20.0 was used to analyze the data (SPSS Inc., Chicago, IL, USA). Continuous variables having a normal

distribution were reported as mean, standard deviation, and numbers and percentages, respectively. Furthermore, numerical data was equated using the Chi-square, independent t-test, or Mann-Whitney U test, if needed. One-way analysis of variance (ANOVA) was used to compare continuous variables, and  $\alpha < 0.05$  was considered statistically significant.

### **Results**

The mean age of women was  $30.43 \pm 6.12$  years with range from 18 years to 43 years. Most studied women (78.2%) were living in Al-Minya governorate. The mean BMI was  $23.04 \pm 2.18$  Kg/m<sup>2</sup>. Regarding educational level, there is (28.3%) women had secondary education level while (19.6%) women had preparatory education level, (17.4%) had primary education level, (13%) had high education level and (13%) read & write education level.(Table 1)

Nearly 35 (76.1%) of the included women were infected by SARS-COV2

virus and diagnosed as had COVID at third trimester, 5 (10.9%) women were diagnosed at labor, 3 (6.5%) were diagnosed at first trimester and 3 (6.5%) were diagnosed at second trimester. (Table 2)

Most of women have symptoms at presentation. The most common clinical presentation found were cough in 41 (89.7%) women, fever in 40 (87%) women, dyspnea in 26 (56.5%) women, labor pain in 10 (21.7%) women and sore throat in 6 (13%) women. The least symptoms found were hemoptysis, tachycardia, diarrhea, palpitation, lung bleeding and pallor. (Table 3)

One woman (2.2%) needed induction of labour. The mean length of hospital stay was and ranged from 3 days to 30 days. Two women needed readmission within 42 days after hospitalization. There was 35 (76.1%) women were delivered by C.S. (Table 4)

Seventeen women (37%) needed ICU admission and 7 (15.2%) women needed

mechanical ventilation. The mortality rate among studied women was 15.9%. (Table 5)

Preterm was the commonest neonatal complication found (13%) followed by FD that observed in 10.9% cases then respiratory distress syndrome in 8.7% cases. The least complication found was neonatal jaundice that reported in one case. (Tables 6&7)

### **Discussion**

Patients' ages ranged from 18 to 43, with women being the average at 30.43 6.12 years old. A large majority of the ladies (78.3%) came from the Al-Minya governorate. Body mass index averaged 23.042.18 Kg/m<sup>2</sup>. In terms of their education, 28.3% of women had completed high school, 19.6% had completed some college-level work, 17.4% had completed elementary school, 13% had completed some college-level work, and 13% could not read or write at all.

Our findings corroborated those of Ibrahim et al. [9], who investigated the

effects of COVID-19 infection on pregnant mothers and their babies. Seventy-five pregnant women with COVID-19 were involved in the research. Women's ages varied widely, from 19 to 43, with the mean age being 29.115.77. Of the women surveyed, 42 (56%) had completed elementary school, 26 (34.67%) had completed middle school, and 5 (6.67%) could read and write. Among these ladies, 48 (64.0%) were multigravida and 45 (60.0%) were multipara. Women had abortions a total of 74 times, with 98.67% having just one or two abortions and only 1.33% having more than two. The average BMI was 28.973.24.

Nearly 35 women (76.1%) were diagnosed with COVID in the third trimester, while 5 (10.9%) were diagnosed during childbirth, 3 (6.5%) were found in the first trimester, and 3 (6.5%) are diagnosed in the second.

The most precarious time for infection to strike is the third trimester. This increased vulnerability may be

attributable to the pregnancy-puerperal period's physiological alterations in the respiratory system's anatomical structure and in the immune system [10].

Three women (6.2%) reported cardiac conditions, three women (one with chronic DM, two with gestational DM, and one patient with preeclampsia) reported diabetes mellitus, three women (one with chronic hypertension, two with gestational hypertension, and one with preeclampsia), and one woman reported preeclampsia. There were two cases of anemia in pregnant women, one case of retinopathy, one case of thrombocytopenia, one case of a right ovarian cyst, and one case of a thyroid removal.

Our findings corroborated those of Yee et al. [11] in their systematic study, which sought to assess the effects of COVID-19 on expecting mothers. They found that 3.7% of women had hypertension (which includes pregnancy-induced hypertension) and that 4.2% had

diabetes (which includes gestational diabetes).

Only one woman (2.5% of total) in this research required labor to be induced. There was a wide variation in patient stays, with the median being 3 days and the maximum being 30 days. Within 42 days of being discharged, two female patients were readmitted. C-sections were used to deliver 35 out of 38 babies (76.1%).

Consistent with the findings of Li et al. [12], we found that hospital stays varied from 3 to four weeks, on average 9 days. Two were born naturally while the others were delivered through cesarean section. C-sections are being done at a higher incidence because of worries that the lung and pro-inflammatory condition associated with COVID-19 might be exacerbated by the heightened ventilation and stress of labor. Women with COVID-19 who were pregnant were more likely to have asthma (4.7%).

Seventeen (37.2%) of the women in this research required intensive care unit

hospitalization, and fifteen percent (5.2%) required mechanical breathing. The study found a death rate of 15.9% among the women who participated. Our study's death toll reflects the difficulties that COVID-19 posed for expectant mothers, such as restricted access to prenatal, elevated levels of stress during pregnancy, and an absence of social support both before and after giving birth.

Bellos et al. [13] conducted a meta-analysis to assess mother and newborn outcomes in covid-19 pregnancies, and our findings corroborated their findings. There were 17 women who became very ill and were hospitalized to the intensive care unit (11%). Two of these ladies (1.3% of the total) did not survive.

Overall, prematurity was the most prevalent consequence among newborns (13%), followed by fetal distress (10.9%) and respiratory distress syndrome (8.7%). In one instance, newborn jaundice was the only consequence detected.

Results from our study were consistent with those found by Dashraath et al. [14], who set out to assess the clinical presentation and outcome of COVID-19 in pregnant women. Preterm delivery (39%), fetal discomfort (43%), intrauterine growth delays (10%), miscarriage (2%), with perinatal mortality (7%) were listed as the most common neonatal effects of COVID-19. Most patients (82.6%) were successfully released from the hospital, while one patient was sent to another facility to complete their care.

Our findings corroborated those of Salem et al. [10], who investigated the effects of COVID-19 infection on pregnant women and their offspring. There were no fatalities and no issues for 94% of those who were released.

Limitations of our study attributed to: Firstly, Small sample sizes which can limit the generalizability of the findings. Secondly, Selection bias as our study may be limited by the fact that pregnant women who have severe COVID-19. It is

difficult to control for other factors that may impact maternal and perinatal outcomes. Moreover, the study used a retrospective cohort study design. Furthermore, there is Lack of comparison with a control group of pregnant women without COVID-19 can limit the interpretation of results. Moreover, there is limited data on long-term outcomes as our study mainly focused only on short-term outcomes.

### **Conclusions**

The risks of SARS-CoV-2 infection during pregnancy were thoroughly assessed in this research. COVID-19 is more likely to cause fatal results in pregnant women, such as hospitalization, the need for a mechanical ventilator, and even death. Preterm delivery is common for pregnant women with Covid-19, and their babies often need care in the neonatal intensive care unit. Therefore, pregnancies with covid-19 should be considered high-risk. The early, proper medical therapy of individuals with COVID-19 may be aided by a thorough



understanding of disease severity risk factors. In order to safeguard healthcare providers who are actively involved in the birth process, SARS-COV-2 testing should be administered upon admission to delivery and labor facilities. To prevent additional difficulties, further research is required on the severity of COVID-19 during pregnancy.

#### Acknowledgements

To all the staff members, assistant lecturers, residents and nursing team of department of obstetrics and gynecology, faculty of Medicine, Minia university and to every one helped to finish this study in the final form.

#### Author's contributions

All authors have a substantial contribution to the article.

#### Conflict of interest

The authors have no conflict of interests to declare.

#### Funding

This study received no special funding and was totally funded by the authors.

#### Author's details

Department of obstetrics and gynecology,  
Faculty of Medicine, Minia University, Egypt

**Date received:** 4<sup>th</sup> January 2023, accepted 13<sup>th</sup>  
February 2023

#### References

1. WHO E. Egypt: WHO Coronavirus Disease (COVID-19) Dashboard with Vaccination Data | WHO Coronavirus (COVID-19) Dashboard With Vaccination Data. Published 2022. Accessed August 30, 2022. <https://covid19.who.int/region/emro/country/eg>
2. Zheng J. SARS-CoV-2: an Emerging Coronavirus that Causes a Global Threat. *Int J Biol Sci.* 2020; 16(10):1678. doi:10.7150/IJBS.45053
3. WHO. WHO Coronavirus (COVID-19) Dashboard | WHO Coronavirus (COVID-19) Dashboard with Vaccination Data. Published 2022. Accessed August 30, 2022. <https://covid19.who.int/>
4. Yu N, Li W, Kang Q. Clinical features and obstetric and neonatal outcomes of pregnant patients with COVID-19 in Wuhan, China: a retrospective, single-centre, descriptive study. *Lancet Infect Dis.* 2020; 20(5):559-564. doi:10.1016/S1473-3099(20)30176-6
5. Di Mascio D, Khalil A, Saccone G. Outcome of coronavirus spectrum infections (SARS, MERS, COVID-19) during pregnancy: a systematic review and meta-analysis. *Am J Obstet Gynecol MFM.* 2020; 2(2):100107. doi:10.1016/J.AJOGMF. 2020. 100107

6. Kotlyar AM, Grechukhina O, Chen A, Popkhadze S, Grimshaw A, Tal O, Taylor HS, Tal R. Vertical transmission of coronavirus disease 2019: a systematic review and meta-analysis. *American journal of obstetrics and gynecology*. 2021; 224(1):35-53.
7. Korraa. A. "Management of Neonates Born to Mothers with COVID-19". *Annals of Neonatology Journal* 2020; 2(2): 7-19. doi: 10.21608 /anj. 2020.27830.1009
8. Panahi L, Amiri M, Pouy S. Risks of Novel Coronavirus Disease (COVID-19) in Pregnancy; a Narrative Review. *Arch Acad Emerg Med*. 2020; 8(1):e34. doi:10.22037/aaem.v8i1.595
9. Ibrahim AAB, Mohammed HS, Elsaid NMAB, Shalab NS. COVID-19 and perinatal outcomes among pregnant women admitted to isolation unit at Suez Canal university hospital, Egypt: A cross-sectional study. *Afr J Reprod Health*. 2022; 26(3):96-103. doi:10.29063/ajrh2022/v26i3.11
10. Salem D, Katranji F, Bakdash T. COVID-19 infection in pregnant women: Review of maternal and fetal outcomes. *Int J Gynecol Obstet*. 2021; 152(3):291-298. doi:10.1002/ijgo.13533
11. Yee J, Kim W, Han JM. Clinical manifestations and perinatal outcomes of pregnant women with COVID-19: a systematic review and meta-analysis. *Sci Rep*. 2020; 10(1):1-7. doi:10.1038/s41598-020-75096-4
12. Li N, Han L, Peng M, et al. Maternal and Neonatal Outcomes of Pregnant Women with Coronavirus Disease 2019 (COVID-19) Pneumonia: A Case-Control Study. *Clin Infect Dis*. 2020; 71(16):2035-2041. doi:10.1093/cid/ ciaa352
13. Bellos I, Pandita A, Panza R. Maternal and perinatal outcomes in pregnant women infected by SARS-CoV-2: A meta-analysis. *Eur J Obstet Gynecol Reprod Biol*. 2021; 256:194-204.doi:10.1016/j.ejogrb.2020.11.038
14. Dashraath P, Wong JLJ, Lim MXK, et al. Coronavirus disease 2019 (COVID-19) pandemic and pregnancy. *Am J Obstet Gynecol*. 2020; 222(6):521. doi:10.1016/J.AJOG.2020.03.021

**Table (1): Distribution of demographic characteristics among the studied women**

| Parameters               | Studied women (n=46)  |             |
|--------------------------|-----------------------|-------------|
|                          | N                     | %           |
| Residence                | Al-Minya              | 36 78.2%    |
|                          | Assuit                | 1 2.2%      |
|                          | Bani-Suweif           | 7 15.2%     |
|                          | Sohag                 | 1 2.2%      |
|                          | Cairo                 | 1 2.2%      |
| Age (years)              | Mean± SD              | 30.43± 6.12 |
|                          | Median                | 30.0        |
|                          | Range                 | 18.0- 43.0  |
|                          | 18-28                 | 17 37%      |
|                          | 29-38                 | 24 52.2%    |
|                          | > 39                  | 5 10.8%     |
| BMI (Kg/m <sup>2</sup> ) | Mean± SD              | 23.04± 2.18 |
|                          | Median                | 23.0        |
|                          | Range                 | 19.4 – 26.5 |
| Educational level        | Illiterate            | 4 8.7%      |
|                          | Read&Write            | 6 13%       |
|                          | Primary Education     | 8 17.4%     |
|                          | Preparatory Education | 9 19.6%     |
|                          | Secondary Education   | 13 28.3%    |
|                          | High Education        | 6 13%       |

SD= standard deviation,

**Table (2): Distribution of diagnosis period among the studied women**

| Parameters       | Studied women (n=46)      |          |
|------------------|---------------------------|----------|
|                  | N                         | %        |
| Diagnosis period | 1 <sup>st</sup> trimester | 3 6.5%   |
|                  | 2 <sup>nd</sup> trimester | 3 6.5%   |
|                  | 3 <sup>rd</sup> trimester | 35 76.1% |
|                  | Labour                    | 5 10.9%  |

**Table (3): Distribution of clinical presentation among the studied women**

| Parameters       | Studied women (n=46) |       |
|------------------|----------------------|-------|
|                  | N                    | %     |
| Asymptomatic     | 1                    | 2.2%  |
| Fever            | 40                   | 87.0% |
| Dyspnea          | 26                   | 56.5% |
| Tachypnea        | 5                    | 10.9% |
| Cough            | 41                   | 89.1% |
| Hypoxia          | 4                    | 8.7%  |
| PROM             | 4                    | 8.7%  |
| Sore throat      | 6                    | 13.0% |
| Labor pain       | 10                   | 21.7% |
| Tender Scar      | 2                    | 4.3%  |
| Vomiting         | 2                    | 4.3%  |
| Hemoptysis       | 1                    | 2.2%  |
| Tachycardia      | 1                    | 2.2%  |
| Diarrhea         | 1                    | 2.2%  |
| Hypertension     | 3                    | 6.5%  |
| Palpitation      | 1                    | 2.2%  |
| Abdominal Pain   | 2                    | 4.3%  |
| Vaginal Bleeding | 5                    | 10.9% |
| Pallor           | 1                    | 2.2%  |
| Pelvic Pain      | 2                    | 4.3%  |
| Combined         | 45                   | 97.8% |

**Table (4): Distribution of clinical data among the studied women**

| Parameters           | Studied women (n=46) |             |       |
|----------------------|----------------------|-------------|-------|
|                      |                      | N           | %     |
| Induction of labor   | No                   | 45          | 97.8% |
|                      | Yes                  | 1           | 2.2%  |
| Hospital stay (days) | Mean± SD             | 10.04± 6.04 |       |
|                      | Median               | 8.0         |       |
|                      | Range                | 3.0- 30.0   |       |
| 42-day readmission   | No                   | 44          | 95.7% |
|                      | Yes                  | 2           | 4.3%  |
| Mode of delivery     | NVD                  | 10          | 21.7% |
|                      | C.S                  | 35          | 76.1% |

**Table (5): Distribution of maternal complications among the studied women**

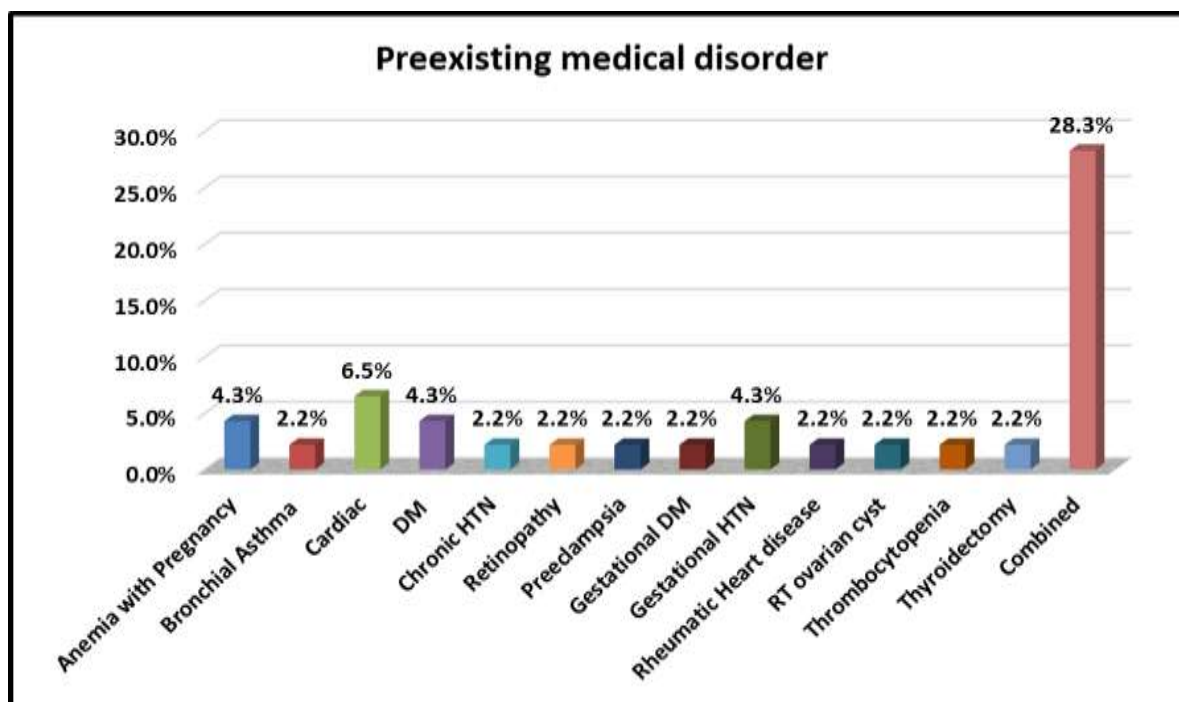
| Parameters             | Studied women (n=46)   |    |       |
|------------------------|------------------------|----|-------|
|                        |                        | N  | %     |
|                        | Non-complicated        | 29 | 63%   |
| Maternal complications | ICU admission          | 17 | 37.0% |
|                        | Mechanical ventilation | 7  | 15.2% |
|                        | Maternal death         | 7  | 15.9% |

**Table (6): Maternal death among the studied women**

| Parameters                      | Studied women (n=46)                 |                       |
|---------------------------------|--------------------------------------|-----------------------|
|                                 | N                                    | %                     |
| <b>NO of dead women</b>         | <b>Total women = 46</b>              | 7 / 15.9%             |
| <b>Residence</b>                | <b>El-Minia</b>                      | 7 / 100%              |
| <b>Age (years)</b>              | <b>Mean± SD</b>                      | 32.3±5.68             |
|                                 | <b>Median</b>                        | 31                    |
|                                 | <b>Range</b>                         | 27.0 – 39.0           |
|                                 | <b>25-30</b>                         | 2 / 28.6%             |
|                                 | <b>30 - 35</b>                       | 3 / 42.8 %            |
|                                 | <b>35 -40</b>                        | 2 / 28.6%             |
| <b>BMI (Kg/m<sup>2</sup>)</b>   | <b>Mean± SD</b>                      | 23.04± 4.8            |
|                                 | <b>Median</b>                        | 23.2                  |
|                                 | <b>Range</b>                         | 21.1– 24.8            |
| <b>Educational level</b>        | <b>Read &amp; Write</b>              | 1 / 14.3%             |
|                                 | <b>Primary Education</b>             | 1 / 14.3%             |
|                                 | <b>Preparatory Edu.</b>              | 2 / 28.6%             |
|                                 | <b>Secondary Edu.</b>                | 2 / 28.6%             |
|                                 | <b>High Education</b>                | 1 / 14.2%             |
| <b>Clinical Presentation</b>    | <b>Cough</b>                         | 7 / 100%              |
|                                 | <b>Fever</b>                         | 6 / 85.7%             |
|                                 | <b>Dyspnea</b>                       | 6 / 85.7%             |
|                                 | <b>Tachypnea</b>                     | 2 / 28.6%             |
|                                 | <b>Hypertension</b>                  | 2 / 28.6%             |
|                                 | <b>Vaginal bleeding</b>              | 2 / 28.6%             |
|                                 | <b>Abdominal pain</b>                | 1 / 14.3%             |
|                                 | <b>Hypoxia</b>                       | 1 / 14.3%             |
|                                 | <b>Combined</b>                      | 7 / 100%              |
| <b>Obstetric History</b>        | <b>Primi Gravida</b>                 | 2 / 28.6%             |
|                                 | <b>Multi Gravida</b>                 | 5 / 71.4%             |
|                                 | <b>Gestational Age (weeks)</b>       | <b>Mean± SD</b> 34± 5 |
|                                 |                                      | <b>Median</b> 33      |
| <b>Associated Co- Morbidity</b> |                                      | <b>Range</b> 29 -37   |
|                                 | <b>Non Associated</b>                | 1 / 14.3%             |
|                                 | <b>Gestational Hypertension</b>      | 2 / 28.6%             |
|                                 | <b>Gestational Diabetes Mellitus</b> | 2 / 28.6%             |
|                                 | <b>Placenta Previa</b>               | 2 / 28.6%             |
|                                 | <b>Rupture uterus</b>                | 1 / 14.3%             |
|                                 | <b>Cardiac lesion</b>                | 1 / 14.3%             |
|                                 | <b>Chronic Hypertension</b>          | 1 / 14.3%             |
|                                 | <b>Eclampsia</b>                     | 1 / 14.3%             |

**Table (7): Distribution of neonatal morbidity&mortality among the studied women.**

| Parameters               | Studied cases (n=46) |       |
|--------------------------|----------------------|-------|
|                          | N                    | %     |
| <b>Non complicated</b>   | 24                   | 52.2% |
| <b>Preterm</b>           | 6                    | 13.0% |
| <b>Neonatal jaundice</b> | 1                    | 2.2%  |
| <b>RDS</b>               | 4                    | 8.7%  |
| <b>IUFD</b>              | 5                    | 10.9% |
| <b>Missed abortion</b>   | 3                    | 6.5%  |
| <b>Died after labour</b> | 1                    | 2.2%  |



**Figure (1): Distribution of preexisting medical disorder among the studied cases**

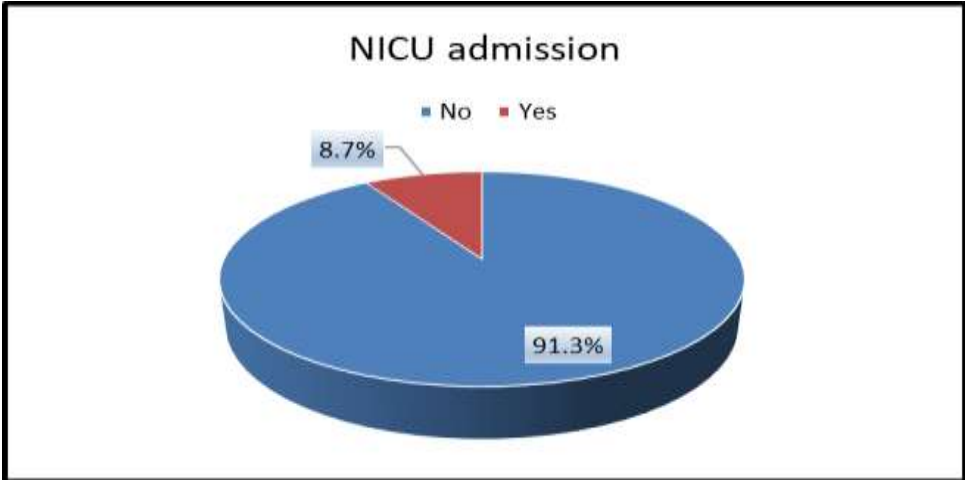


Figure (2): Distribution of NICU admission among the studied cases

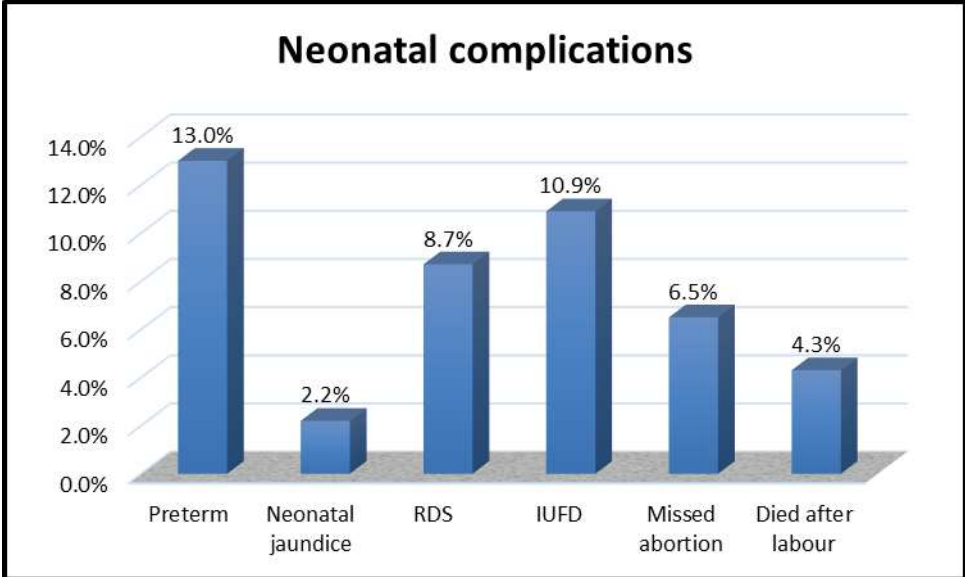
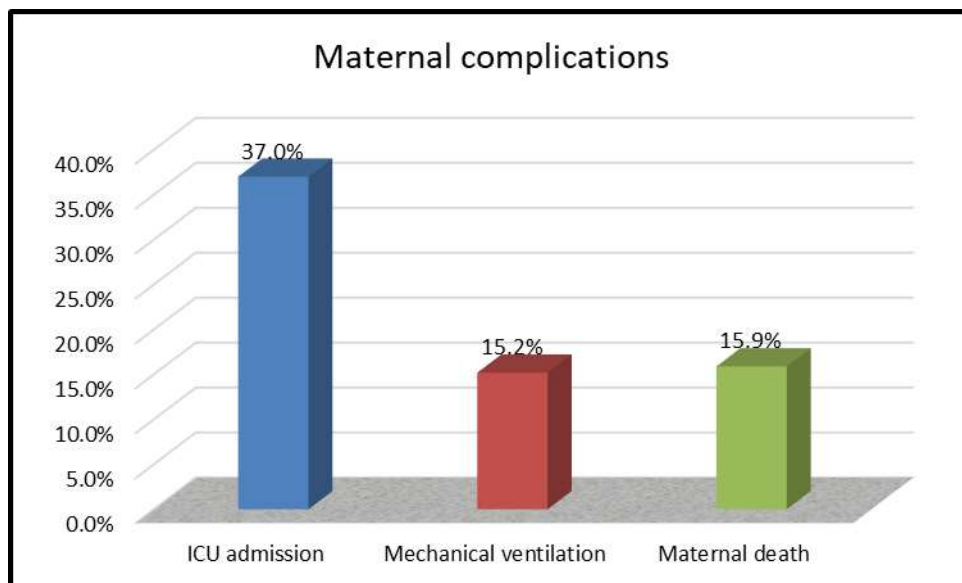


Figure (3): Distribution of neonatal complications among the studied cases





**Figure (4): Distribution of maternal complications among the studied cases**

**Submit your next manuscript to Annals of Neonatology Journal and take full advantage of:**

- Convenient online submission
- Thorough and rapid peer review
- No space constraints or color figure charges
- Immediate publication on acceptance
- No limit as regards tables or figures.
- Open Access research freely available for redistribution

**Submit your manuscript at:**

[www.anj.journals.ekb.eg](http://www.anj.journals.ekb.eg)

**Citation:** Ayman Moheb Youssef; Saad EL-Gelany; Mahmoud Hosni Ibrahim; Asmaa Ragab Gedawy. "Maternal and Perinatal Outcomes in Pregnant Women with Covid-19: A Retrospective Egyptian Study". *Annals of Neonatology Journal*, 2023; doi: 10.21608/anj.2023.285139

**Copyright:** Youssef et al., 2023. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC-BY-NC-ND) license (4).

