

The Impacts of the COVID-19 Pandemic on Pregnant Women

Xi Peng *

Department of Nutritional Science, School of Public Health, University of Washington, Seattle, USA

* Corresponding Author Email: xp9@uw.edu

Abstract. The COVID-19 pandemic has many impacts on the society, such as the inadequacies and shortcomings of the current health system. There have been many reports pointing out that pregnant women are a vulnerable group to the severe COVID-19. Their bodies are more sensitive to the virus, that's for sure. According to a report from the University of Washington, the tissue structure of the placenta is vulnerable to the new coronavirus. And its role in the process of gestation is crucial. In addition, the physiological changes in pregnant women make it important for them to get enough oxygen. And it is the respiratory system that the novel coronavirus attacks. Early indiscrimination between COVID-19 and influenza also lead to worsening of illness caused by delayed treatment. Pregnant women, a vulnerable group, should be taken seriously and cared about in this environment, so that the health system needs to be changed. This article focuses on some severe cases of pregnant women caused by the novel coronavirus and the psychological and social pressure that pregnant women suffer in this environment.

Keywords: Gestation, Pregnancy, COVID-19, Pregnant women, Gravid population.

1. Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) as known as COVID-19 onset in late 2019. According to serological evidence, 75% of the population in USA have already infected it at least once [1,2]. Some countries still has strict rules and policies to control over the disease itself and also the possible transmission routes from happening. Countries are still taking different actions and preventions to stay away from the virus. Infected people are diagnosed with different levels of severity. Until now, the affect and future outcomes of COVID-19 are still in discovering process. Specialists tried to understand and combat it quickly and efficiently. At the beginning of the pandemic, most people have difficulty in distinguishing the flu and coronavirus since they have the similar symptoms. The dissemination methods and severity make influenza and covid different with each other even though they are both contagious respiratory illnesses. COVID-19 is caused by coronavirus that discovered firstly in Wuhan in 2019, and flu is caused by influenza virus which already identified for long time and the 1918 H1N1 virus pandemic defined as the first severe pandemic [3]. The similar symptoms are fever, shortness of breath, sore throat, and headache, etc. However, people who are infected with flu will experience the mentioned symptoms for 1 to 4 days after the infection and will be recovered in the majority of cases [2].

As reports documented, people with certain medical conditions, such as the chronic diseases, are defined as vulnerable to be infected with the coronavirus. Pregnant population should not be ignored under this pandemic since they not only need to worry about themselves but also care about the potential transmission happening between themselves and the unborn babies. They are vulnerable to any types of the sickness. Pregnant women who are infected with flu can be treated with physical cooling method of ice, while if they are infected COVID-19, intensive treatments are also needed to be involved. However, because of the closest connection between mothers and babies, the methods of using specific treatments and medications are really significant. The way of treating a sick mother is easy to be defined but the potential effects on unborn babies are unknown. Severe symptoms of infecting SARS-CoV-2 are required to be hospitalized, called in to an intensive care units (ICU), or need to be cared with ventilators or special medical equipment to help breathing [4]. Due to the immunological changes and physical changes happen during the gestation period, the additional and specialized care and attention are required.

The common symptoms of COVID-19 will be more severe or life-threatening to the pregnant women. The shortage in breath will increase the possibility of maternal health complication and difficult delivery, and higher possibility of having preeclampsia and eclampsia, which can cause pregnant women in danger. People having certain underlying medical conditions, older than 25 years old, or living in the area where has abundant confirmed COVID-19 cases or low vaccination level are considered as the high risk population. However, pregnant women are defined as having a higher level of infection rate than these population because of the gestation situation makes them physically different with the majority of population. This paper aims to discuss some potential sicknesses might happen during and after the pregnancy if they are infected with COVID-19. Current existed strategies and intervention will be also included as reference for what can be improved in the future.

2. The Physiological Changes and Delivery Outcomes of the Pregnant Women Infected with COVID-19

Due to of the immune response and physical changes during the gestation period is happening, mothers are experiencing many physical and mental pressures during the gestation. Comparing with the period of having no COVID-19 danger exists that pregnant women do not need to have additional protection awareness of preventing infection of COVID-19, careful attention is needed since COVID-19 is a novel infectious disease and further analysis are still called in process. Potential outcomes are various that some of them can be life-threatening and might also cause lethal or serious maladies on the newborns.

2.1. Immunity Changes

According to studies conducted by UW Medicine, placenta which transmit nutrition, immunity, and oxygen to the fetus, are easy to be infected or attacked by the SARS-CoV-2 virus [5]. Different variants of the COVID-19 virus cause different severity and Delta variant has been known causing a relative high stillbirth rate, maternal death rate, and hospitalizations comparing with other variants. Immune system are significant for human to protect from being illness as a maker of health status and it can help mothers to balance nutrition and oxygen transmission process, and provide a safe and comfortable uterine environment for the fetus.

Additionally, the upper respiratory tract swells during pregnancy due to the elevated levels of estrogen and progesterone, and limited lung expansion leaves the pregnant woman sensitive to respiratory infections [6]. Because of the sharing oxygen between infant and mother, the oxygen consumption increases by 20%. These two conditions may cause not only the pregnant women being infected with COVID-19 but also the certain complications or illness on newborns due to the close connection between pregnancy with respiratory and immunological developments for fetus growth. Since the restriction of respiratory tract, malaise and dyspnea were substantially more common in women developing pneumonia. According to Rafael San-Juan and his colleagues' single-center cohort study in Spain, 32 out of 52 cases (61.5%) is showed that symptomatic gravid women will develop pneumonia [7]. The high severity will require higher level of treatment which is beneficial for both mothers and infants.

2.2. Psychological Change

During the pandemic, the unpredictable remote conditions forced people to have a novel lifestyle. Some people developed psychological diseases, such as depression, anxiety, feeling of isolation, etc. The pandemic will not end in a short period, and the solutions and treatment of the negative feelings that were inspired due to quarantine or similar situations should be proposed and discovered for this long-term combat. Even normal individuals were feeling isolation or too bored to be alone or staying with the same group of population every day. Pregnant women may have the higher risk of having all those feelings. Mothers will have so many concerns: (1) whether they would be infected with the virus;(2) would the babies be affected by the special situations;(3) it is too stressful to stay in the same

place;(4) what if they have any emergent situations, such as delivery is happening, and there has no health professional can help them [8]. That is to say, expect normal physical reactions, such as morning sickness and tiredness, if women pregnant during the pandemic, they will also need to have additional stressors and become more sensitive to the external factors that can lead to extreme emotional irritation. The outcome of the phenomenon will not be beneficial for both babies and mothers.

Virtual conversation may be a great way to help with the situation so that gravid women can have place to sharing their ideas and thoughts for getting beneficial feedback to overcome the current situation as soon as possible. When virtual meeting becomes a routine schedule, some women might expect for the next time. People should have hope during their life so that they can have something to support them inner world. Extra care from family will also consider as great method to deal with pregnancy sensitivity and emotional feelings. Pregnant women are required have additional attention since they are more vulnerable during the whole gestation period. They will worry about everything especially caring about the babies.

2.3. Social Equity

Many reports have shown that people from minority groups associated with high risk of being infected with COVID-19 because they have no sufficient methods to get treatment or medications when they need. Social concern and health equity should be discussed for the gravid population. Before the pandemic, most minorities have lesser rights and restricted access to health care that cause they have higher risk of experiencing maternal death, and the situation becomes more grievous after the onset of the pandemic [9]. The pandemic situation is causing the society to reform its social structure and relative policies. Women from different backgrounds should always have the same rights that they deserve to have. Access to health care is significant step to balance the social equity.

According to world data, low-income colored communities have been affected by the pandemic much more than the other groups. They might have no access to COVID-19 vaccinations and testing so that they cannot identify their status early. The mortality rate is much higher among colored groups. Another situation will be cause is that their group has not enough access to testing the cause they have not many data to be analyzed for further study which can help the groups to reduce the transmission rates and find proper treatments to help them. Social support is also another important aspect for gravid women. Minority women have limited resources to have pregnancy care which cause remote care might not cover most of them. They cannot be helped as soon as possible.

2.4. Preterm / Vertical Transmission

Preterm is defined as the labor happening early or before 37 weeks of pregnancy: less than 28 weeks is considered as extremely preterm; 28 to 32 weeks labor is considered as very preterm; and labor happening between 32 to 37 weeks is considered as moderate to late preterm. Today, more than 1 out 10 babies will be preterm and most of them might experience organ dysfunctions, a lifetime of disability, or early death [10]. SARS-CoV-2 infection can cause mothers to have severe maternal diseases and preterm labor also happens frequently than it happens among healthy pregnant women. In Emily O'Malley Olsen et al. study, 33 out of 138 cases which is 23.9% are having preterm labor among women with positive neonate RT-PCR test result, comparing with negative result population, the preterm infant rate is 15.3% that is 542 out of 3537 cases [11]. The preterm rate can reach 75% which means if mother infected with severe level of COVID-19 can cause high possibility of delivering preterm and illnesses on infants [12]. Early signs of the infected neonates were shortness of breath, elevated heart rate, vomiting, groaning, and widespread rashes [13].

Even though there has not many evidence or reports that proving the vertical transmissions happening between mothers and fetus, utero transmission and early postnatal infection occur [11].

3. Effects of Quarantine and Medical Care Policies on Pregnant Women during COVID-19 Period

Infectious diseases are required to cut the transmission routes as soon as possible to stop further dissemination. The curfew and lock down are common strategies during the early stage for the first step. Because of this phenomenon, there are so many social problem and inconveniences were happening, such as food and necessities shortages, public panics, etc. Gravid women are affected a lot during the pandemic because of the social distance requirement and other kinds of health relative concerns.

3.1. Vaccination Hesitation

Vaccine considered as the critical strategy for getting protection from being infected with virus is also recommended for gravid women. There are lots of health-related concerns and possible side effects are causing vaccination hesitation among pregnant women. COVID-19 vaccines are proved have no live virus that can cause infection on women and infants and has been proved recommend for people 6 months and the older by Center of Disease Control (CDC) [12]. The vaccine can not only protect pregnant women from being infected but also help the infected gravid women not have severe symptoms. The necessity of getting vaccination is obvious and beneficial.

However, high vaccination hesitancy about COVID-19 exist among pregnant women [14]. The education level and understanding affect the decision of whether taking the vaccination. Some women consider the unknown effects of being vaccinated is more dangerous and being infected with COVID-19, which also connects with inadequate understanding of COVID-19.

3.2. Remote care / Telemedicine

Distance can be said as the first basic requirement during the pandemic so that people can lower their possibility of being infected since they have lower chances to contact the virus even though they might contact with the infected individuals. Medical relative care is significant for pregnancy period. Pregnant women are required to check the status of both mothers and babies weekly or monthly according to their actual situation. Social distancing and relevant policies restrict the required services that pregnant women should have. Normally, ultrasound test is required but it may increase the infectivity because of close contact. Maternal Hospitals were figuring out different methods of protecting pregnant women's rights and route cares as much as possible.

Remote medical care is one solution which already existed for long time while it was favored by gravid women who live too far for route pregnancy care. COVID-19 gives a chance to practice virtual medical care proficiently. According to one study conducted by University of Michigan, the research group claimed a "4-1-4" model which includes 4 times of office meetings, 1 ultrasound test, and 4 times of virtual communications [15]. Virtual communications are composed by small-group counselling sessions, virtual chatting with health professionals. Virtual meetings in the form of small group can be considered as a great way to not only help with route pregnancy care but also can help gravid women to reduce potential inner stress or pressure.

3.3. Special psychological Care

The majority of women are easy to get postpartum depression. Pandemic magnified some of the problems that already existed for long time. As previous research recorded, when the society starts to have any kinds of changes, there always have groups that do not be covered under certain circumstances or policies are exposed to the public, which can cause panic among the community. For pregnant people especially, they are more vulnerable during pregnancy period which caused them to be more emotional. According to Ruxandra-Gabriela Cigăran and his colleagues' research, there found the fear of being infected or the happening of direct transmission can cause the anxiety and depression to a higher level instead of fear of being actual infected [16].

Under the current situations, remote care and virtual care should be developed in more detail and depth. Testing and vaccination should be popularized and the pregnant women should get more detailed information about what kind of specific protection they can get. More health relative programs should be revised to be able to cover more pregnant women from different minorities. The social equity caused many pregnant women cannot have the same right to get equal rights they should have. Gravid women who are live far should also be cared specific programs that care about what they need.

4. Conclusions

The pandemic has taken the human all by surprise. People had no time to prepare and prevent, which led to the rapid spread and mutation of the epidemic. It is no doubt about it that vulnerable people, like pregnant women, are at the higher risk, whom need special care. The pandemic has also given people a chance to look at the gaps and inadequacies in our current health system. This paper mainly focuses on the embodiment of pregnant women in this group.

Similar to the occurrence of preterm birth, the relative departments and institutions need to start with a defense policy in the direction of testing and vaccines. From the fundamental protection of pregnant women's health. They are vulnerable and have a weaker immune system because of the changes in their system during pregnancy. The body becomes more susceptible to any form of virus. Because of the freshness of the novel coronavirus, the professionals still require more time to go up with the root cause. The most important thing now is to defend against it. Many studies have shown that pregnant women are more likely to develop severe symptoms. These disorders affect not only the mother but also the unborn child. So during the epidemic, if a pregnant woman gets sick, the situation can be very dangerous. In some countries, for example, outpatient treatment requires an appointment and an accounting certificate. In some cases, emergency treatment for pregnant women is delayed or exacerbated. The occurrence of this kind of situation will not only increase the burden of the hospital, but also make the family of pregnant women worry and worry. Because of external factors, pregnant women's psychology during pregnancy will also become sensitive and negative. They worry about whether they can provide a good environment for their baby to be born safe from outside germs. But because the immune system changes during this time, they become more susceptible to infection. So they get more worried. When some news reports about these aspects appear, they lead to some social panic and temporary reform of relevant departments' policies.

There is no doubt that social distancing and lifestyle changes have had a great impact on the medical system. Pregnant women are a group that require routine medical consultation during pregnancy. They may experience a variety of situations during pregnancy, and doctors are in great need of them. They have undergone changes in medical advice and health testing during the pandemic in order to comply with the requirements of quarantine. Family should play a vital role in this time, to help pregnant women to eliminate physical fatigue and psychological anxiety and unease.

Of course, in the case of pregnant women, there are many rights that are not enjoyed or some minority groups are discriminated against by the existing system. They may be excluded from the existing health care system. The onslaught of the pandemic has made their situation worse. The general public have to admit that discrimination and neglect can exacerbate some social problems. Pregnant women may suffer from psychological problems and increased physical burden caused by these factors.

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