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The Impact of the COVID-19 Pandemic in Prenatal Care Clinics; Late Diagnosis?

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ABSTRACT

Objective: Coronavirus Disease 2019 (COVID-19) pandemic has an effect on the healthcare system and prenatal care units as well. Our goal is to identify the points where antenatal care was interrupted during the COVID-19 pandemic, as well as the reasons for disruption, and to discuss possible measures in this regard. Methods: This study is a retrospective cross-sectional study which compiles cases who presented to our perinatology clinic for a period of 6 months after the COVID-19 infection was first detected in our country and were diagnosed late, despite the fact that they could have been diagnosed earlier based on their condition. Results: The study included 22 cases of delayed diagnosis. When the reasons for missing the antenatal follow-ups of the cases were examined, nine of them (40.9%) were afraid of being infected in the hospital environment, eight of them (36.3%) could not follow the procedures due to long-distance travel restrictions, four of them (18.1) were on the contact list during the antenatal follow-up period, and one of them (4.5%) escaped the follow-up to because their doctor was infected. Conclusion: COVID-19 outbreak has been found to drastically minimize the number of face-to-face visits. Prenatal care facilities were also found to be underutilized during the pandemic, possibly due to travel limitations, fear of infection, and contaminated healthcare staff. As a result, efforts to improve maternal health programs are suggested. A variety of information, education, and communication materials can be created to raise awareness about the care of pregnant women during COVID-19 pandemic.

Key words: COVID-19, Outpatient visits, Prenatal care.

Covid-19 Salgınının Prenatal Bakım Kliniklerindeki Etkisi; Geç Teşhis?

ÖZ

Amaç: Corona Virüs Hastalığı 19 (COVID-19) pandemisinin sağlık sistemi ve doğum öncesi bakım üniteleri üzerinde de etkisi vardır. Amacımız, COVID-19 salgını sırasında doğum öncesi bakımın kesintiye uğradığı noktaları ve bu kesintinin nedenlerini belirlemek ve bu konuda neler yapılabileceğini tartışmaktır. Yöntemler: Bu çalışma, ülkemizde COVID-19 enfeksiyonu tespit edildikten sonraki ilk 6 ay içinde perinatoloji polikliniğimize başvuran ve daha erken tanı konabilecek olmasına rağmen geç tanı alan olguları derleyen retrospektif kesitsel bir çalışmadır. Bulgular: Çalışmaya 22 geç tanı almış vaka dahil edildi. Olguların prenatal takiplerini kaçırma nedenleri sorgulandığında 9'u (%40,9) hastane ortamında enfeksiyon kapmaktan korkarken, 8'i (%36,3) şehirlerarası seyahat kısıtlamaları nedeniyle gereken prosedürleri takip edemedi, 4 (18,1) tanesi prenatal takip döneminde temaslı listesindeydi ve 1'i (%4,5) doktoru enfekte olduğu için takibini kaçırdı. Sonuç: Genel olarak, COVID-19 salgınının yüz yüze ziyaret hacimlerini önemli ölçüde azalttığı gösterilmiştir. Salgın sırasında doğum öncesi bakım tesislerinin de muhtemelen seyahat kısıtlamaları, enfeksiyon korkusu ve kontamine sağlık personeli nedeniyle yetersiz kullanıldığı tespit edildi. Sonuç olarak, anne sağlığı programlarını iyileştirmeye yönelik çabalar önerilmektedir. COVID-19 salgını sırasında hamile kadınların bakımı hakkında farkındalık yaratmak için çeşitli bilgi, eğitim ve iletişim materyalleri oluşturulabilir.

Anahtar kelimeler: Covid-19, Doğum öncesi bakım, Poliklinik ziyaretleri.

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INTRODUCTION

The new Coronavirus first appeared on December 29, 2019 in people who visited the live animal market in Wuhan, China. As a result of examining the samples taken from the patients, on January 7, it was understood that the virus that caused the disease was from the Coronavirus family such as SARS and MERS. Due to these features, the virus has been named New Coronavirus 2019 (2019- nCoV) (Wu and McGoogan 2020). The disease spread to all continents in as quick as two months, and the World Health Organization (WHO) declared COVID-19 disease as a "Pandemic" on 11 March 2020 (Varol and Tokuç 2020). Research data show that the virus can be transmitted quickly from person to person through droplets that are scattered around while talking or coughing (WHO 2020). As part of this pandemic, governments have set up comprehensive control measures to reduce the transmission of COVID-19 and thus have reduced the pressure on healthcare systems. Most countries initially imposed travel bans from certain locations, followed by quarantine measures. As an example, the Italian government had quarantined the entire country for 56 days. People were banned from gathering in public places, and people were restricted in their movements except in cases of necessity, work and health (Linton et al., 2019).

Patients' fear of infection, the need for physical distance, and the cessation of elective procedures have all contributed to challenges for outpatient providers as a result of the COVID-19 outbreak. The way outpatient treatment is provided in healthcare practices has changed dramatically as a result of this epidemic. To reduce the chance of transmission of the virus to patients or healthcare professionals, heath care providers are delaying elective and preventive visits, and outpatient visits have been limited to more urgent care. Also, many patients had to postpone their visits to avoid being infected with the virus. (Borrelli et al., 2020).

Furthermore, travel restrictions have an impact on patient behavior. According to a study conducted in Harvard University, it has a significant impact on all medical and surgical specialties, with a 79 percent decrease in outpatient volume (Mehrotra et al., 2020).

The prevention and control of COVID-19 infection and the potential risk of vertical transmission among pregnant women have become a major concern. Prenatal care services have also been affected by the COVID-19 outbreak. The world will face major challenges in maintaining high-quality, vital maternal and neonatal healthcare as a result of this pandemic. Owing to transportation and quarantine restrictions, pregnant women and mothers with newborns may have trouble obtaining care, or may be unable to attend health facilities for fear of infection (ICF and EPHI 2019). According to some studies, the pandemic has resulted in a 10% reduction in the coverage of pregnancy-related and newborn healthcare facilities. (Borrelli et al., 2020; Mehrotra et al., 2020; Tadesse 2020). This reduction is expected to lead to a rise in maternal mortality and morbidity. According to a new report in the United States, a 39.3 to 51.9 percent decrease in antenatal care coverage during the pandemic will result in 56.700 additional maternal deaths (Tadesse 2020). In addition, it was found that anxiety and obsessive-compulsive symptoms in pregnant women increased during the current SARS-CoV-2 outbreak (Kahyaoglu and Kucukkaya 2020; Saccone et al., 2020). The Royal College of Obstetricians and Gynecologists (RCOG) advises all pregnant women to weigh the need for a prenatal appointment against the possibility of COVID-19 exposure (RCOG 2020). This means women have to make tough decisions about what antenatal care services they need.

Our goal is to identify the points where antenatal care was interrupted during the COVID-19 pandemic, as well as the reasons for disruption, and to discuss possible measures in this regard.

MATERIALS AND METHODS

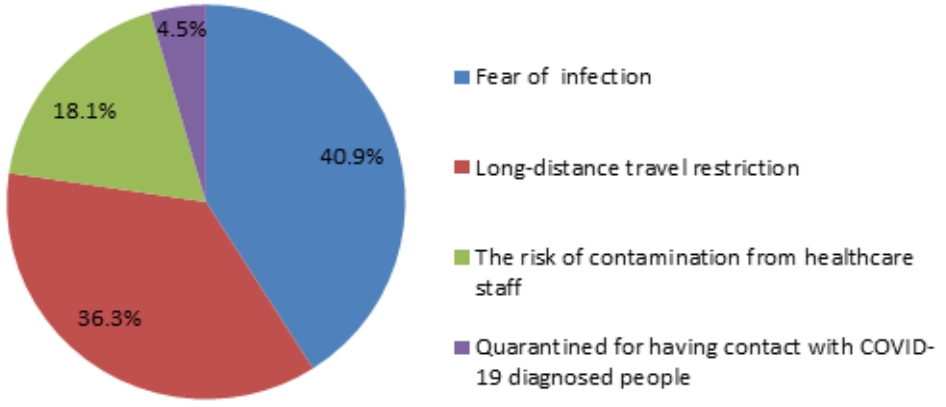
This study investigated 2178 cases who applied to Antalya Training and Research Hospital perinatology outpatient clinic for a period of 6 months after the detection of first COVID-19 in Turkey retrospectively. Among these cases, patients who were diagnosed late, despite the fact that they could have been diagnosed earlier based on their condition, were compiled in this cross-sectional study. The reasons of these diagnostic delays were investigated, and those patients unrelated to the COVID-19 pandemic were ruled out.

Since COVID-19 studies in our country require Ministry of Health approval, the necessary permission has been obtained. (2021-04-05T12_13_33).

RESULTS

In a 6-month period, 36 cases of delayed diagnosis were identified. Those whose diagnosis was missed due to the reasons other than the COVID-19 pandemic period were excluded. The study included 22 cases of delayed diagnosis. During the pandemic period, 14 cases did not have the oral glucose tolerance test and were diagnosed with gestational diabetes due to the emergence of diabetic complications such as macrosomia and polyhydramnios in the later stages of pregnancy, resulting in a delay in treatment. In two cases, a major cardiac anomaly was discovered. One of these cases involved an atrioventricular septal defect discovered at the 32nd gestational week, while the other involved double outlet right ventricle case discovered at the 26th gestational week. Cases did not seek medical attention between the ages of 18 and 24 weeks of pregnancy, when significant heart anomalies can be observed. In three cases, major anomalies in the central nervous system were discovered. Dandy

Graphic 1. The reasons for missing the antenatal follow-ups of the cases



Graphic 2. Delayed diagnosis

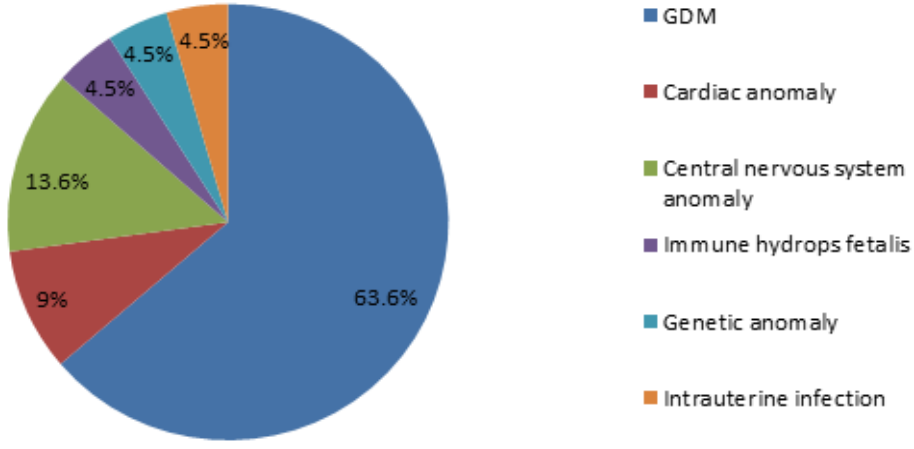


Table 1. Data and characteristics of patients

Patient number	Age	Educational status	Delayed diagnosis	Gestational week at the time of diagnosis	Reason for delayed diagnosis
1.	28	Secondary education and above	GDM	32w	Fear of infection
2.	32	Secondary education and above	GDM	36w	Fear of infection
3.	27	Secondary education and above	GDM	30w	Fear of infection
4.	30	No formal education	GDM	34w	Long-distance travel restrictions
5.	31	Secondary education and above	GDM	34w	Long-distance travel restriction
6.	24	No formal education	GDM	29w	Fear of infection
7.	22	Secondary education and above	GDM	33w	Fear of infection
8.	39	No formal education	GDM	31w	Fear of infection
9.	25	Secondary education and above	GDM	30w	The risk of contamination from healthcare staff
10.	23	No formal education	GDM	34w	Long-distance travel restriction
11.	34	Primary education	GDM	32w	Long-distance travel restriction
12.	34	Secondary education and above	GDM	35w	Quarantined for having contact with COVID-19 diagnosed people
13.	23	Primary education	GDM	33w	Fear of infection
14.	28	Secondary education and above	GDM	36w	Fear of infection
15.	22	Primary education	AVSD	32w	Long-distance travel restriction
16.	24	Primary education	DORV	26w	Quarantined for having contact with COVID-19 diagnosed people
17.	38	No formal education	Dandy Walker Malformation	26w	Long-distance travel restriction
18.	29	Primary education	Corpus Callosum Agenesis	29w	Long-distance travel restriction
19.	19	Secondary education and above	Acrania	15w	Quarantined for having contact with COVID-19 diagnosed people
20.	37	Primary education	Immune hydrops fetalis	32w	Long-distance travel restriction
21.	39	No formal education	Trisomy 21	30w	Fear of infection
22.	22	Primary education	Congenital syphilis	19w	Quarantined for having contact with COVID-19 diagnosed people

AVSD; atrioventricular septal defect, DORV; Double Outlet Right Ventricle, GDM; Gestational diabetes mellitus

Walker malformation was diagnosed at the 26th gestational week, corpus callosum agenesis was diagnosed at the 29th gestational week, and acrania was diagnosed at the 15th gestational week. The acrania case was directed to termination of pregnancy because of an anomaly incompatible with life. At 32nd weeks of pregnancy, one case of hydrops fetalis was discovered due to Rh incompatibility. It was discovered that the patient had not undergone any exams, including indirect coombs testing, and had not attended any follow-up appointments. In one instance, trisomy 21 was discovered during an amniocentesis conducted after the discovery of a hypoplasic nasal bone at the 30th week of pregnancy, as well as growth retardation. During the pandemic, it was discovered that this case did not have any screening tests or undergo extensive sonographic screening. When a case of premature rupture of membranes at the 19th week was evaluated, it was determined that the cause was maternal syphilis, which was confirmed by a fetal PCR examination. During the pandemic, this patient did not get the first trimester monitoring. When the reasons for missing the antenatal follow-ups of the cases were questioned (Graphic 1), nine of them (40.9%) were afraid of being infected in the hospital environment, eight of them (36.3%) could not follow the procedures due to long-distance travel restrictions, four of them (18.1%) were on the contact list during the antenatal follow-up period, and one of them (4.5%) escaped the follow-up because her doctor was infected. The demographic characteristics of the patients are summarized in Table 1. During the data collection period, no pregnant women had COVID-19 confirmed using the Ministry of Health's diagnosis criteria and the diagnostic kit. On the other hand, asymptomatic pregnant women and pregnant women who have not been examined due to minor symptoms, were not calculated.

DISCUSSION

Overall, the COVID-19 outbreak has been shown to significantly reduce face-to-face visit numbers. Prenatal care facilities were also found to be underutilized during the pandemic, possibly due to travel limitations, fear of infection, and contaminated healthcare staff (Borrelli et al., 2020; Mehrotra et al., 2020; Tadesse 2020).

Antenatal care aims to protect and enhance maternal and infant health and well-being through regular monitoring, laboratory testing, and risk assessments for genetic diseases and birth defects. Patient's history, physical examination, and laboratory studies can help to identify pregnant women at high risk for medical or pregnancy complications, or fetal abnormalities. Early diagnosis of these cases provides the opportunity to prevent or minimize the risk of adverse outcomes. In antenatal care, laboratory tests such as complete urinalysis to detect proteinuria, asymptomatic bacteriuria at the first examination, ABO blood group, RH and indirect coombs determination in necessary cases, screening for rubella, varicella, syphilis, hepatitis b, HIV infections, hemoglobin-hematocrit determination, thyroid function screening and early oral glucose tolerance test in selected high-risk cases take place (National Collaborating Centre for Women's and Children's Health 2008). If the patient with premature rupture of membranes and pregnancy termination due to syphilis, does not miss the first antenatal visit, this negative outcome can be avoided with maternal penicillin treatment. Once again, this catastrophic event may have been avoided if our case, in which the fetus died as a result of hydrops fetalis, had been followed up with the indirect coombs test at the prenatal visit.

Fetal anomalies and chromosomal anoploidy screening tests and ultrasound examinations are also important in detecting major chromosomal anomalies and congenital malformations. For this purpose; nuchal translucency measurement via ultrasonography between 11-14 weeks with combined test, maternal serum AFP measurement between 16-20 weeks, triple test (if no combined test is performed) between 16-20 weeks and fetal anomaly screening tests are performed between 18-22 weeks in the antenatal period (National Collaborating Centre for Women's and Children's Health 2008). Since six cases skipped these steps during the pandemic, they were diagnosed late with significant chromosomal and congenital disorders, and termination of pregnancy could not be advised for those cases who had reached the 24th week of pregnancy.

Another study by Tadesse (2020) showed that only 29.3% of pregnant women received the full range of prenatal care services recommended during the COVID-19 outbreak. This

result was lower than the percentages reported in India (45%), Nepal (87%), Nigeria (81.5%), or Kenya (52%) (Chimankar and Sahoo 2011; Tuladhar and Dhakal 2011; Fagbamigbe and Idemudia 2015; Gitonga 2017). The observed differences may be due to sociocultural differences, awareness level or socio-demographic variations. Mothers with a secondary education or higher are more likely to benefit from antenatal care services than mothers without a formal education, according to this report (Tadesse 2020). Previous research in developed countries has shown that higher levels of maternal education are strongly linked to greater antenatal care use. This was explained by the fact that women with more education were better able to recognize and appreciate red flags (Abosse et al., 2010; Nebeb 2015).

Fear of COVID-19 infection was also found to be linked to 87 percent decrease in prenatal care use (Coronavirus and pregnancy–preserving maternal health across the European Region 2020). In a study conducted in Israel, many women were concerned about getting coronavirus and were afraid of going to prenatal check-ups, some pregnant women were abstaining from services altogether. Additionally, the results of a study in Italy showed that pregnant women were afraid of being contaminated if they went to hospitals for childbirth (Saccone et al., 2020). As a result, 40.9 percent of the cases in the present study did not receive antenatal treatment, which is consistent with previous research.

In a study conducted by Borrelli et al. (2020) to measure the reduction in outpatient and intravitreal injection volumes in a secondary tertiary retina unit due to the virus causing coronavirus disease, they found a relatively higher reduction in outpatient volume of female patients than males. This finding is somewhat surprising, that this infection is actually more risky for men (Borrelli et al., 2020). These findings may be explained by the fact that women are more likely than men to delay visits because they are worried about the spread of infection, according to a recent British survey (MARCH 2020).

Patients' ability to travel between long-distances was also restricted, which may have hampered their participation in visits and treatments. It is thought that travel restrictions have a significant effect on units that accept patients from peripheral provinces and districts like the unit in the present study (Borrelli et al., 2020; Tadesse 2020; Kasaven et al., 2020).

RCOG recommended that healthcare services should be structured and managed by remote communication for women, if possible, to outpatient and gynecology clinics, thus reducing the risk of viral transmission without compromising healthcare standards (RCOG 2020). Telemedicine includes methods such as web-based programs, video teleconferences, and phone calls. In such cases, it is essential to determine which cases are appropriate for telemedicine. While it is suitable for routine gynecology outpatient clinics, there may be concerns about its implementation due to the potential delay in cancer diagnosis or treatment. However, during the pandemic, virtual consultations can be applied efficiently for informing patients about examination result and making treatment plans. Positive patient experiences have also been demonstrated in other emotional areas of gynecology, such as termination of pregnancy, where telemedicine provides faster assessments and a more patient-oriented approach (Kasaven et al., 2020).

The application of telemedicine in obstetrics may trigger concerns about aspects of care that traditionally require face-to-face monitoring, such as prenatal care, where regular blood pressure monitoring and fetal evaluation are required. The efficacy of home blood pressure monitors and the advancement of wearable fetal electrocardiography sensors, however, have expanded the potential of telemedicine (Tucker et al., 2017; Graatsma et al., 2009). Moreover, replacing traditional prenatal, maternity or breastfeeding classes with virtual multidisciplinary classes can increase accessibility and provide greater consistency in educational methods. Many healthcare experts, on the other hand, are cautious due to concerns about being late for emergencies, a lack of customized treatment, and the potential for replacing human workers with machines (Grassl et al., 2018).

Despite the evidence that restructuring services can have many benefits, they may have a detrimental effect on health outcomes for disadvantaged communities such as low-income people and ethnic minorities. In the telemedicine context, inequality of communication may also prevent people with low literacy levels or without access to the internet / technology from accessing health services. It is therefore imperative that

such restrictions be addressed to ensure that health services are not compromised among vulnerable groups (Kasaven et al., 2020).

Being pregnant during the COVID-19 pandemic was associated with more uncertainty and anxiety, as shown in a study of about 2000 participants, where 68% of women reported increased pregnancy-related anxiety (Lebel et al., 2020). In a study the number of pregnant women examined in the maternity triage unit dropped from 28 to 20 per day, representing a 30% reduction. While it is unknown which patients fail to show up, it has been suggested that if these were women with symptoms such as abdominal pain, vaginal bleeding, or reduced fetal movements, the stillbirth rate can be affected (Kasaven et al., 2020). These results emphasize the importance of proper education, antenatal counselling, and public health policies in ensuring that women obtain appropriate treatment when they need it.

Despite the fact that quarantine measures are only temporary, the COVID-19 pandemic can last up to two year. According to statistics on maternal deaths in the UK, blacks, Asians, ethnic minority women, refugees, domestic violence victims, and women of low socioeconomic status are all at risk of death during pregnancy (Knight 2019). Women who use prenatal services inadequately have twice the risk of maternal morbidity (Knight 2019). The need to provide appropriate prenatal care to women at high risk in the current pandemic should be taken into account. The mother's age, residence, educational status, fear of the COVID-19 pandemic and inaccessibility have been identified as important factors contributing to low antenatal care (Tadesse 2020). This can be accomplished by competently screening women who require and should receive face-to-face consultation from maternity units in order to be placed in this service.

CONCLUSION

As a result, efforts to improve maternal health programs are suggested. A variety of information, education, and communication materials can be created to raise awareness about the care of pregnant women during the COVID-19 pandemic. In addition, for women who want to receive maternal health care, virtual counseling with obstetricians via telemedicine services can be considered.

LIMITATIONS

Our study was a retrospective study with a small sample size. Since this study was conducted in the first 6 months after COVID-19 was first detected in Turkey, the number of cases may have been insufficient.

AUTHOR CONTRIBUTION

Idea/concept: SEY; Design: SEY; Consultancy: BS; Data collecting: SEY, BS; Analysis and/or comment: SEY, BS; Source scanning: SEY, BS; Writing the article: SEY; Critical review: SEY, BS.

CONFLICT OF INTEREST

The authors have no conflict of interests to declare.

FINANCIAL DISCLOSURE

The authors declared that this study has received no financial support.

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