



Management of Psychological Changes at Pregnant Women During the COVID-19 Pandemic



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Abstract

The goal of this study was to look at the psychological changes that occurred in pregnant women during the COVID-19 pandemic, using a standard maternity clinic as an example, and to develop ways to handle the mental health issues that were discovered. Considering all of the above, there is an urgent need for a detailed study on mental health of pregnant women during pandemic and the search for the ways to reduce the impact of quarantine measures on the level of anxiety and depression at pregnant women. The current investigation was carried out at Kyiv City Maternity Clinic No 1 consultation and diagnostic department. To complete the study tasks, three stages were selected. The pregnant women who met the inclusion criteria were those who were pregnant at the time of the study, had one healthy foetus, gave informed consent to participate in the study, and did not have any serious psychological illnesses. To investigate mental health, we used the Spielberg-Khanin test. The second stage was engaged into correction of psychological changes at pregnant women, where the developed author's algorithm was applied.

Keywords

COVID-19; pandemic; pregnant women; spielberg-Khanin test; virus;

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1 Introduction

The COVID-19 coronavirus pandemic remains one of the extreme challenges that the world has faced in the XXI century. This virus has appeared in Asia and then spread to all continents, causing a rapid increase in the sickness rate and mortality among population, as well as the serious consequences in the global economy. Such situation has contributed to adoption of quarantine measures by governments around the world, aimed to decrease the spread of the pandemic. It should be noted that the adopted restrictive measures had a significant impact on public mental health (Brooks et al., 2020). Thus, the bibliographic analysis testifies to the significant psychological impact of quarantine, accompanied by negative psychological effects, in particular, such as post-traumatic stress symptoms, perplexity and anger (Liu et al., 2020). At the same time, the main stress factors were the duration of the quarantine itself, fear of possibility for infection, disappointment, boredom, corrupted external information, financial losses, etc. Some researchers suggest that the psychological impact of quarantine is widespread, and its effects can be long lasting (Brooks et al., 2020). The individual issue that attracts the attention of researchers around the world is the mental health of pregnant women during pandemic, as a category of the population, which is characterized by focus on their inner world and on the unborn child, responsibility for themselves and the unborn child (Butler & Barrientos, 2020). The lack of information on the impact of the COVID-19 coronavirus on health of pregnant woman and child exacerbates the stress and anxiety at pregnant women (Kumar & Somani, 2020). According to assessments by researchers, more than one from four pregnant women worldwide had the clinically confirmed symptoms of depression (25.6%) and anxiety (30.5%) (Salehi et al., 2020). According to the data from meta-analysis of depression and anxiety at pregnant women during COVID-19, the prevalence of depression at pregnant women was 30% (95% CI: 0.23-0.37), the prevalence of anxiety was 34% (95% CI: 0.26 - 0.43), the prevalence both of anxiety and depression was 18% (95% CI: 0.09-0.29). The prevalence of anxiety (OR = 2.15, 95% CI: 1.39-3.31, Z = 3.47, p=0.0005), depression (OR = 1.95, 95% CI: 1.07-3.56, Z = 2.19, p=0.03) were higher than in control group (Tomfohr-Madsen et al., 2021). The stress during pregnancy can lead to disruption of the relationship between a mother and a newborn, the development of antenatal and postpartum blues, and higher risk of preeclampsia (Ayaz et al., 2020). The outbreak of COVID-19 negatively affects the mental health of pregnant women and leads to the unfavorable birth outcomes. Thus, the researchers from Iran reported about increase in the number of Caesarean operations during the COVID-19 pandemic in Teheran (Mortazavi et al., 2021). The changes were introduced into activity of obstetric services in most countries of the world in order to reduce the nosocomial transmission of the virus during the first wave of the COVID-19 pandemic (Nicola et al., 2020). For example, in the UK, the survey results showed that during April 2020, most departments reduced the prenatal and postnatal visits and applied the remote consultation methods and limited access to childbirth (Moriones & Navas-Castillo, 2000). These service changes have significantly affected the perinatal mental health of pregnant women and increased the anxiety and depression (Taylor et al., 2021). Considering all of the above, there is an urgent need for a detailed study on mental health of pregnant women during pandemic and the search for the ways to reduce the impact of quarantine measures on the level of anxiety and depression at pregnant women.

The aim of the research is to study the psychological changes during the COVID-19 pandemic at pregnant women on example of typical maternity clinic and to find the ways to manage the identified features of their mental health.

2 Materials and Methods

The study was conducted on the basis of the consultative and diagnostic Department at Kyiv City Maternity Clinic No 1. Three stages were identified to solve the tasks of the research. The first stage included the study on psychological status of pregnant women, using the Beck Scale and Spielberg-Khanin test, and the causes of

stress and fear at pregnant women were identified by anonymous survey using the author's questionnaire. The second stage was engaged into correction of psychological changes at pregnant women, where the developed author's algorithm was applied. The women were divided into two groups (Table 1). The inclusion criteria were the pregnant women as of research, who had one healthy fetus, granted their informed consent to participate in the research, and did not have any significant psychological disorders.

Table 1
Groups of pregnant women

Groups	No. of Pregnant women per group	Observational Methods
I	150	who were observed according to the conventional method
II	150	who were observed according to the developed author's algorithm

Source: authors' own research

To correct the psychological changes in pregnant women at stage 2, we choose a remote work format. The information was presented in the form of thematic school "School of Responsible Parenting" in order to ensure the meaningful integrity, logical consistency and unambiguous context, the i Spring Learn e-learning platform was chosen as a technical solution for implementation of the distance seminar. According to its structure, the school consists of 9 sections: introduction, pregnancy management, nutrition during pregnancy, exercise for pregnant women, advice from psychologist, pregnancy during pandemic, childbirth, baby care, breastfeeding. The topics of each section are revealed in thematic seminars, which include videos, text materials and illustrations in the access mode, as well as the possibility of chatting and participating in online events. The third stage anticipated the re-study of mental health at pregnant women, using the methods, chosen for the first stage.

3 Results and Discussions

According to the research results, it was found that all pregnant women were of fertile age, mainly under the age of 25 and they were pregnant for the first time (Figure 1).

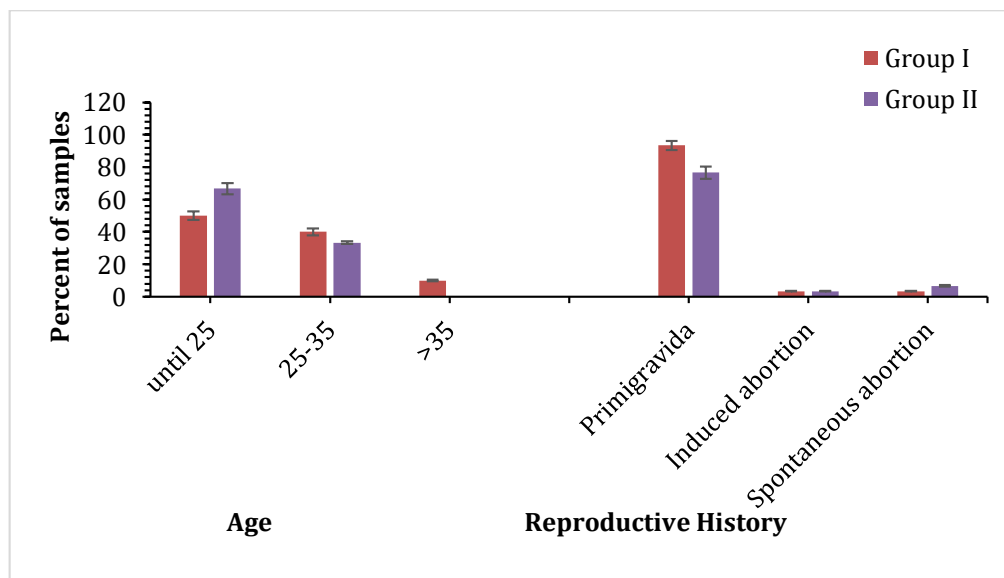


Figure 1. Clinical characteristics of groups under research. Note. Validity of the Wald test, $p < 0.05$
Source: authors' own research

We applied Spielberg-Khanin test to study the mental health. Most often, the groups of pregnant women under research had the moderate level of situational and personal anxiety, which was about 50% and was slightly higher in group II (Table 2).

Such changes in anxiety levels at examined women can characterize the dangerous tendencies in the psychoemotional health of pregnant women, caused by changes in self-esteem and self-respect, as a reaction to a significant number of life situations that arise before childbirth, as well as the tension of their state through external factors. The psycho-emotional state of such pregnant women can be characterized as depressive, due to the perception of a pregnant woman's life prospects that threaten to her life.

Table 2
Indices of situational and personal anxiety levels at pregnant women

Groups	Situational anxiety level			Personal anxiety level		
	Low	Moderate	High	Low	Moderate	High
I	30.0 (25.3-34.7)	47.3 (40.1-54.5)	22.7 (17.9-27.4)	30.7 (24.9-36.5)	46.0 (37.4-54.6)	23.3 (19.1-27.5)
II	31.3 (26.2-36.4)	48.7 (39.9-57.4)	20.0 (15.3-24.7)	30.0 (25.3-34.7)	48.0 (39.7-56.3)	22.0 (17.3-26.7)

Source: authors' own research

Due to the manifestations of anxiety and depression at pregnant women under research, the frequency of their manifestations was in addition studied by Beck Depression Inventory (Table 3). The results showed that the majority of pregnant women had no depression (up to 80.0% in each group). The moderate manifestations of depression were found at 28% of pregnant women from the first group and 27% from the second group, respectively. At the same time, the pregnant women were advised to consult a psychologist for psycho-correction. The depression of the average level was observed at 1.3% and 2% of the pregnant women under research in both groups, respectively (Table 3).

Table 3
Level of depression incidence at pregnant women by Beck Depression Inventory

Groups	Level of depression incidence at pregnant women			
	Lack of depression (0-11 points)	Moderate depression (12-19 points)	Average depression (20-25 points)	Severe depression (26-63 points)
I	80.0 (72.5-87.5)	18.7 (14.4-23.0)	1.3 (1.2-1.4)	-
II	79.3 (72.6-86.0)	18.0 (14.5-21.5)	2.0 (1.9-2.1)	0.7 (0.6-0.8)

Source: authors' own research

Taking into consideration the changes in mental state, being found, we decided to conduct a survey to determine the causes of anxiety and fear at pregnant women during the COVID-19 pandemic. The research results show that the predictors of women's anxiety are the higher level in fear of COVID-19 infection, low family income, available COVID-19 infected person among relatives, low level of information about pregnancy and childbirth at women with COVID-19, social distance, which leads to the serious changes in behavior of pregnant patients.

We developed the algorithm to correct the psychological changes at pregnant women in order to manage the peculiarities of mental health at women – participants in research and it included the informational and explanatory work with patients both on general issues of pregnancy and childbirth, and on issues, related to the prevention and treatment of the COVID-19 at pregnant women. Taking into account the need to comply with quarantine measures at maternity clinic, we have chosen a remote work format. The information was presented in the form of thematic school "School of Responsible Parenting" in order to ensure the meaningful

integrity, logical consistency and unambiguous context, the i Spring Learn e-learning platform was chosen as a technical solution for implementation of the distance seminar.

According to its structure, the school consists of 9 sections: introduction, pregnancy management, nutrition during pregnancy, exercise for pregnant women, advice from psychologist, pregnancy during pandemic, childbirth, baby care, breastfeeding. The topics of each section are revealed in thematic seminars, which include videos, text materials and illustrations in the access mode, as well as the possibility of chatting and participating in online events.

As it has already been mentioned, the participation of 150 pregnant women from the second group during observation of pregnancy took an obligatory part in the thematic distance school of responsible parenting. The pregnant women, assigned to the first group, received the informational support only during visits to the obstetrician-gynecologist.

We once again performed Spielberg-Khanin test in order to determine the mental health of women after they passed through thematic school of responsible parenting. Most often, a moderate level of situational and personal anxiety was observed in the first study group of pregnant women, it was about 45%, while in the second study group, a low level of situational and personal anxiety was most often observed, about 52% (Table 4). Such changes in anxiety levels at women under research may be due to the higher level in awareness of pregnancy and childbirth, the characteristics of these processes in connection with the COVID-19 pandemic, attention, emotional involvement and empathy that pregnant women receive from the medical staff.

Table 4
Indices for situational and personal anxiety levels at pregnant women

Group of pregnant women	Situational anxiety level			Personal anxiety level		
	Low	Moderate	High	Low	Moderate	High
I	36.0 (25.3-34.7)	46.0 (40.1-54.5)	18.0 (17.9-27.4)	38.7 (24.9-36.5)	45.3 (37.4-54.6)	16.0 (19.1-27.5)
II	54.6 (26.2-36.4)	36.1 (39.9-57.4)	12.0 (15.3-24.7)	49.3 (25.3-34.7)	41.4 (39.7-56.3)	9.3 (17.3-26.7)

Source: authors' own research

Despite the manifestations of anxiety and depression at pregnant women under research, we also once again studied the frequency of their manifestations, using Beck Depression Inventory (Table 5). The obtained results showed a significant increase in the number of pregnant women in the second group with absence of depression (up to 90.0%). The moderate manifestations of depression were found at pregnant women in 16.7% of cases from the first group and 9.3% of women in the second group. The depression of the average level was observed in 1.3% and 0.7% of the pregnant women under research in the first and second groups, respectively.

Table 5
Level of depression incidence at pregnant women by Beck Depression Inventory

Groups	Level of depression incidence at pregnant women			
	Lack of depression (0-11 points)	Moderate depression (12-19 points)	Average depression (20-25 points)	Severe depression (26-63 points)
I	82.0 (72.5-87.5)	16.7 (14.4-23.0)	1.3 (1.2-1.4)	-
II	90.0 (72.6-86.0)	9.3 (14.5-21.5)	0.7 (1.9-2.1)	-

Source: authors' own research

Therefore, the participation in distance school of responsible parenting is the effective additional method that can be used to reduce the levels of situational and personal anxiety, as well as the frequency of depression at pregnant women.

Previous epidemics have been shown to have a detrimental psychological impact on the broader population, and disinformation has heightened concern (Brooks et al., 2020; Ortiz et al., 2020; Rubin et al., 2016). The COVID19 pandemic could put pregnant women's mental health at risk (Parra-Saavedra et al., 2020) those who have experienced life changes as a result of restrictive measures and a decline in social life, fears of contracting the virus and the threats of Sars-Cov-2 infection to their own and their baby's lives, and the fear of not receiving proper prenatal care as a result of changes in healthcare services and protocols (Karavadra et al., 2020; Ng et al., 2020). The greatest source of worry for pregnant women is the threat to their lives and the health of their babies as a result of the pandemic's uncertainty (Sultana & Fatima, 2021). The poll found that nearly three-quarters (73.6%) of pregnant women had minor psychological impact, with an average events scale-revised (IES-R) score of 16.93 ± 11.23 , and that 69.4% of respondents had minimal anxiety, with an average generalized anxiety disorder 7(GAD-7) score of 3.09 ± 3.73 (Jelly et al., 2021). The concern of not receiving vital prenatal care might contribute to the high frequency of anxiety during a pandemic (Lebel et al., 2020). We used the Spielberg-Khanin test to investigate the mental health of pregnant women during COVID-19. Our findings revealed that all pregnant women in the research were of reproductive age, mostly under the age of 25, and were expecting their first child. These findings support a recent study that found a link between pregnant trimesters and some markers of unfavourable health effects (Zhang & Ma, 2021). During the first and third trimesters of pregnancy, women reported receiving more support and sharing their feelings with family members (Tytarenko et al., 2022). There was a larger emphasis on mental health, resting time, and relaxing time, with less time spent doing physical activities, which varied dramatically between trimesters (Hashim et al., 2021). We also found that the pregnant women in the study exhibited a moderate level of situational and personal anxiety, which was around 50% in group I and somewhat higher in group II. Changes in self-esteem and self-respect as a reaction to a substantial number of life situations that develop before childbirth, as well as the tension of their state due to external influences, can characterize harmful tendencies in the psychoemotional health of pregnant women. The psychoemotional condition of such pregnant women can be described as depressive, as a result of her sense of her life prospects as being in jeopardy. It has been discovered that psychological discomfort has a high positive link with anxiety, depression, and COVID-19 dread. In contrast, a negative association has been discovered between participants' self-efficacy and psychological suffering (Dule, 2021). During the COVID-19 pandemic, it was previously documented that pregnant and postpartum women in 64 nations had high levels of posttraumatic stress, anxiety/depression, and loneliness (Basu et al., 2021). Staying at home, working, and feeling scared and apprehensive all contributed to higher stress among pregnant women. Our findings also revealed moderate depression in 28% of pregnant women in the first group and 27% of pregnant women in the second group, respectively. According to a Chinese study, depression affects 34.2% of the population (Wu et al., 2020) and a study in Canada involving 1987 participants found that 37% of women had depressive symptoms and 56.6% had anxiety symptoms (Lebel et al., 2020). Another study from Bosnia and Herzegovina and Serbia found that 34.2% of respondents had a severe psychological impact, 9.9% had a moderate psychological impact, and 23.0% had a mild psychological impact as a result of the COVID-19 outbreak (Sultana & Fatima, 2021). Watching COVID-19-related news and stories on social media and television can exacerbate negative feelings in pregnant women (Machado et al., 2021). We created an algorithm to correct psychological changes in pregnant women in order to manage the peculiarities of mental health in women – research participants, and it included informational and explanatory work with patients on both general pregnancy and childbirth issues, as well as issues related to the prevention and treatment of COVID-19 in pregnant women.

4 Conclusion

We picked a remote work model due to the requirement to adhere to quarantine precautions at the maternity facility. To ensure meaningful integrity, logical consistency, and unambiguous context, the information was presented in the form of a thematic school called "School of Responsible Parenting." The iSpring Learn e-

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learning platform was chosen as the technological solution for implementing the distance seminar. Our findings show that 16.7% of pregnant women in the first group and 9.3% of pregnant women in the second group have moderate signs of depression. One of the studies found that relationship, social, and healthcare support play a protective function, which has crucial implications for current and future crisis management (Vacaru et al., 2021). The level of perceived family support was also found to have a negative relationship with depression and anxiety symptoms (Wang et al., 2021). It can be concluded that public health campaigns and medical care systems must clearly address the impact of COVID-19-related stressors on perinatal women's mental health, as preventing viral exposure does not minimise the pandemic's mental health burden.

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