Determinants of perinatal medical care at the ambulatory level in the conditions of the COVID-19 pandemic

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It is important to determine mothers’ perceptions of health care services during the pandemic to ensure equity in the provision of such services in the future.

The objective: to determine the determinants of pregnant women’s perception of perinatal care services during the COVID-19 pandemic.

Materials and methods. An original sociological study was conducted to assess the state of perinatal care during the COVID-19 pandemic using a questionnaire. 110 questionnaires were included in the analysis. Group 1 included 45 female respondents who were sick with COVID-19 during pregnancy, group 2 – 65 women who were not sick with COVID-19 during pregnancy.

All questionnaires were analysed both in the general sample and in the section of COVID-19 during pregnancy.

Results. Certain shortcomings in the provision of perinatal care during the COVID-19 pandemic at the ambulatory level were identified. Insufficient vaccination coverage of pregnant women (65.5% of respondents were vaccinated during pregnancy). 87.3% of patients considered insufficient information about vaccination of pregnant women. A negative attitude towards vaccination during pregnancy was expressed by 30.0% of respondents. 65.4% of respondents considered insufficient availability of perinatal care in the conditions of the COVID-19 pandemic.

Remote counseling was received by less than half of patients (41.8%), and mainly those who were sick with COVID-19 (62.2%). A negative attitude towards remote counseling was expressed by 49.1% of women. More than half (56.4%) of the respondents considered the provided information about COVID-19, treatment and prevention to be insufficient. Only 9.1% of patients received full psychological support.

Half of the patients were not satisfied with the qualifications of the medical staff, and 59.1% were not satisfied with the staff’s attitude. More than half (55.4%) of patients were not satisfied with the care provided at the outpatient stage in general, especially those who did not suffer from COVID-19, which may be due to a shift in the focus of attention on infected pregnant women.

Conclusions. The following positions can be recommended to improve perinatal care: expansion of information provision of the population, in particular with the involvement of mass media; conducting explanatory work with patients on prevention, vaccination, treatment, possible complications during pregnancy; provision of remote counseling in possible cases; psychological support of the pregnant woman and her family at all stages of perinatal care.

Keywords: pregnancy, COVID-19, perinatal care, questionnaires, ambulatory medicine.
The coronavirus disease 2019 (COVID-19) pandemic has had a devastating impact on healthcare delivery systems around the world. The novel coronavirus has meant a lack of knowledge and understanding of the nature of the infection, including a lack of data on the epidemiology, mechanisms of transmission, disease progression, and treatment options for people with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1].

Following the outbreak of the COVID-19 in 2020, many countries implemented local or national quarantine and social distancing measures [2], which also complicated the timeliness of medical care.

Compared to previous epidemics in recent decades, the COVID-19 pandemic had a greater global impact and lasted longer [3]. Moreover, although the impact of COVID-19 has decreased compared to the beginning of 2020, new variants are still spreading worldwide [4].

Pregnant women and their newborns need special attention due to the increased risk of adverse consequences [5–7]. According to various reports, the prevalence of SARS-CoV-2 infection among pregnant women is 3–20%, with a wide spectrum of severity ranging from asymptomatic to extremely severe cases [8,9].


Infection with COVID-19 during pregnancy can lead to adverse pregnancy outcomes, including preterm birth, maternal mortality, intensive care unit admission, and neonatal death. Vertical transmission from mother to fetus is possible, but its immediate and remote consequences for the newborn are unclear [12].

Even after the end of the pandemic in 2023, there are no definitive conclusions about the perinatal consequences of COVID-19. Due to the insufficient amount of data, further studies are needed to assess the long-term impact of COVID-19 on pregnancy and vital parameters of the newborn [13].

COVID-19 is associated with a higher risk of severe disease in pregnant women than in age-matched non-pregnant women [14–16]. Vaccination against COVID-19 is especially important for pregnant and lactating women. Vaccination reduces the risk of progression of COVID-19 to a severe or critical form and the need for hospitalization of pregnant women [17,18]. The risk of stillbirth is 15% lower in the vaccinated cohort. Furthermore, there was no evidence of an increased risk of adverse maternal, pregnancy, or neonatal outcomes following prenatal vaccination against COVID-19, supporting the safety of COVID-19 vaccines during pregnancy [19].

Vaccination of pregnant women against COVID-19 is also beneficial for their children, as it reduces the risk of hospitalization due to COVID-19 before 6 months of age and the severity of the disease [20]. Regarding vaccination during breastfeeding, the breast milk of vaccinated individuals has been shown to contain antibodies and T cells specific for SARS-CoV-2, which may contribute to the development of the breastfed child’s immune system [21,22].

Although vaccination against severe acute respiratory syndrome, coronavirus 2 (SARS-CoV-2) is considered safe during pregnancy [23,24], pregnant women are hesitant about vaccination [25]. Pregnant and breastfeeding women should be provided with specialized, evidence-based information about vaccines against COVID-19 to avoid unfounded fears about vaccines and to facilitate shared decision-making in this population.

The pandemic also had a negative impact on uninfected pregnant women. In this regard, Zheng X. et al. reported in a systematic review that the COVID-19 pandemic has disrupted reproductive plans and routine care for pregnant women. Because the availability and quality of maternal care play a critical role in maternal and fetal outcomes, it is suggested that government or health care providers balance restrictions and access to maternal care during future pandemics [26].

With the emergence of COVID-19 in society, stress and anxiety are increasing in pregnant women and people around them [27]. Such trends can increase the risks of pregnancy [28].

The focus on COVID-19 may change the way pregnant women think about the importance of regular perinatal care. Health care of the mother and child must have an unchanging priority in the provision of medical care. Perinatal care during a pandemic should continue as usual, especially in pregnant women with known risk factors, to ensure safe motherhood and delivery [29,30].

Randomized controlled trials confirm the safety and effectiveness of shortened schedules of prenatal visits and virtual visits, which were widely used during the pandemic, but real data are lacking [31].

Maternal perceptions, including pregnant women’s psychosocial and health needs, should be prioritized in maternal care during the COVID-19 pandemic. It is important to determine mothers’ perceptions of health care services during the pandemic to ensure the equity of health care services in the future in the face of new challenges [32].

In order to prepare for future pandemics, it is necessary to learn the lessons of this pandemic and to improve our preparation and response to new infections that may arise in the future. Policymakers and health leaders must
identify effective and reliable strategies to maintain safe perinatal care even during global emergencies [33].

Satisfaction with and trust in health care providers is associated with better pregnancy health outcomes [34, 35]. Further research with qualitative and quantitative evidence is needed on this topic.

Mothers’ perceptions of antenatal care services during a pandemic will differ from perceptions before the pandemic was announced and may have a more adverse impact [32].

The purpose of the study is to determine the determinants of pregnant women’s perception of perinatal care services during the COVID-19 pandemic.

MATERIALS AND METHODS

An original complex sociological study was conducted by means of a questionnaire to assess the state of perinatal care during the COVID-19 pandemic. Methodological recommendations of the Ministry of Health of Ukraine were taken into account when conducting research and developing questionnaires [36].

The survey was anonymous, conducted with voluntary informed consent to participate in the study after the respondents were informed of its purpose.

To assess the satisfaction of patients with the level of perinatal care during the pandemic, a questionnaire was developed, which consisted of several blocks: the introductory part (appeal to the patient); a block related to the patient’s social status (age, place of residence, education, professional employment, marital status, income), separate 2 blocks on satisfaction with the care provided at the outpatient stage and attitude to vaccination.

The research was carried out on the basis of women’s consultations No. 1, 2, 3 of the Communal non-profit enterprise “City Clinical Perinatal Center of the Ivano-Frankivsk City Council” and the department of the family planning center Communal non-profit enterprise “Ivano-Frankivsk Regional Perinatal Center of the Ivano-Frankivsk Regional Council” in the period February-April 2024. Women who received outpatient perinatal care during the period of quarantine restrictions at the height of the COVID-19 pandemic (2020–2022) were interviewed.

A representative sample of 120 women’s consultation patients who were pregnant during the pandemic was formed for the questionnaire. 120 questionnaires were distributed to women’s consultation patients. After the analysis of the completed questionnaires, 10 of them turned out to be unsuitable for further analysis, that is, 110 questionnaires were included in the final analysis and calculations. 45 female respondents were sick with COVID-19 during pregnancy – group 1, 65 women were not sick with COVID-19 during pregnancy – group 2. All responses of female respondents were analyzed both in the general sample and in the section of COVID-19 during pregnancy. The questionnaire was approved by the ethics committee of the Shupyk National Healthcare University of Ukraine (Protocol No. 3/24 dated March 22, 2024).

The conduct of the study was approved by the ethics committee of the Shupyk National Healthcare University of Ukraine., the work is a fragment of the Scientific research work «Improving tactics of preconception counseling and management of early pregnancy of women with reproductive health disorders» (state registration number 0124U001616).

All obtained data were processed by the methods of statistics accepted in medicine, using the criterion of Fisher’s angular transformation, the level of significance is p<0.05.

RESULTS AND DISCUSSION

According to the data in Table 1, the majority of respondents 68 (61.8%) were aged 20–30. Attention is drawn to the 2 times larger share of women older than 30 years in the group of those who were sick with COVID-19 during pregnancy (26.7% versus 13.8% of women in group 2, p<0.05), age is known to be a risk factor for COVID-19.

As for employment, there were the most housewives (21.8%), employees (20.0%) and private entrepreneurs (18.2%), the least among those studying (10.0%). In group 1, the frequency of private entrepreneurs is significantly higher (26.7% versus 12.3% in group 2, p<0.05), which may be due to a higher intensity of contacts, which contributes to the infection of COVID-19. According to the level of education, the distribution was as follows: the largest share of respondents had secondary special (40.0%) and secondary (31.8%) education.

Group 1 had a higher percentage of women with higher education (28.9% vs. 13.8% in group 2, p<0.05), which may also reflect a higher frequency of contact. By place of residence, a larger share lives in the village (66.4%), and more women from group 1 live in the city than from group 2 (42.2% and 27.7%, respectively).

By marital status: the vast majority of women are in a registered marriage (72.7%). Group 1 has 2.5 times more single women and widows (15.5% versus 6.1% in group 2). In terms of income, the largest share, namely 40.0%, of female patients had an average income (10,000–20,000 per family member), while 9.1% of respondents had an extremely low income (up to UAH 2,000 per person). In terms of income, groups 1 and 2 did not have a significant difference.

65.5% of the surveyed women were vaccinated during pregnancy (Table 2), and twice as many were vaccinated before pregnancy (23.6% versus 10.9%). Among women who were sick with COVID-19, the percentage of unvaccinated women was significantly higher by 1.6 times (84.4% versus 52.3% of women whose pregnancy was not burdened by COVID-19, p<0.05), which caused the disease and its severity. Accordingly, the frequency of a positive attitude to vaccination was significantly lower in group 1 (53.6% vs. 80.6%, p<0.05), it is interesting that the same proportion of women had a completely negative attitude.

87.3% of patients considered the information about vaccination of pregnant women to be partially or completely insufficient, which also requires analysis and certain organizational conclusions. Moreover, the percentage of those who chose the answer «no» is significantly higher in group 1 (57.8% versus 30.8%, p<0.05), which may have caused the refusal of vaccination before or during pregnancy.
A third of respondents considered perinatal care available in the conditions of the COVID-19 pandemic (Table 3): 40.0% in group 1 and 30.8% in group 2. Telephone or Internet counseling was received by less than half of the patients (41.8%), and mostly those who were sick with COVID-19 (62.2% vs. 27.7% of those who were not sick p<0.05), which indicates the possibility of expanding such access to counseling to reduce the risk of spreading the disease among pregnant women.

Moreover, the majority (64.5%) of women in group 1 had a positive or rather positive attitude to remote counseling against 41.5% of women in group 2 (p<0.05), i.e.
more than half of women who did not suffer from COVID-19, considered this method of counseling insufficient, which requires some explanatory work.

18.2% of respondents are completely satisfied with the conditions for providing care at the outpatient stage (Table 4), the same share is not satisfied at all (20.8%), the distribution according to this indicator has no statistical difference in groups of women. The result of the survey draws attention to the fact that more than half (56.4%) of all female respondents considered the information provided at the outpatient stage about COVID-19, treatment and prevention to be incomplete, and a slightly higher percentage of women in group 2 considered themselves less informed. Attention should be paid to the insufficiency of psychological support for pregnant women, which was fully received by only 9.1% of patients (15.6% and 4.6%, respectively, in groups and 2, p<0.05), and half (54.5%) of women did not receive such support at all.

65 (59.0%) of female patients were completely or rather satisfied with the qualifications of the medical staff (Table 5), even fewer female respondents 45 (41.0%) were satisfied with the attitude of the staff, and there is a tendency for less satisfaction with the staff in group 2.

The need to increase the level of perinatal care at the outpatient stage is evidenced by the distribution of patients according to the level of satisfaction with such care during the COVID-19 pandemic (Figure): more than half 61 (55.4%) of patients are to one degree or another not satisfied with the care provided, slightly higher this share is in group 2 (38.5% versus 31.1% in group 1).

### Table 3

<table>
<thead>
<tr>
<th>Indicator</th>
<th>All respondents, n=110</th>
<th>Group 1, n=45</th>
<th>Group 2, n=65</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Abs. number</td>
<td>%</td>
<td>Abs. number</td>
</tr>
<tr>
<td>The availability of help during the pandemic sufficient</td>
<td>38</td>
<td>34.5</td>
<td>18</td>
</tr>
<tr>
<td>partially insufficient</td>
<td>48</td>
<td>43.7</td>
<td>20</td>
</tr>
<tr>
<td>insufficient</td>
<td>24</td>
<td>21.8</td>
<td>7</td>
</tr>
<tr>
<td>Have you received telephone or Internet counseling?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>46</td>
<td>41.8</td>
<td>28</td>
</tr>
<tr>
<td>No</td>
<td>64</td>
<td>58.2</td>
<td>17</td>
</tr>
<tr>
<td>Your attitude to telephone or Internet counseling positive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>rather positive</td>
<td>17</td>
<td>15.5</td>
<td>8</td>
</tr>
<tr>
<td>rather negative</td>
<td>39</td>
<td>35.5</td>
<td>21</td>
</tr>
<tr>
<td>negative</td>
<td>33</td>
<td>30.0</td>
<td>9</td>
</tr>
</tbody>
</table>

Note. * – Significant difference relative to the indicator of group 2 (p<0.05).

### Table 4

<table>
<thead>
<tr>
<th>Indicator</th>
<th>All respondents, n=110</th>
<th>Group 1, n=45</th>
<th>Group 2, n=65</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Abs. number</td>
<td>%</td>
<td>Abs. number</td>
</tr>
<tr>
<td>Are you satisfied with the conditions at the outpatient stage?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>yes, completely</td>
<td>20</td>
<td>18.2</td>
<td>10</td>
</tr>
<tr>
<td>rather satisfied</td>
<td>33</td>
<td>30.0</td>
<td>15</td>
</tr>
<tr>
<td>rather not satisfied</td>
<td>35</td>
<td>31.8</td>
<td>13</td>
</tr>
<tr>
<td>not satisfied at all</td>
<td>22</td>
<td>20.0</td>
<td>7</td>
</tr>
<tr>
<td>Were you given full information about COVID-19, treatment and prevention at the outpatient stage?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>13</td>
<td>11.8</td>
<td>8</td>
</tr>
<tr>
<td>rather yes</td>
<td>35</td>
<td>31.8</td>
<td>15</td>
</tr>
<tr>
<td>rather not</td>
<td>45</td>
<td>40.9</td>
<td>17</td>
</tr>
<tr>
<td>No</td>
<td>17</td>
<td>15.5</td>
<td>5</td>
</tr>
<tr>
<td>Were you provided with psychological support?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>10</td>
<td>9.1</td>
<td>7</td>
</tr>
<tr>
<td>part</td>
<td>40</td>
<td>36.4</td>
<td>16</td>
</tr>
<tr>
<td>No</td>
<td>60</td>
<td>54.5</td>
<td>22</td>
</tr>
</tbody>
</table>

Note. * – Significant difference relative to the indicator of group 2 (p<0.05).
We did not find any publications in Ukraine that would reflect the results of a survey on patient satisfaction with perinatal care during the COVID-19 pandemic. However, a survey was conducted on the satisfaction and awareness of the population regarding the services of a general practitioner — a family doctor [37], according to which 45.2% of respondents were dissatisfied with the quality of medical services, 25.6% did not receive information on the treatment and prevention of diseases. Similar results were obtained in this study: 55.4% of patients are dissatisfied with perinatal care; 56.45% of female respondents considered incomplete information about COVID-19, treatment and prevention at the outpatient stage.

In addition, specialists of the Institute of Sociology of the National Academy of Sciences of Ukraine presented the results of a large sociological study of 2020-2021 on the social consequences of the COVID-19 pandemic [38], in which a low level of satisfaction with the quality of medical services, 25.6% did not receive information on the treatment and prevention of diseases. Similar results were obtained in this study: 55.4% of patients are dissatisfied with perinatal care; 56.45% of female respondents considered incomplete information about COVID-19, treatment and prevention at the outpatient stage.

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Studies were conducted on indicators of awareness, attitude and use of prevention of infection with COVID-19 among pregnant women, which turned out to be low (from 35 to 60% depending on the region of residence, level of education, age of respondents, access to medical services, state policy on information, trust in local authorities etc.) [41].

The peculiarity of our study is that we evaluated the assessment of the quality of perinatal services in terms of patients who were sick and who were not sick with COVID-19. Yes, 42.4% are not going to do it, even when there is an opportunity, and 22.1% have not yet made up their minds about it. Only a third (35.5%) plan to get vaccinated. The carriers of attitudes about the harm of vaccinations are primarily women. According to our data, a third (30.0%) have a negative attitude to vaccination during pregnancy.

A study conducted in Saudi Arabia, which included 303 pregnant women [39], showed a higher adherence to vaccination than our study. More than 73% of participants were vaccinated against COVID-19 before pregnancy. Almost half of the remaining respondents were vaccinated during pregnancy (42.2%).

In the European multinational study [40], different levels of vaccination among pregnant women in different countries were found. Among 3194 pregnant women, the proportion of women who were vaccinated or willing to be vaccinated ranged from 80.5% in Belgium to 21.5% in Norway. Among 1659 women who gave birth, the proportion of women who were vaccinated or willing to be vaccinated ranged from 86.0% in the UK to 58.6% in Switzerland.

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The peculiarity of our study is that we evaluated the assessment of the quality of perinatal services in terms of patients who were sick and who were not sick with COVID-19. During the COVID-19 pandemic, uninfected women experienced difficulties in accessing appropriate health services during pregnancy, both in our data and those of other researchers. Evidence [42] suggests that delays and dissatisfaction with health care services during the pandemic led to inadequate and low-quality prenatal care.

**CONCLUSIONS**

An original comprehensive sociological survey conducted through a questionnaire to assess the state of perinatal care during the COVID-19 pandemic by surveying...
female patients revealed certain shortcomings in the provision of such care at the outpatient level.

Insufficient coverage of pregnant women by vaccination (65.5% of the surveyed women were vaccinated during pregnancy, while the proportion was twice as large as before pregnancy). 87.3% of patients considered information about vaccination of pregnant women to be partially or completely insufficient. A negative attitude towards vaccination during pregnancy was expressed by 30.0% of respondents.

65.4% of respondents considered insufficient availability of perinatal care in the conditions of the COVID-19 pandemic. Telephone or Internet counseling was received by less than half of the patients (41.8%), and mainly those who were sick with COVID-19 (62.2%). A negative attitude towards remote counseling was expressed by 49.1% of women.

More than half (56.4%) of the respondents considered the provided information about COVID-19, treatment and prevention to be insufficient. Only 9.1% of patients received full psychological support.

Half of the patients to one degree or another were not satisfied with the qualifications of the medical staff, and 39.1% - with the attitude of the staff.

More than half (55.4%) of female patients are to one degree or another not satisfied with the care provided at the outpatient stage as a whole. Patients who did not suffer from COVID-19 turned out to be more dissatisfied with the level of perinatal care, which may be due to a shift in the focus of attention to infected pregnant women.

In general, the provision of perinatal care during the COVID-19 pandemic, according to the patients, was carried out at a relatively sufficient level, however, certain shortcomings were identified, the consideration of which could improve the quality of the provision of such care. Based on the conducted research, the following recommendations can be offered: expansion of information provision of the population with the involvement of mass media; conducting explanatory work with patients on prevention, vaccination, treatment, possible complications during pregnancy; provision of remote counseling in possible cases (without the need for an examination); psychological support of the pregnant woman and her family at all stages of perinatal care.

**Conflict of interest.** The authors declare no conflict of interest

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