The Covid-19 Pandemic and Maternal Care

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Original Article

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Abstract:

Introduction: The COVID-19 pandemic has adversely affected the provision of healthcare services, including maternal care. Some services have been restricted or prohibited to a certain extent in order to minimise the risk of COVID-19 transmission to women and newborns.

Objective: The research was focused on evaluating prenatal, intrapartum, and postpartum care provided to pregnant women, mothers, and newborns during the COVID-19 pandemic. In this study, we investigated how women perceived maternal care, measures to reduce the risk of infection, and satisfaction with the care provided. We assessed the extent to which there would be differences in the provision of care in the Czech and Slovak Republics.

Methodology: Empirical data were obtained through a ques-

tionnaire survey. Data collection was carried out at the end of the first wave of COVID-19 and at the beginning of the second wave in 2021. The research sample consisted of 539 women respondents in total, with 270 women from the Slovak Republic and 269 women from the Czech Republic. The research was supported by a joint research project of the Faculty of Health Care Studies of the University of West Bohemia in Pilsen and the Faculty of Health and Social Work of St. Ladislaus in Nové Zámky (St. Elizabeth University of Health and Social Work) and was approved by the institution's ethics committee. The empirical data were processed using the SPSS 20 statistical software.

Results: Statistically significant results were found regarding the relationship between overweight and obesity and the increased risk of COVID-19 infection. Women who were overweight or obese before pregnancy had a positive COVID-19 test result during pregnancy, χ^2= 22,9431, p< 0,001, as did pregnant women who had a positive COVID-19 test before pregnancy and were overweight or obese, χ^2= 13,3497, p= 0,004. Among women who had recovered from COVID-19, we found statistically significant results for the following items: absence of bonding (0.0068), routine recommendations not to breastfeed and to express breast milk instead (0.0203), adherence to epidemiological measures during childbirth (0.032), and adherence to increased hand hygiene and disinfection (0.0481). Regarding the provision of maternal services in Slovakia and the Czech Republic, women expected more information about vaccination and breastfeeding.

Conclusion: To modify preventive recommendations according to international standards for maternal care, to consider criteria for mother-child separation and to improve counselling for mother and child regarding COVID-19.

Introduction

The COVID-19 pandemic posed a risk to pregnant women, the prenatal child, and the newborn. Direct effects of the disease on pregnant women are associated with anatomical, physiological, and immunological changes in pregnancy that increase susceptibility to severe respiratory infections with negative impacts on the woman and foetus (Wastnedge et al., 2021). The risk of infection was associated with the presence of risk factors such as overweight, obesity, comorbidity before or during pregnancy (diabetes mellitus, hypertension, thromboembolic diseases), age over 35, socioeconomic deprivation (RCOG, 2021). The indirect impact of the pandemic mainly affected changes in maternal care provision and clinical practice. The consequences of these changes involved reconfiguring physical spaces in care provided to pregnant and postpartum women, with suspicion or confirmation of COVID-19 positivity. Women became increasingly concerned and afraid of infection and complications that would endanger their health and that of their child. This resulted in a reduction in the number of prenatal visits, which were often conducted online or by telephone. Telemedicine and personalised information on the choice of maternity hospital, delivery, and the presence of the father during delivery, began to be used to a greater extent (B.R. Chivers, R.M. Garad, J.A. et al., 2020, K. Coxon, C.F. et al., 2020). Given the high risk of COVID-19 transmission, the standards of care provided and healthcare teams that provided care in the event of positive results in pregnant women, changed. Changes in obstetric care had an impact not only on pregnant

women, but also on healthcare professionals who were exposed to a higher risk of infection, mandatory quarantine, psychological burden, and restrictions arising from strict compliance with anti-epidemic measures (A.N. Wilson, 2020.3). Restrictive measures in intrapartum care affected the implementation of bonding, increased the rate of routine separation between mother and newborn, and women's concerns about mental health (anxiety, social isolation, stress) were increased. Insufficient direct support for breastfeeding from lactation consultants escalated (Panda S. et al., 2021). All the mentioned changes that were introduced in the framework of maternity care during COVID-19, were not unequivocally accepted by pregnant women and the population.

Objective

The aim of the study was to determine what procedural and structural changes were needed to be adopted in the provision of perinatal care, how pregnant women perceived and evaluated individual measures to reduce the risk of COVID-19, and what differences existed in the provision of care in the Czech and Slovak Republics.

Methodology

In a retrospective case-control study, we obtained empirical data from female respondents who were intentionally selected. The research sample consisted of 539 women, with 270 women from Slovakia and 269 women from the Czech Republic. Within the sample, we compared two subgroups of respondents: one subgroup with a positive COVID-19 test result and one subgroup with a negative result. Data collection was conducted at the end of the first wave and at the beginning of the second wave of COVID-19 in 2021. To collect data, we used a standardized questionnaire with 39 questions. The questionnaire consisted of three parts and provided information on COVID-19 risk factors and the disease (body weight, other illnesses, smoking, COVID-19 test results, symptoms, treatment, hospitalization, source of infection), sociodemographic indicators (parity, age, gestational week), and maternal services (counselling on prenatal care, childbirth, postpartum period, breastfeeding, vaccination, source of COVID-19 information, assessment of satisfaction with care and changes made to reduce infection risk). The present study, which included two midwifery students, was conducted as part of a joint research project between the Faculty of Health Care Studies of the University of West Bohemia in Pilsen and the Faculty of Health and Social Work of St. Ladislaus in Nové Zámky. The project was approved by the faculty's ethics committee. The empirical data were analysed using the SPSS 20 statistical software. We tested the validity of hypotheses using the Mann-Whitney test, Pearson's chi-square test of independence, and Fisher's exact test.

Results

Out of the entire dataset, 361 (67.0%) female respondents aged 26 to 35 had the largest representation, a similar distribution was also found individually within the Slovak Republic 173 (64.1%) and the Czech Republic 188 (69.9%). 326 (60.5%) primiparous women were more represented in the group than 72 (39.5%) multiparous women. Out of the entire group, 84 (15.5%) respondents were overweight and obese before pregnancy, more in the Slovak Republic, 65 (24.1%), than in the Czech Republic. 85 (15.8%) of the respondents were diagnosed with COVID-19 before becoming pregnant, 59 (10.9%) during pregnancy, 6 (1.1%) during childbirth and only 2 (0.4 %) respondents during postpartum. In pregnancy, a positive test for COVID-19 was mostly diagnosed in the third trimester 23 (37.1%). Respondents who overcame COVID-19 during pregnancy were mainly treated for thyroid disease, 9 (13.4%), high blood pressure, 8 (12%), and thromboembolic disease, 7 (10.4%). Other diseases were not significant. Almost all women were non-smokers, 491 (91.1%). Of the 67 women positive for COVID-19, only 4 (5.97%) women were hospitalised in a health care facility due to a worsening health condition caused by the disease. Of the COVID-positive women, 50 (74.63%) reported mild flu-like symptoms. The most frequent symptoms reported by women were headache, 34 (50.75%), loss of taste, loss of smell and malaise, 32 (47.76%), body temperature up to 38°C was reported by 29 (43.28%), and cough by 27 (40 .3%). Upon overcoming COVID-19, only 6 (8.96%) women had a USG examination performed 2 weeks after the infection was over. From the entire group, 119

Table 1 Areas of requested information about COVID-19 for all pregnant women

Areas of requested information	Dataset	Areas where pregnant women requested more information about COVID-19 in relation to pregnancy and childbirth					
		Value on the rating scale					Total n=539
		0	1	2	3	4	
Prenatal care options during the pandemic	CZ n	52	26	42	45	104	269
	CZ %	19,3%	9,7%	15,6%	16,7%	38,7%	100%
	SK n	40	15	39	28	148	270
	SK %	14,8%	5,6%	14,4%	10,4%	54,8%	100%
The presence of a support person during childbirth	CZ n	8	10	27	30	194	269
	CZ %	3,0%	3,7%	10%	11,2%	72,1%	100%
	SK n	34	21	17	16	182	270
	SK %	12,6%	7,8%	6,3%	5,9%	67,4%	100%
Possible complications	CZ n	12	13	26	35	183	269
	CZ %	4,5%	4,8%	9,7%	13%	68%	100%
	SK n	39	13	22	29	167	270
	SK %	14,4%	4,8%	8,1%	10,7%	61,9%	100%
Transmission of the infection to the foetus	CZ n	10	14	27	40	178	269
	CZ %	3,7%	5,2%	10%	14,9%	66,2%	100%
	SK n	37	8	25	24	176	270
	SK %	13,7%	3%	9,3%	8,9%	65,2%	100%
Preventive measures during pregnancy and childbirth	CZ n	17	23	40	49	140	269
	CZ %	6,3%	8,6%	14,9%	18,2%	52%	100%
	SK n	46	11	26	21	166	270
	SK %	17%	4,1%	9,6%	7,8%	61,5%	100%
Method of newborn care	CZ n	29	23	25	37	155	269
	CZ %	10,8%	8,6%	9,3%	13,8%	57,6%	100%
	SK n	48	12	24	22	164	270
	SK %	17,8%	4,4%	8,9%	8,1%	60,7%	100%

The results show that pregnant women demanded more professional information in all areas.

Table 2 Areas of awareness about COVID-19, among pregnant women after overcoming the disease

Counselling	Dataset	Rate of information provided, related to COVID-19, to pregnant women who have overcome COVID-19/					Total n= 67
		0	1	2	3	4	
On prenatal care	CZ n	7	3	1	2	0	13
	CZ %	53,85%	23,08%	7,69%	15,38%	0%	100%
	SK n	27	4	5	6	12	54
	SK %	50%	7,41%	9,26%	11,11%	22,22%	100%
On childbirth	CZ n	9	2	1	1	0	13
	CZ %	69,23%	15,38%	7,69%	7,69%	0%	100%
	SK n	35	2	3	5	9	54
	SK %	64,81%	3,7%	5,56%	9,26%	16,67%	100%
On postpartum	CZ n	11	1	0	1	0	13
	CZ %	84,62%	7,69%	0%	7,69%	0%	100%
	SK n	31	4	2	11	6	54
	SK %	57,41%	7,41%	3,7%	20,37%	11,11%	100%
On breastfeeding	CZ n	10	0	0	2	1	13
	CZ %	76,92%	0%	0%	15,38%	7,69%	100%
	SK n	33	2	3	9	7	54
	SK %	61,11%	3,7%	5,56%	16,67%	12,96%	100%
On vaccination	CZ n	8	2	3	0	0	13
	CZ %	61,54%	15,38%	23,08%	0%	0%	100%
	SK n	42	3	2	3	4	54
	SK %	77,78%	5,56%	3,7%	5,56%	7,41%	100%

(22.1%) women stated that prenatal check-ups with a doctor were in a limited regime, more in the Czech Republic, 75 (27.9%), than in the Slovak Republic, 44 (16.3%). Female respondents with COVID-19, identified family members, 36 (53.73%), as the biggest source of infection. Only 5 (45.46%) women, out of the 11 COVID-19 positive during childbirth, breastfed as recommended by the guidelines. Women in the Czech Republic were mainly afraid of complications that could worsen their health condition, 134 (49.8%), of the COVID-19 disease, 127 (46.9%), of the death of the child, 124 (46.1%), of the transmission of the infection to the child, 118 (43.9%), and childbirth, 117 (43.5%). Women in the Slovak Republic reported the most fear of childbirth 169 (62.6%), of the COVID-19 disease, 150 (55.6%), of complications that would worsen their health condition, 141 (52.2%), of the transmission of the infection from the mother

to the child, 130 (48.2%). The areas where women requested more information about COVID-19 are listed in the following Table 1.

Pregnant women diagnosed with COVID-19 reported receiving the least amount of information in all monitored items in both countries, as shown in Table 2. Based on the results obtained, pregnant women in both countries reported that they were provided with the least amount of information about COVID-19 in relation to pregnancy and childbirth during the given period. They received insufficient and inaccurate information about breastfeeding and vaccination. In the Czech Republic, only 2 women who were COVID-19 positive during delivery were allowed to breastfeed, so we only report the results for Slovakia. Only 2 (22.22%) out of 9 women in Slovakia who had tested positive for COVID-19 during delivery were allowed to breastfeed, while observing preventive measures to reduce the risk of infection transmission to the baby (face mask, hand washing), 1 woman expressed milk and fed it to the baby herself, 3 (33.33%) women expressed milk and had another person feed it to the baby, 2 women (22.22%) did not breastfeed – breastfeeding was not recommended to them, only 1 (11.11%) woman breastfed. Despite the small sample, the results indicate that breastfeeding counselling was not provided to mothers according to national and international recommendations. In evaluating epidemiological measures, we found that women perceived restrictive changes differently depending on the COVID-19 test result. Women with a positive COVID-19 test perceived restrictive measures more and complied with epidemiological measures to a greater extent. A statistically significant result (Mann-Whitney test) was found in the evaluation of care during pregnancy throughout the pandemic, 0.0302, and in the perception of changes in the provision of prenatal care during the pandemic, 0.0094, where women diagnosed with COVID-19 perceived more changes in the provision of maternal services than women without COVID-19 diagnosis during pregnancy, delivery, and the postpartum period. They also perceived epidemiological measures differently – women with a COVID-19 positive test considered epidemiological measures to be significant in reducing the risk of infection transmission to the mother and the child, 0.0281, but felt that the epidemiological measures reduced the time that the staff spent with the mother, 0.0495, they wore masks/respirators throughout hospitalisation, 0.032, evaluated more negatively the absence of bonding after delivery, 0.0068, and routine recommendations not to breastfeed and to express milk, 0.0203. Despite significant measures and changes, overall, 324 (85%) women reported that they were more satisfied than dissatisfied with the care provided during delivery, similarly, from the sample of 58 women who had a positive COVID-19 test, 47 (81%) were more satisfied than dissatisfied with the care provided during delivery. The provision of comprehensive maternity services was rated satisfactorily by 492 (91.3%) women.

Discussion

Based on the results obtained in the study, we can conclude that the majority of respondents rated the provision of care during childbirth as satisfactory in both countries. The COVID-19 pandemic created an opportunity for a new approach to delivering maternal services through telemedicine. Telemedicine can optimise the availability of traditional prenatal visits during unpredictable events such as a pandemic. It helps reduce the potential risk of infection exposure for both pregnant women and prenatal care providers. The need to provide safe and regular obstetric care required an urgent need for adaptive remodelling of the traditional model of care for pregnant women (Kern-Goldberge A, R. et al. 2022).

Despite pregnant women being considered a high-risk group, we did not record a higher incidence of COVID-positive tests among pregnant women. Despite significant physiological and immune changes associated with pregnancy, pregnant women did not exhibit more severe disease symptoms compared to non-pregnant women. In the Kotlar study (2021), most pregnant women exhibited mild symptoms or were asymptomatic (Kotlar B., Gerson E., et al. 2021). Similar results were recorded in our research. New findings from the Royal College of Obstetricians and Gynecologists (RCOG 2022) show that more than two-thirds of pregnant women with COVID infection have no serious symptoms. If they are symptomatic, the most common symptoms are mild fever and cough. Increasing evidence suggests an association between COVID-19 and an increased

incidence of adverse outcomes such as preeclampsia, gestational diabetes, stillbirth, preterm birth, and low birth weight. However, pregnant women who were at increased risk of morbidity (also had other medical conditions) were more likely to be admitted to the ICU, intubated, and on mechanical ventilation (DeBolt CA, et.al. 2019). In our research, those pregnant women whose health condition had worsened related to COVID-19 and at the same time they were overweight or obese, were admitted to a health care facility. Obesity predisposes to increased maternal burden of coronavirus infection. Increased production of pro-inflammatory cytokines and leptin produced by the placenta can negatively affect the birth process and the early period of the newborn (Petrakis D. 2020). Pregnant women who are obese also have a higher rate of gestational diabetes mellitus, preeclampsia, and hypertension in pregnancy. Together with a positive result for COVID-19, this leads to the severity of the disease in the context of the infection. The mother's BMI is an independent risk factor for a serious pregnancy outcome, especially if it is combined with another disease. However, it is important for obese pregnant women to evaluate not only the BMI itself, but also the entire metabolic profile. A study by Weschenfelder (2023) reported that obesity in pregnant women with COVID infection had a limited effect on the course and outcome of pregnancy. We reached a similar conclusion in our study, but this may be biased by the smaller group. Nevertheless, new findings prove that the adverse effects of the COVID-19 infection on the mother and the child can be amplified in women with nutritional disorders, including obesity and overweight (Anttini R., et.al, 2023).

Vaccination can provide pregnant women and children with a higher level of protection against infection. Maternal immunisation can provide protection to infants, particularly during the high-risk first 6 months of life, through passive transplacental transfer of antibodies and through breast milk. The studies published so far indicate that the mothers who were vaccinated did not show any serious adverse effects.

Conclusion

Pregnant women perceived preventive measures related to maternity services differently. In particular, measures related to the prohibition of visits after childbirth and the completion of a preventive PCR or antigen test of mothers after admission to the maternity ward. These measures were imposed more strictly in the Slovak Republic; however, women rated the obstetric services as satisfactory. Based on the research results, it is necessary to continue to strengthen counselling and the provision of relevant information in the field of vaccination and breastfeeding. Pregnant women in both countries stated that they would like more information and support in the mentioned areas. Research limits: greater heterogeneity between COVID-positive and negative pregnant women, the onset of another variant of COVID - Omicron.

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