Childbirth Experiences of Women Who Gave Birth During the COVID-19 Pandemic in the Tohoku Region of Japan: An Internet-based Questionnaire Survey

ABSTRACT

Aims: Perinatal women might have a negative experience with childbirth owing to the coronavirus disease 2019 (COVID-19) pandemic, and their parenting attitudes or mental state could be affected. We used an Internet survey to clarify the experiences of women who gave birth during the COVID-19 pandemic.
Study design: Quantitative descriptive research.
Place and duration of study: Four maternal and child health facilities at a prefecture of Tohoku region from August 14, 2021, to May 29, 2022.
Methodology: We used an Internet-based questionnaire survey. A total of 103 mothers of children undergoing three- to four-month and 1.5-year checkups were included in our analysis. Descriptive statistics were obtained from participants' basic information and free answers were compiled regarding their experiences with childbirth during COVID-19.
Results: The surveyed women believed that the pandemic's main effect was the inability of family members to be present during their health checkups. Owing to the pandemic, 42 women (40.8%) were severely stressed during their pregnancy as they could not see their families outside the prefecture or go out freely. Additionally, most women were denied or restricted family attendance and care during childbirth. Even after leaving the hospital, they could not seek consultation regarding their health and childcare, had to manage childcare and housework alone, refrained from going out owing to the fear of infection, and felt anxious and lonely. Some women appreciated the medical staff, stating that they were dependable and available to talk to, while others reported that the nurses were strict and overbearing. Participants demanded not only that nurses provide infection control measures but also psychological care.
Conclusion: Women experienced anxiety, loneliness, and isolation owing to COVID-19-related restrictions and feared for their own and their children's health. Following discharge from the hospital, childcare support should be provided by healthcare professionals.

Keywords: childbirth, childcare, COVID-19, perinatal, pregnancy

1. INTRODUCTION

In December 2019, a novel coronavirus infection (COVID-19) was first reported in the People's Republic of China and quickly spread worldwide after the World Health Organization (WHO) declared it a pandemic in March 2020. Although vaccination has reached most people worldwide, mutant strains continue to emerge, and people's daily lives are still affected by COVID-19.

The Japan Society of Obstetrics and Gynecology, Japan Association of Obstetricians and Gynecologists, and Japan Society for Infectious Diseases in Obstetrics and Gynecology developed and published joint guidelines for medical practitioners [1]. These guidelines comprise adherence to standard precautions by the Centers for Disease Control and

Prevention [2], as follows: “In principle, Cesarean section is unavoidable depending on the spread of infection,” “We recommend return home deliveries or attending deliveries,” “We do not recommend online medical care or postponing routine pregnancy health examinations,” “Mother and child should be separated after delivery if the mother is infected with COVID-19,” and “Newborns delivered by an infected mother should be managed in an incubator and given complete artificial nutrition.”

Results from a survey conducted by authors in 2020 on infection control measures and maternal nursing care at obstetric care facilities in the Tohoku region of Japan [3] showed that infection control measures generally complied with the abovementioned guidelines. In addition, the group guidance provided during pregnancy and postpartum was changed to individual guidance post the pandemic declaration. Pregnant and nursing mothers were isolated to avoid information exchange among mothers, prohibited from witnessing births, and restricted visitation. Numerous reports have indicated that healthcare providers are making efforts to help families participate in childbirth by focusing on “psychological care,” suggesting “careful listening toward expectant mothers,” “holding motherhood classes using videos,” enabling “online visitation during hospitalization,” and introducing “online witnessed birth” [4–8].

However, the experiences of expectant mothers have not yet been fully reported, including how they lived and felt during pregnancy, delivery, hospitalization, and afterward; how they coped with any difficulties they encountered; and what kind of support they received from their healthcare providers.

If expectant mothers perceive their experience of childbirth during the COVID-19 pandemic negatively, it could affect their attitudes toward childcare during the childrearing period and their children’s growth and mental state. Therefore, analyzing the situation of pregnant and nursing mothers during this time is expected to minimize the medium- and long-term effects of the COVID-19 pandemic on mothers and children, while taking the necessary countermeasures. Additionally, our findings could assist in recommending nurses’ responses to COVID-19 and future pandemics, from pregnancy through childbirth to childrearing. This study aimed to determine the childbearing experiences of women who gave birth under COVID-19 pandemic conditions in the Tohoku region of Japan through a questionnaire survey.

2. METHODOLOGY

2.1 Research design

This study employed a quantitative descriptive design and we administered an Internet-based questionnaire survey (“web survey”).

2.2 Survey period

The survey was conducted from August 14, 2021 to May 29, 2022.

2.3 Survey participants

Participants included 103 mothers of children undergoing three- to four-month and 1.5-year checkups.

2.4 Survey procedure

First, we sought opportunities to explain the outline of this study to maternal and child health centers, maternal and child health departments of city halls, and facilities conducting infant health examinations in a prefecture of Tohoku region. We explained the study purpose, significance, and content; methods for protecting personal information; provided an explanatory document regarding the publication of the results; and displayed a guide to potential participants. At the four facilities that agreed to cooperate, the staff distributed 1,000 recruitment information forms to mothers during their infants’ health checkups. Mothers who received the recruitment guide were asked to respond to the survey voluntarily.

2.5 Survey contents

2.5.1 Basic information of respondents

We recorded age, history of delivery, employment, infertility treatment, gestational age, abnormality during pregnancy, mode of delivery, labor induction, and infants’ birth weight.

2.5.2 Pregnancy experience

The following aspects of the pregnancy experience were assessed: whether the woman attended group guidance, whether there were changes in the method of group guidance and its contents, whether there were changes in the technique of antenatal care and its contents, care received from the nursing staff and its contents, and items that had to be changed or were restricted during COVID-19 including participants' feelings toward them (free description).

2.5.3 Experiences during hospitalization

The following aspects of women's experiences during hospitalization were considered: presence at delivery, family attendance, presence/absence of visitors, care received from nursing staff and its contents, and items during hospitalization that had to be changed or were restricted owing to COVID-19 and the women's feelings about them (free answers).

2.5.4 Experiences since discharge from the facility to the present

The following information, on women's experiences since discharge from the facility to the present, was evaluated: life after discharge; childcare situation; other support received from public health nurses, midwives, and other staff at the local health center; and any changes or restrictions imposed related to COVID-19, alongside participants' feelings about them (free answers).

2.5.5 What care do you want from obstetric care facilities and nursing professionals related to COVID-19 (free answers)?

Responses for this aspect were sought in the form of options and open-ended statements.

2.6 Methods of analysis

Descriptive statistics were compiled for participants' basic information. The free-describe section was not a required field but was established for the purpose of providing a basis for the survey results and supplementing meaning-making. For free descriptions, similar content was compiled into themes. The results of women's experience in each period are summarized in a table; however, the care received is not included in the table; the main comments are summarized in the text.

3. RESULTS

We obtained responses from 103 women.

3.1 Participants' demographics

The women who responded to the survey gave birth between March 2020 and September 2021. The age range of the participants was as follows: one respondent (1%) was 19-years-old or younger, 19 (18.4%) were between 20- and 29-years-old, 75 (72.8%) were between 30- and 39-years-old, and eight (7.8%) were 40-years-old or older (Table 1).

Among respondents, 80 (77.7%) were employed (employment benefits included maternity leave), and 23 (22.3%) were not.

Additionally, 51 (49.5%) were primipara, 34 (33.0%) were second-time mothers, 16 (15.5%) were third-time mothers, and two (1.9%) were fourth-time mothers or more.

Regarding infertility treatment, 18 (17.5%) availed it. Ovulation induction and in vitro fertilization was the most common treatments sought, with six women for each treatment.

The number of women falling under each gestational age was six (5.8%) for premature delivery, 95 (92.2%) for full-term delivery, and two (1.9%) for delivery after 42 weeks.

There were 29 women (28.2%) with abnormalities during pregnancy, including 19 (18.4%) with impending premature abortion and six (5.8%) with gestational hypertension.

The methods of delivery included spontaneous delivery for 76 women (73.8%), vacuum extraction for five (4.9%) women, emergency C-sections for seven women (6.8%), and scheduled C-sections for 15 women (14.6%). A total of 81 women (78.6%) did not undergo labor induction at delivery, while 22 women (21.4%) did.

The birth weight of infants was 2499 g or less for 10 patients (9.7%), 2500 g to 3499 g for 79 patients (76.7%), and 3500 g or more for 14 patients (13.6%).

Table 1. Mothers' and children's demographics

	Total (N = 103)		Primipara (n = 51)		Multipara (n = 52)	
	n	%		%	n	%
Age (years)						
≤ 19	1	1	1	2.0	0	0.0
20–29	19	18.4	16	31.4	3	5.8
30–39	75	72.8	31	60.8	44	84.6
≥ 40	8	7.8	3	5.9	5	9.6
Employment						
Employed	80	77.7	39	76.5	41	78.8
Unemployed	23	22.3	12	23.5	11	21.2
Infertility treatment						
Yes	18	17.5	10	19.6	8	15.4
No	85	82.5	41	80.4	44	84.6
Gestational age (weeks)						
< 32	4	3.9	2	3.9	2	3.8
32–36	2	1.9	2	3.9	0	0.0
37–41	95	92.2	45	88.2	50	96.2
≥ 42	2	1.9	2	3.9	0	0.0
Abnormal during pregnancy						
Yes	29	28.2	14	27.5	15	28.8
No	74	71.8	37	72.5	37	71.2
Mode of birth						
Spontaneous vaginal birth	76	73.8	33	64.7	43	82.7
Vacuum extraction	5	4.9	5	9.8	0	0.0
Planned cesarean	15	14.6	6	11.8	9	17.3
Emergency cesarean	7	6.8	7	13.7	0	0.0
Labor induction						
Yes	22	21.4	18	35.3	4	7.7
No	81	78.6	33	64.7	48	92.3
Birth weight (g)						
≤ 2499	10	9.7	7	13.7	3	5.8
2500–3499	79	76.7	35	68.6	44	84.6
≥ 3500	14	13.6	9	17.6	5	9.6

3.2 Women's experiences during pregnancy

3.2.1 About the antenatal checkups

Regarding whether COVID-19 had a negative impact on pregnancy checkups, 34 women (33.0%) said “yes” and 69 (67.0%) said “no” (Table 2).

The primary reasons for “yes” included the prohibition of attendants during checkups, limited people in the waiting room, and longer intervals between checkups; for multiparas, they stated that could not go to checkups with their older children. Moreover, if women had planned to give birth in their hometown, they were unable to see a doctor for two weeks after going back home to avoid infections, and because they had transferred to a different hospital, they could not have checkups through midwife care.

Table 2. Women’s experiences during pregnancy

	Total (N = 103)		Primipara (n = 51)		Multipara (n = 52)	
	n	%	n	%	n	%
Negative impact on pregnancy checkups						
Yes	34	33.0	19	37.3	15	28.8
No	69	67.0	32	62.7	37	71.2
Attending motherhood classes						
Yes	32	31.1	22	43.1	10	19.2
No	71	68.9	29	56.9	42	80.8
Attending parent classes						
Yes	25	24.3	24	47.1	1	1.9
No	78	75.7	27	52.9	51	98.1
Impact on pregnancy class attended						
Yes	22	21.4	13	25.5	9	17.3
No	77	74.8	37	72.5	40	76.9
No answer	4	3.9	1	2.0	3	5.8
Restricted by COVID-19 during pregnancy						
Yes	42	40.8	25	49.0	17	32.7
No	59	57.3	24	47.1	35	67.3
No answer	2	1.9	2	3.9	0	0.0

Main experiences the women wrote about in the free comment section (n = 42; 40.8%):
-I had to stay in the hospital for a long time because the baby might have been born prematurely.
-I felt very lonely because I was not allowed any visitors.
-I could not go anywhere, so I needed a change of scenery.
-I could not visit my parents because there was a cluster COVID-19 outbreak nearby.
-I was disappointed that I could not participate in yoga or maternity programs during my pregnancy.
-I felt anxious because I had not been able to visit the shrine to pray for the safe delivery of my baby until late in my pregnancy.
-I felt lonely because I could not see my friends or relatives.
-I was anxious when I was told I could not be present during the delivery.
-I was anxious because I could not attend the motherhood class.
-I felt nervous about interacting with others because I was afraid of getting COVID-19.

3.2.2 Health guidance

Regarding group motherhood classes, 32 women (31.1%) attended these classes. As for group parenting classes, 25 (24.3%) women attended them. Women who indicated that COVID-19 affected their health guidance during pregnancy indicated the following impacts: cancelation of motherhood classes, prohibition of husbands’ presence, lack of direct instruction (only booklets), individual instruction instead of group instruction, and inability to attend the classes owing to a

restricted number of participants. Contrastingly, only 21.4% of the women responded there was an "impact on the pregnancy." From the free description, it can be inferred that some pregnant women did not wish to participate in the group class owing to concerns about COVID-19 infections caused by their participation.

3.2.3 Experiences owing to COVID-19-related restrictions during pregnancy

A total of 42 women (40.8%; 25 primiparas and 17 multiparas) reported that they had experienced changes or restrictions related to COVID-19. Free descriptions included the following: They could not have a change of pace owing to requests to refrain from going out, women felt uneasy during their pregnancy as they were unable to see their family (parents), they were unable to witness the birth, it was difficult to ask for childcare for their older child at each antenatal checkup, and they were worried about infection when they interacted with other people.

3.2.4 Care received from nurses during pregnancy

Four women (3.9%; two primiparas and two multiparas) answered that they received positive care related to COVID-19 from the nursing staff during their pregnancy. These included communication regarding the approximate date of their post-delivery visit, a gift of hand sanitizer, and consultation regarding their return home.

3.3 Women's experiences during childbirth and postnatal period (hospitalization)

Table 3. Women's experiences during childbirth and postnatal period (hospitalization)

	Total (N = 103)		Primipara (n = 51)		Multipara (n = 52)	
	n	%	n	n	%	n
Companionship during labor						
Yes	31	30.1	15	29.4	16	30.8
No	72	69.9	36	70.6	36	69.2
Companionship during childbirth						
Yes	21	20.4	7	13.7	14	26.9
No	82	79.6	44	86.3	38	73.1
Postnatal visitation						
Yes	60	58.3	25	49.0	35	67.3
No	43	41.7	26	51.0	17	32.7
Restricted by COVID-19 during postnatal period (hospitalization)						
Yes	90	87.4	46	90.2	44	84.6
No	13	12.6	5	9.8	8	15.4
Main experiences the women wrote about in the free comment section (n = 90; 87.4%):						
-I felt lonely because my family could not be there during delivery and could not visit or stay long when I was in the hospital.						
-I felt lonely and depressed while in the hospital.						
-I had wanted my partner to be able to hold our baby right after birth.						
-I was lonely, but I felt good that I could focus on my baby when I gave birth.						
-I was anxious about giving birth alone.						
-I was anxious to spend a lot of time alone with my baby after birth.						
-I had to wear a mask during the delivery, which was very uncomfortable and hard.						

3.3.1 About attendants

Of the companions, 31 (30.0%) were present during labor. These included 26 (83.9%) husbands, two (6.5%) their mothers, two (6.5%) midwives, and one (3.2%) family member online (Table 3).

A total of 21 companions (20.4%) were present at childbirth, including 17 (81.0%) husbands only, two husbands with children (9.5%), one online family member (4.8%), and one midwife (4.8%).

Around 60 (58.3%) participants had a visitor immediately after the birth. These visitors included 46 (76.7%) husbands only, four (6.7%) biological mothers, three (5.0%) husbands and children, five (8.3%) husbands and biological mothers, and two (3.3%) others.

3.3.2 Experiences with and feelings about COVID-19-related restrictions during childbirth and postpartum hospitalization

Ninety (87.4%; 46 primiparas and 44 multiparas) women reported matters regarding COVID-19-related changes or restrictions.

Many of the women described in the free description section that they felt restricted during their hospitalization, which is summarized as follows: They reported feeling disappointed, shocked, stressed, anxious, lonely, inconsolable, and hurt owing to the prohibition of family visitation, witnessing the birth, and brief visitation. Some reported feeling depressed during hospitalization. However, there were positive comments such as “It was good that I could concentrate on the delivery alone” and “It was good that I could spend time with the baby alone.” Additional comments included the inconvenience of wearing masks during delivery, not being able to go to the pharmacy, and other infection control measures, as well as not being able to interact with other women during delivery.

3.3.3 Care received from nursing during delivery and postpartum hospitalization

Eleven (10.7%; three primiparas and eight multiparas) participants reported receiving care related to COVID-19 from nurses during delivery and postpartum hospitalization.

These included nurses caring about their feelings and physical condition, listening to their feelings and cuddling with them, accompanying them, shopping for them, disinfecting them, and giving them plenty of support.

3.4 Women’s experiences after leaving the hospital

Table 4. Women’s experiences after leaving the hospital

	Total (N = 103)		Primipara (n = 51)		Multipara (n = 52)	
	n	%	n	n	%	n
Postpartum discharge location						
Own house	62	60.2	20	39.2	42	80.8
Parent’s house	41	39.8	31	60.8	10	19.2
Postpartum supporters						
Yes	98	95.1	51	100.0	47	90.4
No	5	4.9	0	0.0	5	9.6
Restricted by COVID-19 during child care						
Yes	52	50.5	27	52.9	25	48.1
No	49	47.6	24	47.1	25	48.1
No answer	2	1.9	0	0.0	2	3.8

Main experiences the women wrote about in the free comment section (n = 52; 50.5%):

-I was lonely because I was not allowed to see my partner or mother owing to the two-week visitation restrictions, and so on

-I was frustrated because I was left alone at home with my baby and felt I could not go out owing to COVID-19

-I was afraid of getting COVID-19, so I could not go out easily

-I could not attend various events because they had been canceled owing to COVID-19

-I did not have a chance to meet other mothers to talk about my childcare worries

-It was not able to rely on anyone for help

-I was concerned about my baby's development as there was a lack of stimulation, such as contact with other people

-Refraining from going out made them feel anxious, confined, and isolated

-Even though I was not told to push myself too hard, I had no choice but to do so

3.4.1 Accompanying patients at discharge from the hospital

A total of 102 patients (97.1%) had an escort at the time of discharge from the hospital. These included 67 (65.0%) husbands only, 13 (12.6%) husbands and other family members, and 22 (21.4%) family members (Table 4).

3.4.2 Places participants spent time at after discharge

Around 62 (60.2%) women spent time at home and 41 (39.8%) spent time at their parents' or in-law's home. Among primiparas, 20 (39.2%) spent time at home and 31 (60.8%) at their parents' or in-law's home. Among multiparas, 42 (80.8%) were at home and 10 (19.2%) were at their parents' or in-law's family home.

3.4.3 Help after discharge from the hospital (support)

A total of 98 (95.1%) participants had family members who helped them, and five (4.9%) did not. The family members who helped included 16 husbands only (15.5%), 49 husbands and other family members (47.6%), and 33 family members (32.0%). All respondents who answered that they received no help were multiparas.

Regarding the period during which participants received supporters' help, 22 (22.4%) women said that they received help for less than one month, 35 (35.7%) received help for one month, 14 (14.3%) received help for one to two months, six (6.1%) received help for two to three months, six (6.1%) received help for three to six months, 11 (11.2%) lived together with their supporters, and four (4.1%) gave no response.

3.4.4 Experience with COVID-19-related restrictions after discharge from the hospital

A total of 52 women (50.5%; 27 primiparas and 25 multiparas) reported that they had experienced changes or restrictions related to COVID-19 after discharge.

Free descriptions included the following: Participants experienced loneliness because they could not see their husbands or mothers outside the prefecture owing to the two-week visitation restrictions and could not show their babies to their friends. They felt frustrated because they were home alone with their children; they felt anxious and isolated because parenting events were canceled. They felt depressed because they refrained from going out owing to a fear of infection.

Multiparas had to take care of their newborns and older children without help. They were worried about their physical condition, and they were afraid to use daycare centers for their older children.

3.4.5 Care received from the Community care program personnel after discharge from the hospital

Ten respondents (9.7%; six primiparas and four multiparas) reported receiving care related to COVID-19 from the community care program after discharge from the hospital.

These included the following points: "The public health nurse gave me detailed information about agencies I could call for advice, listened to me;" "I obtained methyl alcohol or finger sanitizer and benefits;" "I received postpartum care and midwife visits so I could talk to someone other than my family;" "Newborn visits were handled over the phone;" and "I am multipara, but if I were primipara, I would have felt uneasy about everything."

3.5 Care that perinatal women require from health workers (nurses) and healthcare providers

Participants were asked to respond to the following open-ended question: "Is there anything you would like to see obstetric care facilities and nursing staff do or consider regarding new coronavirus infections?" We received responses

from 48 women. The free comments were grouped into six topics (Table 5): reduced restrictions on visitation during delivery, considerations during delivery during restricted visitation, psychological care for restricted visitation during hospitalization, stricter infection control, no care is needed, and appreciation for health workers (nurses) and healthcare providers.

Table 5. Care that perinatal women require from health workers (nurses) and healthcare providers (n = 48)

Reduced restrictions on visitation during delivery
-I wanted my partner or other family members to be allowed to visit, even if they had to take the polymerase chain reaction test.
-I wanted to show my family my baby, even if it was just from looking out the window.
Considerations during delivery during restricted visitation
-I wanted a back massage during labor because I was left alone owing to visiting restrictions.
-I should have asked for more help, but the medical staff or midwives seemed busy, so I did not ask.
Psychological care for restricted visitation during hospitalization
-I should have asked for help, but I needed kinder support from the health workers and nurses.
Stricter infection control
-The waiting room was always crowded during checkups, so I was worried about getting infected.
-I was in a large room, but I wanted to make sure I had a private room.
No care is needed
-I could get information from the Internet.
-I felt the staff was busy, so I did not need more exceptional care.
Appreciation for health workers (nurses) and healthcare providers
-I am grateful to the staff for being there for me and helping me.

4. DISCUSSION

Participants consisted of women of childbearing age who used cell phones and were from the Tohoku region of Japan; therefore, it is difficult to imagine any bias in the results owing to the rate of Internet use. The delivery method and birth weight were consistent with Japan's average distribution.

The women's experiences during childbirth were considered to have three major themes throughout the entire period: anxiety, loneliness, and isolation owing to restrictions on accompanying the mother during medical visits, childbirth, and hospitalization; anxiety about their own and their children's health and infection risks; and social isolation owing to restrictions on going out.

4.1 Anxiety, loneliness, and isolation owing to restrictions on chaperoning

Many women felt "anxious," "lonely," and "isolated" owing to restrictions about chaperoning during antenatal care and delivery; "chaperoning during delivery" has been recommended since before the COVID-19 pandemic, both as prenatal care for a positive birth experience and as care provided throughout the delivery [9]. Despite this recommendation [9], only 20.4% of participants had an escort during childbirth, and 21.4% had an escort during antenatal checkups. Participants wanted to check the growth of the fetus with their husbands during pregnancy checkups. The WHO [9] reported that many expectant mothers were anxious regarding how to get through labor and when to go to the hospital. Therefore, the need for a chaperone during delivery is important. The rationale is that since chaperones help expectant mothers maintain control by recognizing and reinforcing their efforts, this increases their self-confidence and self-esteem. The presence or absence of a chaperone could also affect the delivery mode (increased cesarean section rates) and decrease negative birth experiences [9]. Expectant mothers' anxiety increased owing to the infectious nature of COVID-19. Family attendance during delivery and antenatal care should not be neglected. Further, it is necessary to reconsider the meaning of such attendance and examine how the presence of family members can be realized with infection control measures in place, alongside what conditions should be met to make such attendance possible.

4.2 Anxiety about their own and their children's health and the risk of infection

The women were afraid or anxious to go out, especially when the actual situation of infection and specific measures were not yet known, and they refrained from going out. Saccone et al. [10] found that the number of women with anxiety during pregnancy increased owing to COVID-19 and that a major cause of concern was vertical transmission to the fetus. Hartz et al. [11] reported that women are increasingly receptive to home births and births in midwifery centers (midwifery in the community) because of the fear of going to the hospital. In Japan, where home birth and community midwifery systems are declining, this is an opportunity to rethink home birth, but the choice is not easy. First, appropriate knowledge must be imparted so that the mother will not be too anxious about infection control. Second, consistent infection control measures are required to enable the environmental improvement of hospital facilities, ensure close avoidance, give consideration, and allow expectant and nursing mothers to receive medical examinations with peace of mind.

However, the lack of access to motherhood classes, and childcare circles, among other factors, has reduced the opportunities for women to feel secure in checking whether the fetus and child are progressing well, resulting in a loss of opportunities to receive education on the knowledge necessary for pregnancy and childbirth. Devising ways to ensure that there are sufficient opportunities to compensate for this through online medical care, online motherhood classes, and so on are necessary.

4.3 Social isolation owing to restrictions

Around 98% of the women reported having a postpartum supporter; however, 87.4% felt restricted during their postpartum hospital stay and half of the women (50.5%) felt restricted by childcare. These women felt restricted not in terms of whether they could receive support from their families or others around them but because of the limitation of their activities. Not being able to participate in childcare circles and other events after childbirth and not being able to meet friends were also thought to contribute to feelings of isolation. Tsuno et al. [12] reported that approximately 30% of the mothers who gave birth and raised children during COVID-19 had postpartum depression, which was a substantially higher rate than that before the COVID-19 pandemic (14.4%); there was also an association between social restrictions and loss of support resources and postpartum depression. This indicates a link between a lack of social outings or having less contact with others and psychological depression.

Currently, online childcare circles and information dissemination using social network services are becoming more widespread as a countermeasure against infection, and it is hoped that these systems will improve in terms of convenience and effectiveness in reducing feelings of loneliness. Postnatal care, which has become popular in recent years, is useful for women to receive personal care after childbirth; however, many women are anxious from the time of pregnancy. Eleftheriades et al. [13] reported that the COVID-19-related curtailment of outings increased the amount of time pregnant women spent on television and social media. However, uncertainty and ambiguity about the future of COVID-19 in these information sources caused additional stress for pregnant women. Reliable and correct knowledge provided by the national government, local governments, and hospitals for antenatal checkups is necessary.

The lack of support, such as help with childcare, was also a major problem for postpartum women. Kamo et al. [14] noted that women wanted to ask for help but were reluctant to do so because of concerns about infection. Additionally, mothers could not meet their loved ones. This is similar to the result reported in Hadjigeorgiou's survey [15]. This is an important period when parents and other family members want to interact with the newborn. Postpartum women want to nurture and care for their children by discussing the baby's characteristics with family members and loved ones [16]. Considering what medical personnel can do to prevent social isolation while taking measures against infection, and to consider ways for women to spend time with their significant others, are necessary.

As for the care that the patient requires from the medical staff, many participants mentioned infection control measures and routine care, such as easing the restrictions on visitation and consideration on behalf of the family members and psychological care. This is because when family members cannot be present, they have to rely on medical personnel. In this survey, there were many descriptions of gratitude to the medical personnel who were courteous. Nakamoto [17] noted that for women whose childbirth experiences were positive, even with COVID-19, satisfactory care at the hospital where they gave birth and other factors might have served as the basis for their ability to view childbirth and childcare positively. The care provided by healthcare professionals is a factor that contributes to a positive birth experience.

However, a survey conducted on medical personnel during COVID-19 [3] revealed that the number of medical personnel was insufficient owing to staff absences from work owing to infection, which caused some distress. In the future, increasing the number of medical staff might be necessary because pregnancy support requires friendly care, such as cordial and attentive staff. It is necessary to consider support, including other measures, for a satisfactory delivery that does not make expectant and nursing mothers anxious nor isolated while taking infection control measures, from pregnancy to childcare.

4.4 Study limitations and future directions

This study was conducted as a web-based questionnaire survey to obtain an early overview of the COVID-19 pandemic. This survey was conducted with women living in the Tohoku region of Japan, and the number of respondents was small; thus, the results could not be generalizable to other populations. The survey was conducted over a period of 10 months among mothers with children aged from 3–4 months to 1.5 years after delivery. Depending on the infection status at the time, the survey could have influenced women's perceptions, such as being wary during the COVID-19 pandemic and having a positive view when the pandemic was easing. In the future, it will be necessary to clarify the detailed experiences of the mothers and their nursing needs by combining the results of the interview survey conducted in parallel with a study on mothers raising children.

5. CONCLUSION

Women who gave birth during the COVID-19 pandemic were highly anxious about their own risk of COVID-19 infection and were isolated during pregnancy and postpartum owing to social restrictions, such as limited visitation and refraining from going out. Further, after being discharged from the hospital, women requested support for childcare.

ACKNOWLEDGMENTS

We express our sincere gratitude to the Maternal and Child Health Center, the Maternal and Child Health Section of the City Hall, and the expectant and nursing mothers who responded to this study for their cooperation.

COMPETING INTERESTS

We have no conflicts of interest to disclose related to this study.

AUTHORS' CONTRIBUTIONS

Sato designed this study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Otani and Emori managed the analyses and the literature searches. All authors read and approved the final manuscript.

CONSENT

Participants provided their informed consent as part of the overall process of the online questionnaire survey.

ETHICAL APPROVAL

This study was approved by the Iwate University of Health and Medical Sciences Research Ethics Committee (no. 21-1).

REFERENCES

1. Japan Society of Obstetrics and Gynecology. Response to novel coronavirus infection (COVID-19) (5th edition). 2021. Accessed 24 March 2021. Available: http://www.jsog.or.jp/news/pdf/20200903_COVID-19.pdf.

2. Centers for Disease Control and Prevention. COVID-19. 2021. Accessed 16 March 2021. Available: https://www.cdc.gov/coronavirus/2019-nCoV/index.html.

3. Sato M, Otani Y, Emori Y. Infection control and care for perinatal women in obstetric facilities in Iwate Prefecture during the coronavirus disease pandemic. Jpn Acad Midwif. 2022;36(1):115–28. DOI: 10.3418/jjam.JJAM-2021-0026

4. Ikeda C. Streaming of midwife-created videos as motherhood classes are suspended. Midwives. 2020;74(4):27–9

5. Kobayashi H. Support for pregnant and childbirth women during the COVID-19 pandemic. Midwives. 2020;74(4):10–5

6. Nakayama T, Kojima Y, Katsumura Y, Ieshiro K, Yokote N. The birth of Nagoya City's online daddy and mommy classes for working couples Midwives. 2020;74(4):22–6

7. Okamoto T. Challenging remote birth attendance via online. Midwives. 2020;74(4):16–8.

8. Taguchi M. About our hospital's efforts through online services in response to the state of emergency declaration, josan-shi. Midwives. 2020;74(4):19–21

9. World Health Organization. Coronavirus disease (COVID-19) advice for the public. 2020. Accessed 24 March 2021. Available: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public.

10. Saccone G, Florio A, Aiello F, Venturella R, De Angelis MC, Locci M, et al. Psychological impact of coronavirus disease 2019 in pregnant women. Am J Obstet Gynecol. 2020;223(2):293–5. DOI: 10.1016/j.ajog.2020.05.003

11. Hartz DL, Tracy SK, Pairman S, Yates A, Renard C, Brodie P, et al. Midwives speaking out on COVID-19: The international confederation of midwives global survey. PLoS One. 2022;17(11):e0276459. DOI: 10.1371/journal.pone.0276459

12. Tsuno K, Okawa S, Matsushima M, Nishi D, Arakawa Y, Tabuchi T. The effect of social restrictions, loss of social support, and loss of maternal autonomy on postpartum depression in 1 to 12-months postpartum women during the COVID-19 pandemic. J Affect Disord. 2022;307:206–14.

13. Eleftheriades M, Vousoura E, Eleftheriades A, Pervanidou P, Zervas IM, Chrousos G, et al. Physical Health, Media Use, Stress, and Mental Health in Pregnant Women during the COVID-19 Pandemic. Diagnostics. 2022;12(5):1125. DOI: 10.3390/diagnostics12051125

14. Kamo N, Sugino M, Shoji A, Koga A, Terao Y, Matsuura K, et al. The current status of the impact of the COVID-19 pandemic on pregnancy, childbirth, and child-rearing: preliminary survey through interviews.Yamaguchi Prefectural University Academic Information. 2022;15:73–9

15. Hadjigeorgiou, E., Vogazianos, P., Christofi, MD. et al. Experiences, concerns, and needs of pregnant and postpartum women during the Covid-19 pandemic in Cyprus: a cross-sectional study. BMC Preg Childbirth. 2022; 22:685. https://doi.org/10.1186/s12884-022-05017-y

16. Rubin R. Maternal Identity and the Maternal Experience. New York: Spring Company; 1984.

17. Nakamoto K. The changes and challenges of pregnancy and childbirth during the COVID-19 Pandemic: A longitudinal interview study of women giving birth at a university hospital]. Bulletin of the Faculty of Pharmacy, Osaka Medical and Pharmaceutical University. 2022;1:77–97