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The challenges of prenatal care services during the COVID-19 pandemic: qualitative evidence of primary health care providers' perspective in Iran

Edris Kakemam[1], Faranak Karimiyeganeh[2], Farzaneh Soltani[3*] and Akram Karimi Shahanjarini[4]

Abstract

Background The COVID-19 pandemic affected almost all healthcare services, including prenatal care. Providing care to pregnant women during the pandemic was affected by general policies related to the control of COVID-19 and thus faced many challenges. Exploring the challenges of prenatal care during the pandemic can be helpful for effective planning and interventions to reduce the fundamental challenges. The present study aimed to explore the midwives' perception of care challenges during the COVID-19 pandemic.

Methods This qualitative research was conducted using conventional content analysis in 13 health centers of Hamadan, Iran, between July and September 2023. A semi-structured interview was conducted with 13 midwives who had experience providing prenatal care services to pregnant mothers during the COVID-19 pandemic and were selected using the purposive sampling method. Granheim and Lundman's 5-step content analysis approach was used for data analysis.

Results Three themes describing challenges to prenatal care during the COVID-19 pandemic emerged, including the unfamiliarity and unpreparedness of the health system in facing COVID-19, disruption in the quantity and quality of services, and socio-economic and systemic challenges.

Conclusion PNC providers have experienced various challenges during the current COVID-19 pandemic. The results of the present study can be used to reduce the problems and challenges of providing prenatal care services in future pandemics. Effective interventions such as strong and managed organizational support, maintaining and sustaining the midwifery staffing, empowering PNC providers, supplying personal protective equipment, adopting strategies to improve mental health, and considering special measures and various incentives for midwives are necessary to overcome similar crises in the future.

Keywords COVID-19, Maternity care, Prenatal care

*Correspondence:
Farzaneh Soltani
farzanehsoltani2008@yahoo.com
[1]Non-communicable Diseases Research Center, Research Institute for Prevention of Non-Communicable Diseases, Qazvin University of Medical Sciences, Qazvin, Iran
[2]Student Research Committee, Hamadan University of Medical Sciences, Hamadan, Iran
[3]Mother and Child Care Research Center, Institute of Health Sciences and Technology, Hamadan University of Medical Sciences, Hamadan, Iran
[4]Social Determinants of Health Research Center, Institute of Health Sciences and Technology, Hamadan University of Medical Sciences, Hamadan, Iran

Introduction

In early 2020, the World Health Organization (WHO) declared the outbreak of COVID-19 a public health emergency [1]. In Iran, following the identification of the disease in February 2020, a large number of people were infected throughout the country. With the spread of the infection and the increase in the number of patients, more women contracted the disease during their pregnancy [2]. Pregnant women were one of the most vulnerable groups during the COVID-19 pandemic [3]. For example, pregnant women are physiologically and psychologically more susceptible to infectious diseases. They are at higher risk for maternal complications such as preterm birth, gestational hypertension, gestational diabetes, and miscarriage [4–6]. A study in Brazil showed that 13.19% of maternal deaths in 2020 were related to COVID-19 [7]. Although the majority of maternal deaths associated with COVID-19 have occurred in pregnant women with concomitant diseases [8], previous studies have confirmed that COVID-19 in pregnant women can cause severe outcomes such as miscarriage and increased maternal morbidity and mortality, preeclampsia, and preterm delivery [9].

International concerns and subsequent quarantines have significantly disrupted access to health care services globally, including prenatal care (PNC). PNC is an essential care that should be provided to all pregnant women, and its main goal is to ensure the delivery of a healthy baby without any adverse effects on the health of pregnant women. This is achieved through health promotion, disease prevention, early diagnosis, and management of complications and existing diseases [10]. The WHO considers providing PNC as one of the basic ways to reduce maternal and child mortality. Evidence shows that not using PNC services puts women at risk of maternal death, stillbirth, and other adverse perinatal outcomes [11–14]. On the other hand, PNC is the most cost-effective approach to prevent infant mortality, so it is estimated that if 90% of women receive PNC, 14% of infant deaths can be prevented [15].

Despite the disorderliness of health services during the COVID-19 pandemic, pregnant women were encouraged to participate in PNC due to the extensive benefits of receiving PNC compared to not receiving it. Nevertheless, most health systems were forced to change care processes or adapt to the situation to help prevent the spread of COVID-19. Face-to-face visits have changed to virtual ones, and family members and friends were often excluded from accompanying pregnant women, and supporting mechanisms such as pregnancy and childbirth education and prenatal group care have been changed to virtual ones. In parallel, the changes implemented by health care systems, which could affect the quality of care provided, significantly affected midwives who provided PNC services in health centers [16].

To date, little is known about the challenges that PNC providers faced during the pandemic, and this is especially important in countries with low and average resources [3, 17]. In addition, considering the importance of the role of maternity care providers in maternal health during pregnancy and childbirth as well as the unknown nature of this disease and its possible effects on both pregnancy and childbirth, conducting a study to discover the experiences of PNC providers during the COVID-19 pandemic seems to be essential [15]. Therefore, the current qualitative study was conducted to explore midwives' perceptions as the front line providing PNC services to pregnant women in Iran in the context of care challenges during the coronavirus pandemic. Since PNC challenges during the COVID-19 pandemic in the primary health care (PHC) setting of Iran have not yet been sufficiently explored from the perspective of healthcare providers, the knowledge provided in this study could be used to develop an appropriate and safe PNC program for pregnant women living in urban and rural areas.

Methods

Study design and setting

The present study is a qualitative study based on semi-structured interviews using the content analysis approach. The study was conducted in the health centers of Hamadan, the capital of Hamadan province in the west of Iran. In the structure of the PHC system in Iran, pregnant women's care is integrated into the PHC system, and these services are provided in government centers by midwives working in the system, complying with the leveling of services and the referral system [18].

Participants

The participants were midwives in urban and rural health centers responsible for providing PNC services to pregnant women during the COVID-19 pandemic. The inclusion criteria included providing PNC services during the COVID-19 pandemic and willingness to participate in the study. We continued recruitment until saturation was reached [19]. After 11 interviews, we reached saturation on the level of categories and subcategories; however, we conducted two additional interviews for confirmation. Therefore, the final sample included 13 midwives. A purposive sampling method was used to select the participants in the study, coordinating with the midwives working in the centers.

Data collection

Data were collected from early July to late September 2023 through individual semi-structured interviews using an interview guide that was developed based on

the literature review on PNC challenges in the COVID-19 pandemic situation (Supplementary 1). A purposive sampling method was used to recruit participants. After making the necessary arrangements, the first interview began with a midwife working in a busy health center. Then, based on the snowball sampling method, she was asked to answer the simple question: "Can you recommend a midwife from another center that we could interview about this topic?" We continued recruiting until we reached data saturation. The same process was followed for rural health centers. Finally, midwives from 7 urban centers and 6 rural centers were interviewed. The interview guide was reviewed and approved by a panel of experts consisting of two midwives and two lecturers from the maternity department for their relevance to the study's purpose. The interview guide was also approved and pilot-tested on three midwives who were not involved as study participants. Participants were assured that the interviews would be anonymous, that their information would remain confidential, that they could discontinue the interview whenever they wished, and that the interview file would be deleted. The interviews were conducted in a quiet room in the centers that was agreed upon by the interviewer and the interviewee. The duration of the interview depended on the desires of the participants and the entire presentation of their opinions during the interview. If they agreed, the interviewees' voices were recorded with a digital audio recorder; the text was written down entirely if they did not allow it. The participants' speech patterns and facial expressions were also recorded during the interview. The interviews were conducted individually by the study's first author, observing all the points that provide psychological security and privacy for free expression of the thoughts and feelings of the participants. Probing questions were also used to gather more detailed understandings and receive new perspectives from individuals.

Data analysis

Data collection and analysis were performed simultaneously. Granheim and Lundman's 5-step content analysis approach [20] was used to analyze the data. This approach includes writing down the entire interview immediately after conducting each interview, reading the entire text for a general understanding of its content, determining meaning units and primary codes, classifying similar primary codes into more comprehensive classes, and determining the hidden content in the data. Two researchers analyzed the data independently. After writing down the text of the interviews, it was entered into the MAXQDA 2007 software for storage, retrieval, and analysis. Then, to fully understand the data, the text of the interviews was read several times, and the primary codes were extracted. In the coding process, there was both explicit and hidden content. Then, regarding the coded data, conclusions were made, and classes were produced. Finally, the main themes were extracted based on the concept and hidden content in the data. An example of the steps in the analysis process is shown in Table 1.

Trustworthiness of the data

Four criteria provided by Goba and Lincoln, including validity, confirmability, reliability, and transferability, were used to check the accuracy of the data [21]. The leading researcher who conducted the interviews had a proper interaction with the participants as midwifery personnel, which helped to gain the trust and familiarity of the participants. This study included healthcare providers varying in age, education level, work status, and work experience to help identify different perspectives and concepts and increase credibility. During the implementation of the study, a qualitative research specialist supervised the data collection and processing, and two qualitative researchers analyzed the data independently. The researchers tried to avoid subjective biases by recording all interviews, taking detailed field notes, and avoiding interference with the results of data analysis, which led to better validation of the study. In addition, to confirm whether the participants' experiences were accurately reflected, the analysis results were shared with the interviewees.

Results

A total of 13 midwives agreed to participate in the study. The characteristics of the participants are shown in Table 2.

Three main themes and eight categories emerged from the findings of in-depth interviews and field notes obtained from observations in primary health centers. The three main themes included: (1) the challenges of unfamiliarity and unpreparedness of the health system in

Table 1 An example of the steps in the data analysis process

An example of Quotes	Primary Code	Main Code
The coronavirus was unknown and our first encounter with a contagious pandemic. The ways to deal with it were completely unknown, and it was very unbelievable to me that the world was involved in a common disease that had a high mortality rate and no specific treatment.	• Being unknown • First encounter with a pandemic • Unknown ways of coping • Uncertain treatment	Unknown nature of the disease

Table 2 Characteristics of the participants

P	Age (year)	Marital status	Work experience(year)	Workplace
1	38	Married	13	Urban
2	36	Married	12	Urban
3	35	Married	10	Rural
4	26	Single	6	Rural
5	38	Married	18	Rural
6	40	Married	17	Urban
7	36	Married	12	Urban
8	37	Married	9	Rural
9	38	Married	17	Urban
10	38	Married	16	Urban
11	42	Married	19	Urban
12	41	Married	12	Rural
13	40	Married	15	Rural

facing the pandemic, (2) the challenges of disruption in the quantity and quality of services to mothers, and (3) socio-economic and systemic challenges (Table 3).

Unfamiliarity and unpreparedness of the health system in facing the pandemic

From the participant's perspective, the unknown nature of the disease, along with the structural problems of the healthcare system, brought the important challenge of unpreparedness of the health system in facing the COVID-19 pandemic:

The first experience of a pandemic Most interviewees mentioned their first encounter with the pandemic during their conversations. COVID-19 and its treatment methods were unknown to them.

> *" The disease was unknown, and our initial information about this disease was not enough."(P.5, Rural PHC cener).*
> *"The ways to deal with the disease were unknown. A new vaccine had been developed, and the side effects of the vaccine were unknown, and we were at a crossroads."(P.1, Urban PHC cener).*
> *"There was no specific treatment. At the beginning, there was no vaccine. Mothers were more afraid because they knew they had a weak immune system." (P.4, Rural PHC Center).*

The fear of the unknown subjects in pregnant mothers also brought the fear of death, the fear of infecting the fetus and causing abnormalities:

> *"When the mothers were infected with corona, they were stressed about death, and when they got better, they were afraid of the abnormality of the fetus." (P.9, Urban PHC center).*
> *"Mothers ask a lot whether the vaccine has a bad effect on their fetus or not, so we did not have an answer to say because the information about the vaccine was not fully known."(P.2, Urban PHC center).*

The structural problems of the health care system Many midwives noted the infrastructure and problems of the health system as a challenge in providing appropriate services to pregnant mothers. They mentioned physical and work environment problems, human resource problems, equipment problems, and sufficient facilities to provide services and problems related to clinical guidelines.

According to the providers of pregnancy services, the corona disease led to a multiple increase in the number of referrals to the centers, which the existing physical environment was not enough to respond to this increase in referrals:

> *" There was a crowd at the health centers, and this itself caused an increase in the transmission of the virus. Suspicious or symptomatic mothers were in the same place as asymptomatic mothers."(P.6, Urban PHC center).*
> *"We did not have separate places for pregnant women to receive services in a shorter time."(P.2, Urban PHC center).*

Participants emphasized that the health centers were facing human resources problems to provide services to patients:

> *"Sufficient human resources were unavailable, gynecologists and internists were unavailable, psychologist counseling was scarce in crisis."(P.8, Rural PHC center).*

Table 3 Themes with categories and subcategories emerged from data analysis

Code	Subcategory	Category	Theme
• Unknown nature of the disease • Unknown ways of coping • Mothers' fear and anxiety of contracting COVID-19 • The concern of affected mothers about the effect of Corona on the fetus	-Unknown disease -First encounter with pandemic -Mothers' fear of contracting the disease and fetal complications	The first experience of a pandemic	**The challenges of unfamiliarity and unpreparedness of the health system in facing the pandemic**
• Inadequate infrastructure • Failure to provide protective equipment • Lack of vehicles for home visits • Lack of full protective coverage • Lack of timely new Instructions	-Physical and work environmental problems -Human resources problems -Equipment and facilities problems -Instructions and clinical guidelines problems	The structural problems of the health care system	
• Mothers not seeking care early in pregnancy • Non-face-to-face prenatal care • Problems finding home addresses of women • Families preventing caregivers from entering homes	-Reducing the number of cares -Non-attendance care -Non-referral of mothers -Home visit and follow up problems	Disruption in the provision of routine prenatal care	**The challenge of disruption in the quantity and quality of services**
• The negative impact of midwifery multitasking on the quality of maternal care • Declining quality of home care for high-risk mothers • Imposing other duties on midwives, such as vaccinations	-Not having enough time to care -Doing things outside the job description -Reducing the quality of care for high- risk mothers	Reduced quality of maternal care services	
• Unsuccessful treatment of infected pregnant mothers • Persistence of coronavirus complications until delivery	-Maternal deaths -Complications of mothers contracting corona virus	Increased mortality and morbidity of mothers	
• Mothers not answering follow-up calls • Mothers hiding positive COVID test results • Mothers' resistance to wearing masks	-Lack of proper cooperation of families -People's distrust of the health staff -Lack of training effect on mothers	Cultural problems	**Socio-economic and systemic challenge**
• Families not having the money to purchase protective equipment • Creating fear and anxiety for mothers in cyberspace	-Poor economic status of families -The negative effect of cyberspace	Socio-economic problems	
• Too much work pressure • Disruption of caregivers' families • Lack of fairness in paying caregivers • Blaming staff for coronavirus outbreaks • Appreciation of medical staff compared to healthcare staff	-Increasing work load not related to mothers -Lack of manpower -Long work shifts -Failure of officials to pay attention to the financial problems of personnel -Ignoring the health staff compared to the treatment staff	Career and professional problems	

"I even stayed for two days for the specialist to come and look at the medicines, and the symptoms were severe. There was no specialist to look at the medicines."(P.10, Urban PHC center).

The majority of interviewees mentioned the lack of equipment and facilities needed to provide services to pregnant women:

"The initial challenge was the vehicle for home visits. We did not have enough protective equipment. We did not have masks in the beginning, and there was little protective equipment."(P.7, Urban PHC center).
"Once, we went to a house to take a Corona sample, and I did not have a new mask, and I used a mask that I used a day before, which smelled so bad that I felt nauseous."(P.12, Rural PHC center).
"The lack of equipment, the lack of laboratory kits and…, the test results were given with a long interval. If someone wanted to do a CT scan, it would take a whole day."(P.5, Rural PHC center).
Some participants stated that the clinical guidelines sent by the Ministry of Health (MoH) had created challenges:
"The lack of integrity of the MoH's instructions made colleagues call people several times and caused people to be confused. There was no coordination between the MoH groups."(P.8, Rural PHC center).

Another participant mentioned the ambiguity in the instructions:

"Instructions were sent through automation, and sometimes they were ambiguous, and a phone call should be made for further explanation."(P.9, Urban PHC center).

The challenge of disruption in the quantity and quality of services

From the participant's perspective, the most important challenges during the COVID-19 pandemic was disruption in the quantity and quality of services to mothers:

Disruption in the provision of routine PNC From the participants' perspective, disruptions in providing routine care during pregnancy were caused by various reasons such as reducing the number of cares, non-attendance care, non-visiting of mothers to health centers, and problems related to home visits and follow-ups.

"The stress had an unconscious effect on care, and we had a reduction in the number of care visits."(P.8, Rural PHC center).

"Pregnancy care was not face-to-face, and we only took care of special cases in person, and by issuing the instruction, we also did it in person and by phone calls."(P.8, Rural PHC center).
One of the midwives said: "Some mothers resisted and did not come, and in the end, she received 2 to 3 cares with counseling and follow-up."(P.2, Urban PHC center).

Several participants also mentioned the problems of home visits:

"I had many problems with home visits. We had to carry all the equipment such as blood pressure gauges, scales, and sonic aid and visit homes."(P.5, Rural PHC center).

Reducing the quality of maternity care services Participants believed that the quality of maternity care services had declined during Covid-19. They mentioned several problems. For example, several midwives mentioned that midwives had little time to care for pregnant women.

"Mothers did not receive high-quality care; we were only engaged in telephone follow-up."(P.3, Rural PHC center).
"More time should be spent on care. More issues should be checked during care visits, and all care items should be considered. Unfortunately, the health system only emphasized the quantity of services."(P.6, Urban PHC center).

On the other hand, in addition to performing the main duties, midwives had to do several tasks out of their job description, which affected the quality of services provided to mothers:

"During the pandemic, we were forced to do much work that was not in our job description, such as sampling, vaccination on holidays, and high workload to complete the vaccination in-home visits."(P.6, Urban PHC center).

Decreasing the quality of care for high-risk mothers During the coronavirus pandemic, the necessary services for high-risk mothers were disrupted.

"Pregnant women with high blood pressure who had to check their blood pressure every other day, and there were also cases that should refer, they did not come due to the fear of corona patients."(P.8, Rural PHC center).

Increased mortality and morbidity of mothers The midwives noted that the non-referral of mothers led to

mortality and morbidity of some mothers and complications due to contracting the disease.

"Decreasing the number of specialist visits, reducing the number of cares, reducing the number of ultrasounds and laboratory tests, caused an increase in prenatal mortality."(P.7, Urban PHC center).
"I have had several cases of pregnant women who developed diabetes and high hypertension after the Corona pandemic, and their illness continued after pregnancy."(P.11, Rural PHC center).

Socio-economic and systemic challenge

This theme was formed from the abstraction of the concepts of the three main categories named as "Cultural problems", " Socio-economic problems", and "Career and professional problems" as well as its 10 sub-categories.

Cultural problems Problems such as the lack of cooperation of families, distrust of the people in the health staff, and the low impact of training on mothers were among the cultural obstacles to providing appropriate PNC during the coronavirus pandemic, which some participants mentioned.

"When we went to the patient's house with equipment such as masks and special clothes, the patient and his family did not want the neighbors to know about their illness, and getting the coronavirus was considered bad even though it was a global issue." (P.7, Urban PHC center).
"It was very difficult to convince the mothers; some were careless, and some were very strict. In one of the villages, people did not believe and did not wear masks." (P.8, Rural PHC center).

Also, from midwives' perspective, people's distrust of health workers created many problems and challenges in providing care to patients:

"It was a difficult situation. We had to get the mother's trust. We had to call several times to be able to talk to a high-risk mother." (P.8, Rural PHC center).

Another problem was the lack of health education's impact on some people. So, despite the training provided, people did not follow the instructions:

"Training was given, but people did not follow them. Unfortunately, our training affected a small group of people." (P.4, Rural PHC center).

Socioeconomic problems Midwives considered issues such as the poor economic status of households in socio-economic problems. For example, one of the midwives said: *"Many families did not want our phone calls frequently for follow-up and mostly wanted financial assistance." (P.2*, Urban PHC center).

"The costs of dealing with the disease were not available for the people, such as the cost of preparing masks, etc." (P.13, Rural PHC center).

The negative impact of cyberspace on the providing services was another point that some participants noted:

"The cyberspace made people more interested in traditional medicine, and of course, it failed most of the time." (P.2, Urban PHC center).
"People did not want to be vaccinated; there were a lot of advertisements in cyberspace." (P.12, Rural PHC center).

Career and professional problems Participants discussed the increase in workload not related to mothers, lack of workforce, long work shifts, lack of attention of the officials to the financial problems of the personnel, and ignoring the health personnel compared to the treatment staff.

Most participants mentioned that their workload increased during the Covid-19 outbreak:

"I did all the services for the elderly, middle-aged, and children because I am a midwife-health care provider, and in fact, I am multi-professional, but I specialized in taking care of mothers." (P.9, Urban PHC center).
"The high workload and multi-professional nature caused me to have less time for mothers and not to use the information that we acquired during my studies." (P.3, Rural PHC center).

In addition, the primary healthcare system was facing a shortage of human resources:

"We were facing a shortage of human resources, and we were doing less of the tasks that were not a priority." (P.7, Urban PHC center).

Some of the midwives mentioned the long work shifts:

"Working time was too much; the corona evening shift was given to midwives and doctors." (P.12, Rural PHC center).
"We were at work on holidays and under pressure." (P.6, Urban PHC center).

Some of the midwives noted that their pay and salaries were too low:

"One of our problems was that we did not receive a good salary. I was a company contract staff, and we got no rewards." (P.13, Rural PHC center).
"Why should I have Corona shift for eight days and not be given my rights and salaries?" (P.8, Rural PHC center).

In addition, the midwives complained about ignoring health staff compared to the treatment staff. Although the healthcare providers in the centers had a vital role in education, control, and prevention of the disease, officials paid less attention to this group compared to the hospital treatment staff:

"A health care provider did the disease identification and followed up, but treatment staff were constantly praised and thanked, which affected our work motivation." (P.2, Urban PHC center).
"The health staff did the screening and care, and the treatment staff were appreciated and thanked." (P.11, Urban PHC cener).

Discussion

Midwives worldwide have an undeniable role in providing care services to pregnant women and ensuring their health. However, the outbreak of the 2019 pandemic faced them with problems and challenges in providing this essential care during pregnancy. Exploring the challenges of providing services during the COVID-19 pandemic can provide insight into the difficulties of midwives' providing care in crises as first-line caregivers in the PHC system. The participants in the current study pointed to the challenges of unfamiliarity and unpreparedness of the health system in facing the pandemic, challenges of care and providing services to mothers, and environmental and systemic challenges.

The participants initially mentioned the unknown nature of the disease, the ways to deal with it, and the fear and worry of contracting COVID-19. In a qualitative study conducted by Soltani et al., the participants emphasized the unknown nature of the disease, which led to pregnant women's distrust of care providers [2]. Also, the results of a review study showed that infectious pandemics are associated with anxiety about the unknown nature of the disease, living with uncertainty, anxiety about prevention and treatment methods, and especially anxiety about the transmission of the disease to the fetus [22]. In a study in India, one-third of pregnant women reported fear, and more than three-quarters of them refused sonographic and laboratory evaluations [23]. Anggraeni and colleagues, in their qualitative study in Indonesia, found that pregnant women missed PNC visits during the pandemic, and they were afraid of giving birth in health centers due to the fear of contracting COVID-19 [3]. In addition, the results of another study showed that pregnant women delayed care and experienced more stress and fear during their pregnancy due to a lack of knowledge about the pandemic [23]. An Irish study shows that women in the second and third trimesters of pregnancy were worried about the infection of their dependent children and their unborn babies [24]. Other studies have identified similar delays in health-seeking behavior. According to a study in Britain, 11% of women skipped prenatal check-ups during the pandemic, often due to fear of contracting COVID-19 [25]. These findings indicate the unique needs of pregnant women for appropriate psychological support and counseling by health service providers.

In addition, the findings of this study showed that from the care providers' perspective, challenges related to the state of the PHC system, such as lack of physical space, lack of workforce, lack of equipment and facilities, as well as health guidelines affect the provision of PNC services negatively. In line with these findings, previous studies in Iran have shown that Iran's PHC system faces many challenges in management and structure, such as a lack of human resources, financial and capital resources, equipment and physical space, and a lack of trained staff [26]. The participants in the current study mentioned the lack of vehicles for home visits or insufficient protective cover. It is necessary to provide appropriate models of PNC for pregnant women depending on the conditions and facilities available during pandemics in order to avoid complications. For example, the home care model can be considered when the equipment and enough midwives and health care workers are available. In a qualitative study in Australia, unclear changes in clinical guidelines were identified as barriers to care and distrust for physicians and families under their care [27]. A study in Nigeria reported weaknesses in the health system, such as lack of human resources and poor communication infrastructure, as barriers to access to PNC [28]. A review study on the challenges of providing maternal and child health services in low- and middle-income countries showed that the care provider centers needed more basic facilities, medicine, and other equipment and human resources during COVID-19 [29]. Healthcare providers have found that acute shortages of healthcare workers in hospitals have led to high workloads and resulted in frustration among staff. In addition, because healthcare professionals are also at high risk of COVID-19 infection, fewer professionals may have been available to care for pregnant women [30].

Our findings showed that the most critical challenge perceived by PNC providers during COVID-19 was the challenge of providing care and services to mothers. During COVID-19, routine care was disrupted, and the quality of PNC decreased, leading to an increase in

mortality and complications during pregnancy. Other studies have shown that maternal non-attendance leads to poor obstetric outcomes, including undetected intrauterine growth restriction, higher rates of preterm birth, and perinatal mortality [9, 31]. PNC providers had to do work related to COVID-19, such as sampling or vaccination, in addition to the routine care of mothers. In line with our findings, the results of other studies showed that continuous care for many pregnant women has been disrupted due to the spread of COVID-19 [32]. Mohammadi et al. evaluated the quality of PNC for women with high-risk pregnancies as average during the COVID-19 pandemic in Iran [33]. Other studies have also confirmed the negative impact of the outbreak of corona disease on the quality of pregnancy care services. For example, an online social network study with participants from different countries showed that the disruptions in midwifery services, such as postponing, canceling, and changes in birth plans, limited access to partners during labor, and inadequate support for breastfeeding had been associated with reduced quality of pregnancy and postpartum period care [34]. In addition, a study in the United States showed that changes in PNC had different effects on women's perception of the quality of care, so some felt that their care was compromised [35]. In line with the results of the present study, Leung et al. (2022) showed that the pandemic diverted the focus from midwifery care in Nigeria, and maternity care providers took on other roles, such as administering the COVID-19 vaccine [28]. At the same time, environmental and systemic challenges such as cultural, socioeconomic, occupational, and professional problems were also expressed from the point of view of PNC providers in the present study. Pregnant women from lower socioeconomic groups with pre-existing pregnancy complications are more likely to experience barriers to receiving PNC [23]. A study in Nigeria showed that physical, financial, health and social factors limited the access and acceptance of maternity care [36]. During the pandemic, people's daily needs became scarce, and medical appointments cost much more than usual. Many families lost their jobs and suffered a heavy economic burden. People who could not afford or pay for adequate medical supplies were the most vulnerable [37]. Online PNC can provide cheaper medical services and reduce healthcare disparities due to convenience and affordability, especially in developing countries or regions. However, evidence has shown that the global Internet usage rate is 51%, and less than a third of the African and Middle Eastern population use the Internet [32]. Thus, in addition to improving online PNC, the availability of the Internet and mobile electronic devices is crucial so that more pregnant women can access online education and care.

Inappropriate interactions with relevant officials and managerial dissatisfaction were of particular importance in the statements of the participants in the present study. According to them, blaming the health workers for the frequent outbreaks of the disease and not appreciating the services of the health workers compared to treatment staff caused their frustration and reduced their work motivation. A study in Nigeria showed midwives faced challenges during COVID-19, such as heavy workloads, quick adaptation methods, insufficient resources, and lack of financial support from managers [28]. Similar results in the field of occupational and professional challenges have been reported in a systematic review study by Mehrolhossani et al. in Iran. They showed that most of these challenges and weaknesses are related to the structure and process of PHC [32]. In addition, a study conducted by Tabrizi et al. showed that PHC has weaknesses, such as a lack of motivation and unequal payment for service providers working at similar and different levels in Iran [38]. There is a growing literature on how the health and well-being of front-line workers were devalued during the pandemic, resulting in increased burnout [39–41]. Most of the nurses participating in Altman, et al.'s study, stated that their feelings of insecurity and lack of support directly impacted patient care. Also, the lack of transparency in managers' policies that our participants mentioned was also noted by the nurses. They stated that knowing why policies change and how to reduce the potential effects of those changes requires transparency. They noted how simple reassurance and communication of managers with health providers can have far-reaching effects on their ability to cope with changes caused by the pandemic [42]. The levels of stress and anxiety in response to pandemics are high in both service recipients and health service providers, and clear and organized communication is required at all levels of people, employees, and managers.

Strengths and limitations

As far as we know, this is the first study in Iran that addressed the challenges of providing PNC during the COVID-19 pandemic from the providers' perspective of these services. A strength of this study is that the interviews were conducted by the seconde author who had experience working in the PHC and providing midwifery care, which led to reassurance and created a comfortable environment for the participants. However, the study has several limitations that should be considered when interpreting and applying the findings. Data collection was done to some extent when the coronavirus subsided in Iran, which may have impacted the participants' experiences, views, and feelings. Like other qualitative studies, the present study's findings cannot be generalized, and other midwives in other work environments may present

different views. However, the widespread and profound effects of COVID-19 on the whole world have probably made countries with similar socioeconomic contexts face similar challenges. Finally, this study did not include the perspectives and opinions of pregnant mothers as main recipients of PNC.

Suggestions for future research

Future studies need to identify strategies and solutions to address the barriers and challenges faced by PNC providers during pandemics. In addition, PNC challenges from the perspective of pregnant mothers and other providers such as physicians contribute to a deeper understanding of the challenges.

Conclusion

Our findings showed that PNC providers during the COVID-19 pandemic have faced various unknown challenges and unpreparedness of the health system in facing the pandemic, care challenges and providing services to mothers, and even environmental and systemic challenges. The results of this study can help design effective interventions to overcome and solve the above challenges in similar pandemics. Effective interventions, such as infrastructure preparations of centers providing prenatal care services, empowering PNC providers, supplying protective equipment, strong and managed organizational support, as well as adopting strategies to improve midwives' mental health, are necessary to overcome similar crises in the future.

Abbreviations

WHO	World health organization
PNC	Prenatal care
PHC	Primary helth care
MoH	Ministry of health

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12875-025-02884-0.

Supplementary Material 1

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Author contributions

FS and FKY conducted the literature research for the background of the study, planned the study, collected data for the study, analyzed and interpreted data, and wrote the majority of the article. EK was involved in study planning, data processing, and revising the article. AKS was involved in study planning, revising the article, and oversaw the study. All authors read and approved the final manuscript.

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Data availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

This study was approved by the Ethics Committee of Hamadan University of Medical Sciences with the code of IR.UMSHA.REC.1401.334. Before the interviews, the participants read an information sheet gave informed written consent and signed the associated consent form. This included information about their participation, their privacy and data, and the use of their anonymized information in the study. All data were collected and analyzed in accordance with the Declaration of Helsinki. All methods were performed in accordance with the relevant guidelines and regulations.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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