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Content analysis of barriers to delivering maternity care to women with physical disabilities: A qualitative study

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Abstract

Background Women with physical disabilities face many barriers in accessing safe, respectful and acceptable health care. This study was designed and conducted with the aim of identifying the barriers of delivering maternity care to women with physical disabilities.

Methods This study was conducted with a qualitative research method of guided content analysis, and it explained the barriers to prenatal care in women with physical disabilities in Kermanshah province. In this study, a targeted sampling method with maximum diversity was used, and in order to collect data, face-to-face semi-structured interviews were used with open questions and, if necessary, follow-up and probing questions. A total of 24 people (12 pregnant women with physical disabilities and 12 antenatal care providers) participated in this study, and the data collection period lasted 10 to 12 months. In this study, the comparative analysis method was used, and Guba and Lincoln criteria were used for the accuracy and strength of the data.

Results Barriers to providing care for pregnant women with disabilities in two themes, barriers related to stakeholders, including classes of society-related barriers, barriers related to healthcare providers, family-related barriers, barriers related to companions and barriers related to women with physical disabilities, and barriers related to support organizations, including classes: the lack of a systematic support system, the lack of a systematic care program and poor accessibility were categorized.

Conclusions The findings of the present study showed that there are many obstacles in the field of providing care to women with disabilities, and knowing these factors will make the program managers and policy makers in the field of health and rehabilitation, with a closer look at the existing capacities of the country, to provide these cares to women with physical disabilities and their families should take more effective steps and adopt and implement the necessary mechanism in the field of policy making and planning in order to reach a better situation.

Keywords Women, Perinatal care, Pregnancy, Health services accessibility

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Introduction

Pregnancy is a part of feminine identity that substantially affects a woman's life and personality [1]. Pregnancy is a dynamic, complex, and irreversible process in which the mother experiences profound changes to harmonize with phenomena such as fetal implantation, nutrition, and growth [2]. Maternity care, which is now considered one of the important preventive medicine indicators, refers to a systematic process, including clinical examinations, consultation on the essential issues of pregnancy, providing reassurance, training, and support to the pregnant mother and her family, resolving minor ailments befalling during pregnancy, and implementing a continuous clinical and paraclinical screening program to discern low- and high-risk pregnancies [3]. One of the main causes of mortalities in pregnant mothers and their babies is insufficient maternity care. The Center for Disease Control of the US has declared a 6.5-fold higher rate of maternal mortality in mothers deprived of maternity care than in those receiving adequate pregnancy care [3]. For this reason, global endeavors have been recently directed to ensure the delivery of high-quality antenatal care as a part of women's rights [4].

The provision of antenatal care may be more complicated in women with special health conditions, who may have impediments in access to such care. Among such individuals are women with physical disabilities, who may largely become deprived of access to healthcare services due to disability-related restrictions. According to a report by the World Health Organization (WHO), around one billion people in the world are somewhat dealing with disabilities, 80% of whom reside in middle- and low-income countries. Since birth or after the development of a disability, affected people have to struggle with various conundrums and structural barriers in all dimensions of their lives, including social, economic, environmental, and cultural aspects. One of the important aspects of the lives of people with disabilities originates around the sexual dimension [5]. In Iran, people with disabilities generally belong to the poorest and most isolated social strata due to reasons such as low income, lack of opportunity for employment and acquiring occupational skills, deprivation from equal educational opportunities, and allocating low budget to implement the comprehensive law on disability rights [6]. According to available statistics, 10% of women with disabilities are of reproductive age, but these women are often considered to be sexually inactive and have fewer chances of conceiving a child. This misconception has restricted the access of these women to sexual and reproductive health care services [6].

So far, there has been no report on the pregnancy rate among women with physical disabilities, but unofficial reports indicate that this rate is not low. In line with an increase in social participation, advances in medical sciences, and recognition of the reproductive rights of people with disabilities, women with disabilities have been bestowed with better opportunities to conceive children [7, 8]. Despite the global increase in the number of women with disabilities experiencing pregnancy, studies focusing on the pregnancy issues related to these people are infrequent [9, 10]. Various factors can affect the access of women with disabilities to antenatal care, and although these women comprise a significant part of the population, their reproductive health needs generally remain unrecognized and unfulfilled [11]. In their study on women with disabilities in Nepal, Acharya et al. found that the prevailing presumption in this country was that women with disabilities could fulfill the expectations pertaining to their sexuality, such as wedlock and childbearing [5, 12]. Also, Nguyen et al. reviewed the challenges faced by women with disabilities in accessing reproductive healthcare. In the recent review, the literature search was conducted in 10 databases, and 40 qualitative studies were analyzed, resulting in the identification of nine main barriers: invalid health information, the lack of independence, inadequate education on fertility, healthcare provider-related barriers, systemic barriers to healthcare access, socio-economic obstacles, transportation hurdles, family-related barriers, and contraceptive technological barriers [13].

Amanda Blair et al. conducted a study to investigate he most recent evidence regarding access to, and experiences of, maternity care for women with physical disabilities in high-income countries. The results of this study showed that maternity services are not meeting the needs of women with physical disabilities. These women face numerous barriers in accessing high quality, respectful care. Accommodating organisational policies enhance women's care experiences and co-designing service improvements with women will be crucial for their success [14]. Martina König-Bachmann and colleagues also conducted a qualitative research in Austria entitled Health professionals' views on maternity care for women with physical disabilities. The results of this research showed that the awareness of one's own attitudes towards diversity, in the perinatal context in particular, influences professional security and sovereignty as well as the quality of care of women with disabilities. There is a need for optimization in the support and care of women with physical disabilities during pregnancy, childbirth and puerperium [15].

So far, limited studies have been conducted on the challenges of providing prenatal care to women with physical disabilities in different countries. But in Iran, no study has been done in this field. Meanwhile, the prevalence of disability in Iran is estimated at 14.4 per 1000 people, and this rate in Iranian women is about 10.04 per

1000 people, which indicates a slightly higher rate than the global average [11]. On the other hand, due to the cultural atmosphere prevailing in Iran and the fact that people with disabilities often lack any income, jobs, job opportunities, job skills, and proper education, and due to the lack of a part of the budget necessary for the implementation of the comprehensive law on the rights of the disabled, this People generally belong to the poorest and most isolated social groups [16, 17].

The Kermanshah province of Iran, which is located in the west of the country, hosts 2.5% of the country's population, claiming the rank of 13th amongst the most populated provinces of Iran. Compared to other provinces of Iran, Kermanshah province is considered a relatively underprivileged region in terms of cultural facilities [18] and the welfare development index. According to statistics, this province hosts around 14,000 women with physical disabilities [19]. We believe that Kermanshah is a special and unique province due to its social and cultural conditions, and it is very valuable to understand the concepts, thoughts, and experiences of women with physical disabilities who had experience using pregnancy services in this city through qualitative content analysis. Therefore, in the present study, we explored the viewpoints of this field's health providers and women with physical disabilities residing in Kermanshah province to investigate the barriers to providing antenatal care to these individuals.

Methods

Study design

The main purpose of this research was to investigate the experiences of women with disabilities in receiving health services during pregnancy. For this purpose, is qualitative research of the type of guided content analysis was used in which it explains the barriers to prenatal care in women with physical disabilities in Kermanshah province.

Participants

24 participants including 12 women with physical disabilities and 12 prenatal care providers were present in this research. Sampling was done purposefully and semi-structured interviews continued until data saturation. This means that when we did not find new data and encountered duplicate data, we stopped the process of data collection and conducting interviews. In fact after interviewing 20 participants and analyzing the data simultaneously, the researchers concluded that the data have reached saturation. However, in order to ensure the saturation of the obtained classes, four supplementary interviews were also conducted. The inclusion criteria for women with physical disabilities were being between the ages of 18 and 54, suffering from a type of physical disability diagnosed by a specialist doctor, and having at least one pregnancy experience in the last 5 years, and for providers cares included having at least 5 years of experience in the field of caring for pregnant women who have physical disabilities, including obstetricians, doctors, midwives, and nurses. The exclusion criteria were failure to attend the interview session and loss of desire to continue cooperating in the research.

Data collection and analysis

Data were collected using semi-structured interviews with an open question at the beginning and continued with follow-up and searching questions that were selected based on the answers of the participants. The research setting was chosen by agreement between the parties (researcher and participant) and taking into account the suitable time and place conditions for them. In this way, the place chosen for care providers, care centers and bases, and for women with physical disabilities, was in their homes. Each interview lasted between 20 and 60 min. According to the previous agreement and obtaining permission from the participants, all the interviews were recorded by a digital audio recorder, then written word by word and turned into a text. The interview questions were tried to be open-ended and non-judgmental.

The first question asked of women with physical disabilities was: Tell us about your experience of receiving reproductive care, and the first question asked of care providers was: Tell us about your experience about providing reproductive care for women with physical disabilities. In the following, questions such as, if possible, explain more or give us an example in this case, were used for a more complete understanding of the issue and deepening the information.

Data sampling and analysis lasted for 10 months (November 2022 to August 2023). The researcher carefully read each recorded interview and the notes related to it immediately and up to 5 h after the interview and wrote down the concepts that came to mind. The approach of Graneheim and Lundman [20] was used to analyze and coding the data. Coding is the process of labeling and organizing of qualitative data to identify different themes and the relationships between them. In this way, after reviewing the written interviews line by line, the key points were determined and coded to determine the initial codes. Similar codes were then given a common heading, then similar and common headings were combined and subclasses were formed to organize them and then main classes were created. The coding and classifications done by the researcher's colleagues were reviewed and after adapting to the theoretical and research background of the research and applying the necessary changes, the final coding and classification was done. The process of going back and forth between the

Table 1 Summary of data collection and analysis process

The informed consent form was read and signed by the participants.
All the interviews were recorded by a digital audio recorder and then written verbatim and converted into text.
Data were collected using a semi-structured interview with an open-ended question at the beginning and continued with follow-up and probing questions.
The process of data collection and analysis was done simultaneously.
After reviewing the written interviews line by line, initial codes were determined.
Similar codes were given a common heading, then similar and common headings were combined and subclasses were formed to organize them.
The main classes were created.

data and their analysis was done simultaneously with the collection of information and continued until theoretical saturation. In the end, in order to verify the validity of the obtained information, the extracted codes and themes were returned to the participants for review to confirm the correctness and appropriateness of the codes with their opinions. The data collection and analysis process is briefly presented in Table 1.

Strength of data

In order to validate the research data, the criteria provided by Guba and Lincoln (1985) were used [15]. Thus, during the research, a long-term engagement with the participants, a long-term presence in the research field (10–12 months) and the use of effective data collection methods were carried out. An effort was made to give clear and precise explanations of the research processes, especially the studied population, so that it would be possible to use this research for future related research. In the selection of the samples, the maximum variety between them was considered and the selected sample should have the maximum difference in age, education, occupation, number of pregnancies. To evaluate the reliability of the data [21], after a few days, the text of the interviews was read and coded again by the research team, and the results were compared with the previous coding. Also, parts of the recorded interviews and the text of the interviews along with the extracted codes, subcategories and categories were evaluated by the researcher's colleagues and two observers outside the research team who are familiar with the qualitative research method and by confirming the coding and The classifications performed, the reliability of the data was accepted. In order to ensure verifiability [21], it was tried to avoid prejudice throughout the research, to avoid some unexpected cases from the obtained data, and to observe honesty in all stages of the research. For this purpose, an effort was made to code and analyze the data based only on the quotes of the participants and not on the thoughts of the researcher.

Table 2 Description of demographic characteristics of prenatal care providers

Number	Gender	Years of Employment	Education	Job
1	Female	5	Ph.D.	Gynecologist
2	Female	10	Ph.D.	Gynecologist
3	Female	12	Bachelor	Midwife
4	Female	6	Diploma	Health worker
5	Male	25	MA	Health worker
6	Male	5	Diploma	Health worker
7	Female	8	Bachelor	Midwife
8	Male	12	Diploma	Health worker
9	Female	6	Bachelor	Midwife
10	Female	6	Ph.D.	Doctor
11	Male	4	Ph.D.	Doctor
12	Female	10	Bachelor	Midwife

Ethical considerations

A written informed consent was obtained from all the participants before participating in the research. Ethical considerations include providing complete and clear explanations to the participants and their voluntary participation in the study, respecting the principle of confidentiality and protecting the rights of the participants, respecting the rights of individuals, human dignity, avoiding harm and discrimination, professional and scientific responsibility and training was done by the researchers, obtaining permission from the participants.

Results

This research was conducted with the aim of explaining the barriers to prenatal care in women with physical disabilities. In this research, 12 women with physical disabilities and 12 service providers, including four midwives, two doctors, four nurse practitioners and two obstetricians, some of whom had studied in other fields such as clinical psychology during their postgraduate studies participated. Information about the participants (women with physical disabilities and specialists in the field of pregnancy care) is detailed in Tables 2 and 3.

The result of data analysis was 830 primary or open codes. After removing the unrelated codes and merging these codes based on overlapping, the final codes were obtained and by examining the open codes, similar codes were placed together in the same category and an initial classification of the codes was obtained. The obtained concepts and examples were categorized into 2 themes, including 8 categories and 36 subcategories regarding obstacles to prenatal care in women with physical disabilities, which are detailed in Table No. 4.

As shown in Table 4, the barriers to providing antenatal care to women with physical disabilities were divided into two broad categories, including (1) barriers related to stakeholders and (2) barriers related to support

Table 3 Description of the demographic characteristics of women with physical disabilities

Number	Age	Education	Number of children	Job	place of living	Type of disability
1	40	Middle School	2	Tailor	Village	Fracture-dislocation of pelvis
2	35	Diploma	1	Housewife	City	Amputation
3	33	Bachelor	1	Employee	City	Fracture-dislocation of pelvis
4	34	Diploma	2	Housewife	City	Multiple sclerosis
5	28	Middle School	1	Housewife	Village	Feet Abnormalities
6	32	Middle School	3	Housewife	City	Spinal cord injury
7	36	Bachelor	1	Housewife	City	Fracture-dislocation of pelvis
8	38	Middle School	2	Housewife	Village	Fracture-dislocation of pelvis
9	33	Diploma	2	Housewife	Village	Spinal cord injury
10	40	Middle School	1	Seller	Village	Feet Abnormalities
11	38	Diploma	2	Housewife	City	Weakness in the legs
12	27	Diploma	1	Housewife	City	Hand and Feet Abnormalities

organizations. The themes, categories, subcategories, and their semantic units have been explained below.

Barriers related to stakeholders

This theme is constituted from the following categories: society-related barriers, barriers related to healthcare providers, family-related barriers, barriers related to companions, and barriers related to women with physical disabilities. Each of these categories also included a number of subcategories.

1. **Society-related barriers**: This category included two subcategories: "Society's lack of knowledge" and "unfriendly orientation in society."

    1.1. **Society's lack of knowledge**: A 28-year-old woman with a congenital leg disability stated: *"When I was pregnant, my neighbors and even midwives advised me by saying that I might give birth to a disabled baby, and this made me very anxious."*

    1.2. **Unfriendly orientation in society**: A 34-year-old woman with a physical disability expressed: *"Other visitors usually had an unfavorable view toward me, and I was hearing them saying to each other... What this desperate wants to do with a child?"*

2. **Barriers related to healthcare providers**: Barriers related to maternity care providers included five subcategories: "inability to provide care," "inadequate knowledge and awareness of healthcare providers", "opposite gender of care providers", "ignoring professional ethics and poor ability to bond with and honor the mother" and " Improper perception toward disability-related needs".

    2.1. **Inability to provide care**: A gynecologist with 5 years of experience in this field stated: *"I personally had to do rehabilitation consultations, which was sometimes beyond my reach; I did not have much information about this, and most of the time, I had to extend the time dedicated to patient visit."*

    2.2. **Opposite gender of care providers**: A health worker working in one of the health centers noted: *"Because I am the only health worker at our center, and I am a man, it was not possible for me to offer many types of necessary training and care to this woman. Besides, I could not go to her home because it was inappropriate in the eyes of the villagers."*

    2.3. **Inadequate knowledge and awareness of healthcare providers**: One of the health workers who had 20 years of work experience expressed: *"I myself had no knowledge about disability and how to deal with and advise people with disabilities properly and scientifically. Although I hold a master's degree in psychology, I never received training courses on disability neither in the university nor during the rehabilitation course."*

    2.4. **Ignoring professional ethics and poor ability to bond with and honor the mother**: In this regard, one of the healthcare providers stated: *"This mother was accosted and criticized by the midwife even at the time of delivery, questioning her why she had given birth to seven children or become pregnant?"*

    2.5. **Improper perception toward disability-related needs**: A 35-year-old woman with a disability stated: *"Every time I wanted the midwife to, due to my condition, assist me and arrange me an appointment with the doctor, the midwife would refuse, saying that she could not give me an appointment with the pretext of having no time."*

3. **Family-related barriers**: These barriers included four subcategories: "Mother's lack of independence", "the family's lack of knowledge and positive attitude",

Table 4 Themes, categories, and subcategories of barriers to providing pregnancy care to women with physical disabilities

Themes	Categories	Subcategories
Barriers Related to Stakeholders	Society-related barriers	Society's lack of knowledge Unfriendly orientation in society
	Barriers related to healthcare providers	Barriers related to healthcare providers Inability Opposite gender of care providers Inadequate knowledge and awareness of healthcare providers Ignoring professional ethics and poor ability to bond with and honor the mother Improper perception toward disability-related needs
	Family-related barriers	Mother's lack of independence The family's lack of knowledge Financial problems in the family Inadequate familial support
	Barriers related to companions	Lack of effective companionship The care provider's need to communicate with and train the companion The companion's insufficient knowledge and awareness
	Barriers related to women with physical disabilities	The occurrence of secondary maternal complications Poor maternal mobility and balance The mother's negative attitudes The diversity of required services The mother's poor knowledge and awareness The mother's inadequate independence
Barriers related to support organizations	The lack of a systematic support system	Costly care services Insufficient insurance coverage of pregnancy care services Lack of governmental support for the costs of pregnancy care services Lack of non-financial support services Poor infrastructure in society
	The lack of a systematic care program	Insufficient delivery of specialized care in governmental healthcare centers Untimely doctor appointments The lower quality of care provided in governmental healthcare centers compared to private centers Inefficient referral systems Inefficient care protocols Lack of a clinical database for physical disabilities
	Poor accessibility	Inappropriate location of health care centers Shortage of portable equipment Difficulty in utilizing equipment Poor access to the transportation system

"financial problems in the family", and "inadequate familial support".

3.1. **Mother's lack of independence**: One of the participants, a 32-year-old woman with a spinal cord injury, noted: *"My wife insisted on an abortion, but I did not want it... Although I was not ready to become pregnant, afterward, I was afraid that if I had an abortion, I would never conceive a child again."*

3.2. **The family's lack of knowledge and positive attitude**: A 36-year-old woman with congenital hip dislocation stated: *"When I was planning to get pregnant, I did not tell anyone...because my family and those around me were against it, saying that pregnancy would exacerbate my condition."*

3.3. **Financial problems in the family**: A participant who was a 40-year-old woman with a congenital disability expressed her experience as follows: *"My husband is a farmer and grows vegetables. Every day, he had to take time off work to take care of me, which caused us to have a lot of financial problems."*

3.4. **Inadequate familial support**: A 38-year-old woman with a disability reiterated: *"Because my husband's job required working in the morning shift, he had to take a leave when I was planning to visit the health center. So, he often opposed receiving some necessary services, saying that I did not need them."*

4. **Barriers related to companions**: This category included four subcategories: "Lack of effective companionship", "the care provider's need for communicating with and training the companion", "the companion's insufficient knowledge and awareness", and "male companions not being allowed to enter the healthcare center".

4.1. **Lack of effective companionship**: A midwife working at the health center No. 1 of the Salas-Babjani City, who had 12 years of work experience, declared: *"I encountered an individual suffering from Parkinson's, who had severe muscle tremors and could not walk on the bed for clinical examination on her own. She definitely needed to come with a companion, and she was unable to visit regularly. Sometimes, I had to go to her home to deliver some care services."*

4.2. **The care provider's need for communicating with and training the companion**: One of the midwives working at a rural healthcare center expressed: *"I am always required to communicate with and provide necessary explanations several times to not only the pregnant mother but also her companion."*

4.3. **The companion's insufficient knowledge and awareness**: A gynecologist shared her experience: *"This mother's companion was herself*

a young woman who had not much experience or knowledge about pregnancy, so she was difficult to be illuminated."

4.4. **Male companions not being allowed to enter the healthcare center**: A woman with a disability and two children stated: *"I was generally being accompanied by my sister-in-law, but she could not help much because I had weight gain and heavy for her to help me move."*

5. **Barriers related to women with physical disabilities**: This category included six subcategories: "the occurrence of secondary maternal complications", " Poor maternal mobility and balance", "the mother's negative attitudes", "the diversity of required services", "the mother's poor knowledge and awareness", and "the mother's inadequate independence".

5.1. **The occurrence of secondary maternal complications**: A midwife with 8 years of work experience shared her experience: *"I was in charge of caring for a pregnant woman with a disability, who had complicated pregnancy and developed hypertension, urinary protein excretion, and preeclampsia during her last weeks of gestation, which led her gynecologist to terminate the pregnancy."*

5.2. **Poor maternal mobility and balance**: A midwife with 10 years of experience noted: *"These women, due to being pregnant, would gain a lot of weight and could not easily walk or stand due to the great pressure imposed on their pelvis."*

5.3. **The mother's negative attitudes**: A gynecologist with 10 years of work experience stated: *"Women with disabilities usually insist on cesarean delivery because they lack enough confidence for natural delivery due to their condition."*

5.4. **The diversity of required services**: In this regard, a health worker with 12 years of experience expressed: *"Women with physical disabilities, due to the presence of comorbidities, high-risk pregnancy*, etc., *need much more care services than their ordinary peers, so they have to commute to health centers more frequently, incurring them more costs."*

5.5. **The mother's poor knowledge and awareness**: A 32-year-old woman with a spinal cord injury stated: *"I had no plan for becoming pregnant at all and even did not know much about it. We were not even prepared financially, and my husband was against my pregnancy."*

5.6. **The mother's inadequate independence**: A health worker working at one of the health centers of Javanroud City declared: *"A pregnant mother with a disability usually cannot do her routine work, even personal activities, independently and needs a companion."*

Barriers related to support organizations

This theme was formed by the following categories: "the lack of a systematic support system", "the lack of a systematic care program", and "poor accessibility". These categories themselves comprised a number of subcategories, which will be discussed below.

1. **The lack of a systematic support system**: One of the most important and repeatedly mentioned obstacles raised by most participants was the lack of a systematic support system. This category consisted of five subcategories: "costly care services", "Insufficient insurance coverage of pregnancy care services", "lack of governmental support for the costs of pregnancy care services", "lack of non-financial support services", and " Poor infrastructure in society".

1.1. **Costly care services**: A 27-year-old woman with disabilities in extremities stated: *"My main problem was the costs that I had to pay. Apart from the costs for a private midwife, I was charged a lot for ultrasounds and specialist visits."*

1.2. **Insufficient insurance coverage of pregnancy care services**: A woman with multiple sclerosis referred to this issue as: *"I had to pay costs several times that of others. Midwives in private offices do not recognize any insurance and demand their full visit costs. Even many gynecologists and sonography centers do not admit most insurances."*

1.3. **Lack of governmental support for the costs of pregnancy care services**: A midwife with 10 years of experience expressed: *"These women often have to travel to Kermanshah city for examination and treatment many times during pregnancy, which is very expensive for them, and they pay these expenses out of their own pockets, and they are not given any privileges in getting a doctor's appointment."*

1.4. **Lack of non-financial support services**: In this regard, a health worker with 25 years of experience stated: *"Specialized care, ultrasound, specialist visits, and even screening tests are not available in Salas city, so pregnant mothers had to travel to Kermanshah City, but these women cannot be seated in a car for long times due to their physical problems."*

1.5. **Poor infrastructure in society**: A doctor with 6 years of experience stated: *"I have a contract*

as a family doctor, and I was told when I signed my contract that a single doctor is required to cover 5 thousand people, and may wage would be proportional to the size of the population under coverage, the distance required to be traveled, and the dispersion of the population. However, the condition of the people under coverage was not an issue to be taken into account. For example, I was not informed how many disabled people who require more extensive care are present in the population."

2. **The lack of a systematic care program**: Among other organization-related barriers included the lack of a systematic care program, which included six subcategories: "Inefficient referral systems", "insufficient delivery of specialized care in governmental healthcare centers", "the lower quality of care provided in governmental healthcare centers compared to private centers", "inefficient care protocols", "untimely doctor appointments", and "lack of a clinical database for physical disabilities".

   2.1. **Insufficient delivery of specialized care in governmental healthcare centers**: A 33-year-old woman with congenital pelvic dislocation stated: *"Health centers only offer simple care services, such as monitoring the fetal heart rate and measuring blood pressure, height, and weight. I had to visit private doctor's offices for ultrasounds, anomaly screening, and other tests, which cost me a lot of visits. Once, a midwife wanted to make an ultrasound appointment for me in a hospital, which was scheduled two months later, but that was late and useless to me."*

   2.2. **Untimely doctor appointments**: One of the participants, a 40-year-old woman with congenital pelvic dislocation, expressed: *"Making an ultrasound appointment in a hospital was not possible for me because it was too busy, and I had to make an appointment at a private doctor's office."*

   2.3. **The lower quality of care provided in governmental healthcare centers compared to private centers**: A 28-year-old woman with a leg disability noted: *"The gynecologist did not approve the tests and ultrasound that I took in the hospital due to the lack of accuracy, saying that I had to refer to a certain private office due to my critical condition."*

   2.4. **Inefficient referral systems**: In this regard, a gynecologist underlined: *"The major problem was that when a mother was referred to me, she could not give an accurate history, and her booklet was not completed appropriately by the midwife or the referring doctor either."*

   2.5. **Inefficient care protocols**: A 38-year-old woman with leg weakness shared her experience: *"A problem that I encountered was during labor; my gynecologist informed me that I had no pelvic or birth canal problems for natural childbirth, but I told her that I could not even go on the examination bed, so how could I give birth naturally taking into consideration my physical problem?! She told me that she had no say in this and that her job was to just check the pelvic status before childbirth. She told me that I needed to get the approval of three orthopedic specialists before I could get a commission's approval for a cesarean section. In order to see three orthopedic specialists, I needed to travel multiple times and wait a lot on doctor appointment lists."*

   2.6. **Lack of a clinical database for physical disabilities**: One of the doctors working in rural health centers stated: *"There is no instruction for care provision to a pregnant woman with a disability who cannot walk on a balance or lie on the examination bed."*

3. **Poor accessibility**: According to most of the participants, poor accessibility was a main obstacle to care provision. This category included four subcategories: "inappropriate location of health care centers", "difficulty in utilizing equipment", "shortage of portable equipment", and "poor access to the transportation system".

   3.1. **Inappropriate location of health care centers**: One of the health workers highlighted this issue: *"Because the health center was built in a hard-to-access location with a high altitude, she could not come to the center, and I had to visit her in her home."*

   3.2. **Shortage of portable equipment**: A midwife working in one of the rural centers stated: *"There was only one portable sonic aid in the whole city, and because this tool was in the labor ward, I had to first obtain permission before I could take this device and go to one's home."*

   3.3. **Difficulty in utilizing equipment**: A 36-year-old woman with a disability stated: *"It was very hard for me to even lie on the examination bed at the health center because the beds were very high, and I was afraid that I might not be able to step on them and fall."*

   3.4. **Poor access to the transportation system**: A woman with congenital pelvic dislocation, who was a villager, noted: *"Because we did not own a*

car, it was very difficult and costly for us to travel to the city. Every time, we had to rent a car because I could not take a taxi, which needed me to get off and on multiple times."

Discussion

The aim of this study was to identify the barriers to delivering effective antenatal care to pregnant women with physical disabilities. The barriers identified in this study were divided into two broad categories: barriers related to stakeholders and barriers related to support organizations. Under the first category, the following subcategories emerged: society-related barriers, barriers related to care providers, family-related barriers, barriers inherent to women with physical disabilities themselves, and finally, companion-related barriers. Regarding the obstacles that were related to care providers, the most significant hurdles were noted as insufficient knowledge and awareness of care providers, ignoring professional ethics, and poor ability to communicate with and honor the mother. This finding agreed with the results of Bassoumah [19], Becker [22], and Nguyen [13], who reported similar barriers inherent to care providers. In addition, another barrier identified in this study was the opposite gender of care providers, an obstacle that has not been noted by previous studies, offering a noteworthy new finding. In fact, in Iranian culture and especially in Kermanshah province, providing pregnancy services to women by the opposite sex, i.e. a man, is not correct and causes these women to experience difficult conditions at the moment of receiving the services. Regarding women with physical disabilities, due to some reasons such as the difficulty of accessing some cities in this province and the inability to access female specialists, male specialists were inevitably used to provide pregnancy services to these women.

Regarding the category of society-related barriers, two subcategories were identified: poor social knowledge and attitude and unfriendly orientation in society, which was consistent with the results of a study by Mitra [23], Hashemi [24] and Devkota [25], who announced that incorrect cultural beliefs and attitudinal barriers were important society-related barriers to providing quality pregnancy care to women with disabilities [24]. Society often perceives people with disabilities as different from the norm, and women with disabilities are frequently considered to be doubly discriminated against. Negative perceptions held in many societies undervalue women with disabilities and that there is discomfort with questions of their control over pregnancy, childbirth and motherhood, thus limiting their sexual and reproductive rights. Public attitudes towards women with disabilities have a significant impact on their life experiences, opportunities and help-seeking behaviours [24, 25].

Our findings revealed that the category of family-related barriers constituted important subcategories, such as insufficient familial support and the family's poor knowledge and attitude. In separate studies, Nguyen [13] and Casebolt [26] also confirmed that the family's poor knowledge, lack of awareness, and inadequate support were the most prominent barriers pertaining to the family. Lack of family awareness causes women with physical disabilities to go through a difficult pregnancy and not receive adequate support from their families. Another two barriers identified in this study (i.e., the mother's deprivation of independence and the family's economic problems) have not been mentioned in previous similar studies, suggesting these elements as unique barriers inherent to our studied population. Most women in Kermanshah province, due to illiteracy, lack of specialized skills, and early marriage, do not have sufficient independence and often have many financial problems. This is exacerbated in women with disabilities and makes their conditions more difficult than normal women. This group of women does not have enough money to receive specialized services during pregnancy and is forced to use public services that are not suitable and sufficient for them. Likewise, companion-related barriers that emerged in this study offer a novel observation that has not been found in prior studies investigating barriers to pregnancy care provision to women with physical disabilities. Usually, the companions of these women at the time of receiving services are their husbands who have not received enough training and do not have enough information about how to take care of these women.

Under the category of barriers related to women with physical disabilities, the most important subcategories emerged were the mother's poor mobility and balance, as well as poor maternal knowledge and awareness, and the mother's lack of independence. This finding was in line with the results of Nguyen [13] and Blair [14], who identified the same factors as important barriers to providing pregnancy care to women with physical disabilities. Moreover, the occurrence of secondary maternal complications, the mother's unfavorable attitudes, and the diversity of the care services required were among other obstacles observed in this study. There was no mention of these factors in previous studies, so these elements can be regarded as unprecedented barriers identified in our study.

The barriers identified under the broad category of support organizations-related obstacles engulfed the following components: the lack of a systematic support system, the lack of a systematic care program, and poor accessibility. This finding was in line with the results of studies by Tarasoff [27], Heideveld-Gerritsen [7],Ganle [28], and Nguyen [13]. The most notable obstacles to pregnancy care provision to women with disabilities

reported in recent studies included inadequate service support, the lack of clinical data related to people with disabilities, the lack of adaptation of health provider centers, lack of access to equipment, and poor access to the transportation system. Regarding the category of the lack of a systematic support system, the most prominent subcategories were identified as costly care services, the lack of insurance coverage of antenatal care services, the lack of non-financial support, and poor infrastructure. On the other side, the lack of a systematic care program constituted the subcategories of inefficient referral systems, not providing specialized pregnancy care in government health centers, untimely doctor appointments, the low quality of care in governmental health centers compared to private centers, and inefficient care protocols. Finally, under the category of poor accessibility, difficulty utilizing equipment was a new barrier observed in this study, which has not been mentioned in previous studies. There are small and difficult-to-access cities in Kermanshah province, and given that this region being mountainous and often covered in snow, it is often difficult to provide specialized medical services to people living in these cities. This problem is even more acute for pregnant women with physical disabilities. Because these women do not have enough physical ability to go to nearby cities to receive pregnancy services.

This study was the first to examine barriers to receiving prenatal care among women with physical disabilities in Kermanshah province. The strengths of this study were its novelty, the use of participants with unique experiences, and its conduct in a province that was economically considered a low-income province and had specific cultural conditions. It is recommended that comprehensive protocols for providing prenatal care to women with physical disabilities be developed and made available in low-income provinces. It is also recommended that training workshops be held for families of women with physical disabilities to inform and educate them about the prenatal care process, as well as for prenatal care providers to increase their knowledge and attitudes.

Study limitations

One of the limitations of this study was access and face-to-face interviews with interviewees. Because of the vastness of the studied population, which included all women with disabilities in Kermanshah province, and these people lived in 14 cities and border regions, access to many of these cities was very difficult due to the mountainous nature of the region and impassable roads. In different cities of Kermanshah province, people of different religions live, and each of them has unique cultural conditions. In some religions and cultures, women have a higher value and position in the family, and all family members make efforts for their comfort and well-being. Unfortunately, in some religions and cultures, the role of women in childbearing is more important than their health, and despite having physical disabilities, these women are asked to give birth to and raise many children. To overcome the limited access to participants and create diversity in the interviewees, an attempt was made to interview women from different cities and cultures. Before going to each city, necessary arrangements were made by contacting a number of people who had been designated as coordinators, and the addresses and characteristics of the participants were recorded. However, we were unable to access participants in a limited number of cities, and for this reason, the diversity of participants was somewhat reduced. Access to prenatal care providers, especially experts and doctors who had a high workload, was another limitation of the study. In order to overcome this limitation, the researcher made the necessary arrangements over the phone before conducting each interview. Another limitation of the present study was the inability to interview the wives of these women. It is suggested that future studies examine women with disabilities in this province as a whole and avoid focusing on a specific group of them in order to provide access to diverse participants. Due to the important role of the wife in accompanying these women, it is suggested that her words be heard and analyzed in a separate interview.

Conclusion

The findings of the present study showed that pregnant women with physical disabilities in various cities of Kermanshah province are deprived of receiving many prenatal care services due to problems and limitations resulting from their disability, while they need these services more than others due to their specific circumstances. Recognizing these factors will make the planners and policy makers in the field of health and rehabilitation, with a closer look at the existing capacities of the country, take more effective steps to provide these cares to women with physical disabilities and their families, and in order to reach a more favorable situation, the necessary mechanism In the field of policy-making and planning, adopt and implement, so as to finally lead to basic measures in the field of improving the situation of providing prenatal care to women with physical disabilities.

Supplementary Information

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Supplementary Material 1

Supplementary Material 2

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Author contributions
M.S. and K.A. designed the study. MS.K. and M.S. and K.A. collected the data. K.A. and M.L. performed the data analysis. M.S. and M.L. wrote the text of the manuscript and all authors reviewed the manuscript and contributed to revising the manuscript.

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Data availability
The data that support the findings of this study are available from the corresponding author upon reasonable request. The interviews were conducted only for this study and have not been published anywhere before.

Declarations

Ethics approval and consent to participate
All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors. The current research is a part of a master's thesis with the code of ethics IR.USWR.REC.1401.126 approved by the University of social welfare and rehabilitation sciences. A written informed consent was obtained from all the participants before participating in the research. The interviews were conducted only for this study and have not been published anywhere before.

Consent for publication
Not Applicable.

Competing interests
The authors declare no competing interests.

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