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Challenges and Strategies of Prenatal Care in Deaf Pregnant Women from the Perspective of Iranian Midwives: A Qualitative Content Analysis

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ABSTRACT

Background & aim: Deaf pregnant women are one of the most vulnerable groups in any society. Midwives, as the members of the healthcare providers' team, face various problems while providing services including prenatal care to deaf pregnant women. To gain midwives' perspectives in this regard, this study conducted to explore the challenges and strategies of midwives in providing prenatal care to deaf and hard-of-hearing pregnant women.

Methods: This study was conducted using a qualitative content analysis from September 2023 to December 2023 in Khuzestan Province (Southwestern Iran). Purposive sampling and semi-structured interviews were conducted with 10 midwives with experience of providing prenatal care to deaf pregnant women. Data collection continued until data saturation. The analysis was done using the conventional content analysis method of Granheim and Lundman (2017).

Results: Two main categories of "encountered challenges", and "proposed strategies" emerged. The main category of encountered challenges included two subcategories of "midwives' feelings of weakness" and "midwives' psychological burden". The main category of proposed strategies also included two categories of "comprehensive support" and "specific instruction".

Conclusion: As a key element in providing services to deaf pregnant women, midwives face a range of challenges. The current results can draw the attention of health managers to the challenges of midwives and other healthcare providers. Also, the strategies suggested by midwives can help managers to plan improved care provision to deaf pregnant women.

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Introduction

The World Health Organization identifies deafness as the fourth most common cause of disability globally (1). It is expected that the demand for assistance for deaf individuals will substantially increase in the future years. Deafness is primarily characterized by partial or complete hearing loss, which can vary in severity. Hearing loss range based on decibels (dB) includes mild (26 to 40 dB), moderate (41 to 55 dB), and severe (over 90 dB) (2). Currently, 466 million people worldwide experience significant hearing difficulties (3). Research indicates that 13.05 out of 1,000 individuals in Iran are affected by hearing impairments or deafness (4).

Deaf women, as a very vulnerable population, have special problems related to reproductive health. This issue is associated with a challenging and troublesome situation for health service providers and has put the quality of prenatal care in the spotlight (5). On the other hand, the presence of some factors prevents deaf and hard-of-hearing women from accessing

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appropriate reproductive health care. Among these obstacles are the structural, financial, and location of health centers, the long distance to health centers, and, most importantly, the negative attitude of healthcare workers (6-8). Arulogun et al. (2013) found that the negative attitude of healthcare workers toward patients with disabilities could be one of the reasons for their communication problems with this group, including job stress and lack of necessary training in dealing with people with special disabilities (9). Adigun et al. (21), and Madula et al. (2018) showed that people with disabilities, especially deaf and hard-of-hearing women, experience worse health outcomes and are more likely to be poorly supported in prenatal care (10-11).

According to Gichane et al. (2017), midwives' inability to communicate effectively with deaf and hard-of-hearing women appears to be one of the main reasons for reduced provision of desirable services (5). Empathic communication facilitates information exchange and reduces the healthcare providers' anxiety (9). Effective communication encourages deaf women to be more motivated to seek prenatal care, whereas poor communication is associated with reluctance to access care, which may increase the risks of adverse outcomes (12). Mazurkiewicz et al. (2018), and Steinberg AG et al. (2004) have demonstrated that healthcare providers are not aware of the needs of deaf pregnant women, and this makes them avoid direct communication with these women or ignore their needs (13-14). According to previous studies, Arsenault et al. (2018), problems between healthcare service providers and deaf or hard-of-hearing pregnant women can be one factor in the desirability of the services provided (15). On the other hand, despite the unique characteristics of the deaf and hard-of-hearing population, limited research has been done on the health status of deaf people, especially deaf pregnant women (16-17), Also, based on the surveys, there are no accurate statistics on the population of deaf pregnant women in Iran, and the problems related to the provision of health care by midwives and other service providers. Since the quantity and quality of services provided by midwives directly play a key role in reducing and increasing the health level and pregnancy outcomes of deaf women, the current studies may draw the attention of health managers to the challenges of midwives and other healthcare service providers. On the other hand, to reach a a deeper understanding of the subject, and to emphasize applying qualitative studies to conceptualize the social processes in social contexts (18), the researchers conducted the present study to examine the challenges and solutions of prenatal care in deaf women from the perspective of Iranian midwives.

Materials and Methods

This qualitative study was conducted from September 2023 to December 2023 in Ahvaz, Southwest Iran. In this study, the approach of qualitative content analysis was used. Because qualitative methods are primarily intended to examine barriers, facilitators, and develop new conceptual models of process and outcomes. Qualitative content analysis is based on the theories of communication and social sciences, which provide the basis for understanding and interpreting the analyzed content (19). The reporting of the study was based on the consolidated criteria for reporting qualitative research (COREQ) (20).

The study participants included midwives working in health centers providing health care services for pregnant women with hearing disabilities. The data were collected through semi-structured interviews conducted with 10 midwives working in health centers. Using purposive sampling, key informants were deliberately selected to ensure a greater understanding of the subject under study (19). After referring to the health centers, the researcher invited midwives meeting the inclusion criteria to participate in the study after introducing herself and explaining the necessity and purpose of the study. The study inclusion criteria included people with more than one year of work experience, those who had communication experience with deaf pregnant women, the ability to provide rich information on the subject under study, and the exclusion criteria included unwillingness to participate in the study.

Data collection started at the end of September 2023 and lasted until the end of November 2023. The place and time of the

interviews were selected by the participants, and the interviews were also conducted in a quiet environment. The participants were assured that the interviews would be completely confidential and anonymous. Written informed consent was obtained from the participants to record the interviews. The researcher took notes of important points during the interviews conducted by the corresponding author, who was a PhD student in midwifery. She was interested in researching this field and conducted the interviews under the supervision of her supervisor first author. Then, the main interview questions were asked. The main questions included 1) In general, please explain your experience of providing prenatal care to deaf and hard-of-hearing women. 2) Please tell me about the strategies that you use or suggest to communicate with deaf pregnant women; 3) could you please explain the challenges you face in providing care to deaf pregnant women? According to the midwives' answers, the interview process was guided. Also, probing questions, such as "What do you mean by this sentence?" and "Please explain more," and "Do you have any other explanation that I didn't ask?" were used. Attention was paid to the participant's body language (such as silence, smile, and sigh). Each interview lasted between 45 and 55 minutes. All interviews were recorded, typed word for word, and read line by line, and coding started from the first interview. In this way, the data collected from each interview was analyzed as it was conducted to help identify categories and subcategories and guide subsequent interviews. Conducting interviews continued until data saturation, that is, until no new information emerged from the data. In general, each midwife was interviewed once. Data saturation was achieved after interviewing the eighth participant; however, two additional midwives were interviewed to ensure data saturation.

Data analysis was performed using the Granheim and Lundman method (2017), which includes: data selection, identification of semantic units, coding, grouping of concepts, and extraction of themes (21). Data were analyzed using Word 2020 software. Each interview was considered a unit of analysis. The researcher engaged in multiple readings of the interview transcripts to develop a comprehensive understanding of their content. The extraction of semantic units, words, sentences, or paragraphs related to midwives' experiences was done, and all similar codes were classified into primary categories. Similar primary subcategories were grouped, and secondary categories emerged. Finally, the main categories were extracted. The obtained data were read line by line by another author. The resulting codes and categories were shared between the authors. The disagreements of the authors with the opinions of the supervisor (S.M.) were resolved. To ensure the accuracy of the data, the obtained results were given to the midwives, and they also confirmed the results.

To guarantee the trustworthiness of the conclusions, the principles of Lincoln and Guba were applied. These principles aimed to increase the credibility, transferability, dependability, and confirmability of the study (22). To ensure the credibility of the data, the obtained results were confirmed by the participants. To achieve confirmability, all stages of the study were done under the supervision of the supervisor (Correspondence author), from the study idea to the writing of the results. She was among the people who had extensive experience in qualitative studies. To increase the dependability of the research, the data were reviewed and confirmed by an external observer. To increase the transferability of the study, we tried to explain all the steps clearly. The members of the research team held several meetings to review the findings, and the results were also reviewed and then approved by the supervisor.

Results

This study was conducted with the participation of ten midwives working in various health centers in Khuzestan province (Table 1).

From the data analysis, 89 initial codes were generated, which, after removing overlapping codes, resulted in 37 codes based on the conceptual framework, 9 sub-subcategories, 4 sub-categories, and two main categories. The main categories include: encountered challenges and proposed strategies.

Table 1. Demographic characteristics of participating midwives

Age	Educational attainment	Work Experience (Year)	Workplace
29	Bachelor's degree	5	Health Center
27	Bachelor's degree	3	Health Center
32	Master's degree	6	Health Center
37	Bachelor's degree	8	Health Center
38	Bachelor's degree	7	Health Center
39	Bachelor's degree	9	Health Center
40	Associate degree	13	Health Center
28	Bachelor's degree	5	Health Center
42	Associate degree	12	Health Center
34	Bachelor's degree	6	Health Center

The challenges included two main subcategories, including "midwife's feeling of weakness and inability to communicate" and "midwife's psychological burden". The strategies included two main subcategories, such as "all-around support" and "specific training". The subcategories and quotations of this category are reported in Table 2.

Categories and quotes from midwives' experiences related to their challenges and strategies in providing healthcare services to deaf and hard-of-hearing women were as follows. Categories and quotes from midwives' experiences related to their challenges and strategies in providing healthcare services to deaf and hard-of-hearing women were as follows.

1. Encountered challenges

1-1 Midwives' feelings of weakness were the first main category of challenges. "Ineffective communication" and "Challenging companions" were the two sub-categories in this group. Ineffective communication and challenges that midwives often have with deaf pregnant women and their companions can have significant negative impacts on the quality of services provided to this specific group of women. For example, failure to properly communicate medical and treatment information can cause confusion and insecurity in deaf pregnant women.

1-1-1 Lack of effective communications: According to midwives, the lack of effective communication between midwives and deaf expectant mothers made midwives feel weak and unable to provide healthcare services to deaf women. One of the participants explained:

"Unfortunately, the pregnant mother was deaf and illiterate. It was very difficult to communicate because I did not know sign language. This made me feel that I could not do anything for her", a 31-year-old midwife says. "I didn't know how to talk to her. I didn't have a poster or a photo that would be suitable and understandable to teach him. I felt helpless because I couldn't communicate properly". (27-year-old, 3 years of work experience)

1-1-2 Challenging companions: The second subcategory related to this category of midwifery challenges was related to those accompanying deaf women while receiving care. According to midwives, companions of deaf pregnant women can present specific challenges for midwives providing care.

"Unfortunately, the person who came with the deaf mother was illiterate. He also seemed bored because he conveyed everything I taught him very briefly to the deaf mother. I could not communicate properly, and I think this is a professional weakness for me". (32-year-old, 6 years of work experience)

1-2 Midwife's psychological burden were the second main category of challenges. Two sub-categories of this category included "difficulty in providing training" and "fears and concerns of midwives". Midwives who have not received the necessary training in communicating with deaf pregnant women felt helplessness.

Fear of not being able to communicate and not understanding the specific needs of deaf

pregnant women can increase midwives' levels of stress and anxiety. These concerns put them under constant pressure while were working.

Table 2. Main categories, Subcategories, Sub-subcategories emerged from the analysis

Primary codes	Sub-subcategories	Subcategories	Main categories
Literacy of pregnant mother Lack of familiarity with sign language. Lack of educational aids for deaf women	Lack of effective communication	Midwives' feelings of weakness	
Illiteracy of the patient Indifference to the patient Regular absence of attendance in care Lack of participation due to disability	Challenging companions		
Forced to repeat educational material by the midwife Lack of proper feedback from the mother Spending a lot of time in training Spending extra energy to provide training Lack of confidence in the correct presentation of educational materials by companion Lack of confidence in the mother receiving the correct educational materials	Difficulty in providing training	Midwife's psychological burden	**Encountered challenges**
Midwives fear of an undesirable pregnancy outcome Maternal worry about mother's lack of understanding Mother's fear of not backing home on time Mother's fear of pregnancy complications	Midwives' Fears and Worries		
Providing a special care plan Setting up special care centers Visiting deaf pregnant women in special days by midwives	Health system support		
Providing midwifery services for low-income deaf pregnant women Provision of insurance services for deaf pregnant women by the government Support of deaf and hard-of-hearing pregnant women by charitable foundations	Economic support	Comprehensive support	
Respect for professional ethics by the midwife Special attention to deaf women's psychological needs Empathy of the midwives with deaf women Companionship of an interpreter during the visit of deaf women Paying attention to deaf women's social needs	Psychosocial support		**Proposed strategies**
Teaching midwives to communicate correctly with deaf women Language instruction to midwives serving deaf pregnant women Providing services to midwives, tailored to the needs of deaf women	Special training for midwives	Specific instruction	
Providing clear, understandable educational	Special training for		

Primary codes	Sub-subcategories	Subcategories	Main categories
posters	deaf pregnant women		
Using clear and colorful illustrated pamphlets			
Using short clips			
Creating virtual groups			
Use of family health TV and specific health programs			
Empowering deaf pregnant women to enhance their self-care			

1-2-1 Difficulty in providing training: According to midwives, the inability to properly teach deaf women caused mental disorders in midwives. It seems that midwives need to receive special training to communicate with deaf women.

""Teaching deaf clients is difficult. It takes a lot of time and energy to care for them. Communication is boring, and one gets confused". (40-year-old, 13 years of work experience)

1-2-2 Midwives' fears and worries: Fear and worry of increasing adverse pregnancy outcomes in deaf pregnant women is another reason that causes mental disorders in midwives. The inability to communicate effectively can lead to poor teaching, which in turn can lead to adverse maternal and fetal outcomes.

"I had to teach the companion. But I was not sure that the companion would convey the exact and complete instructions to the mother and that she would receive all the information correctly; this made me nervous". (29-year-old, 5 years of work experience)

2. Proposed strategies

2-1 Comprehensive support: Midwives' experiences indicated that support for deaf pregnant women had different dimensions that should be investigated. Health system support, economic support, and psycho-social support for deaf pregnant women were the sub-categories of this category.

2-1-1 Health system support: Midwives believed that all health system members, especially healthcare managers, should contribute to providing optimal health services to deaf pregnant women. Providing services to this sensitive and vulnerable group requires comprehensive cooperation from the health system.

"Deaf women need special programs and training. Healthcare managers should consider setting up special centers with midwives who are trained and familiar with sign language". (28-year-old, 5 years of work experience)

2-1-2 Financial support: According to midwives, most deaf pregnant women were financially weak. Financial problems were one of the reasons for not receiving timely and routine care. Financial prosperity has left these women unable to afford many of the costs of pregnancy-related care.

"Most of these women are very poor. Due to poverty, they do not often perform the necessary tests and ultrasounds. In my opinion, managers should consider special midwifery services for these women and even special insurance during pregnancy to support these women". (42-year-old, 12 years of work experience)

2-1-3 Psycho-social support: Midwives believed that deaf women are prone to many psychological injuries. Midwives, family, and other members of society should be more attentive in their behavior with them. These women have low morale and self-confidence due to their disability, and any negative treatment from service providers can cause them suffering.

"People with disabilities have a more sensitive and fragile spirit. This sensitivity is intensified during pregnancy. They indeed have disabilities, but we must be aware of our behavior and even non-verbal gestures". (39-year-old, 9 years of work experience)

2-2 Special training: Midwives introduced special training as one of the important strategies to improve the provision of care to

deaf and hard-of-hearing pregnant women. Targeted training at any level and topic can easily improve many of the problems related to deaf pregnant women.

2-2-1 Special training for midwives: It seems that the training is tailored to the needs of deaf and hard-of-hearing pregnant women, including teaching the appropriate ways to communicate properly, teaching sign language to the midwives providing the service, and using educational aids for deaf and hard-of-hearing pregnant women, which should be taken into consideration by healthcare managers.

"In my opinion, a training program for effective communication should be considered for midwives based on the needs of deaf women, for example, sign language training for the midwives of deaf pregnant women". (34-year-old, 6 years of work experience)

2-2-2 Special training for deaf pregnant women: According to the midwives, special training programs for deaf pregnant women should be planned to help empower these women in self-care. Midwives believe that even deaf pregnant women should receive separate training from specialists familiar with sign language.

"According to the content of educational programs, suitable picture postcards can be prepared and provided to deaf women. They can even be helped by using short educational clips". (37-year-old, 8 years of work experience)

The subcategory of "interpretation of ultrasound and pregnancy tests online"; One of the concerns of pregnant mothers is the interpretation of ultrasound and tests during pregnancy. It is possible to get ultrasound and tests on the mentioned websites from online services.

The highest frequency (73 codes) was related to "Pregnancy and childbirth information (Table 3) which included pregnancy health and medical content, pregnancy symptoms, pregnancy common problems and its solutions, content about pregnant mother's mental health, screening tests and guidance for pregnant women and types of tests during pregnancy. In the next stage, the codes related to the subcategory of "Fertility-related factors" (51 codes) and in the next rank, the subcategory of "Family health information" (49 codes) had the highest frequency that included ideas for family vacation, sleep health, mental health, child injury management, medication use guide, playing with children (home and outdoors) and family finances, and etc (Table 3).

Discussion

The study was conducted to explain the challenges and strategies of midwives providing services to deaf pregnant women. The results were classified into two categories: challenges and strategies. Based on midwives' experiences, their feelings of weakness and inability to provide healthcare services to deaf pregnant women, and midwives' mental disturbances are the two major challenges in facing this group of clients.

The lack of effective communication with deaf pregnant women was related to reasons such as the illiteracy of the pregnant mother, the midwife's lack of familiarity with sign language, and the lack of educational aids. The problems related to deaf pregnant women's companions were associated with several factors, such as illiteracy, indifference, lack of regular presence of the companion in care sessions, and the husband's non-engagement due to disability. Most deaf women marry men with similar disabilities. Therefore, their husbands cannot be suitable companions for care provision. Effective communication is a key element in providing maternal and child care (21, 22), and policymakers should consider it a key component to improve care (23). Healthcare providers' lack of familiarity with sign language and the lack of an interpreter were important factors for the ineffective communication and could cause deaf pregnant women to be dissatisfied with the way services are provided (24). Adigun et al. (2021) conducted a systematic study and found that one of the major problems of deaf pregnant women in receiving services was communication problems (10). Panko et al. (2023) also emphasized identifying the needs and how healthcare service providers communicate with deaf pregnant women (25). On the other hand, recent studies showed the absence of an educated and compassionate companion with deaf women while receiving care made midwives feel weak

and unable to provide services to deaf women (26). Therefore, the family and knowledgeable companion play an important role in accompanying deaf women when receiving optimal and effective services (27).

Several factors have caused midwives to experience mental disturbance while providing care, and described it as a challenge. The difficulty of providing training and the fears and concerns of midwives in providing care to deaf pregnant women can result in midwives' psychological turmoil. Spending a long time to transfer training, midwives having to repeat the same sentence continuously, not being sure that the deaf woman receives the information correctly, lack of proper feedback from deaf women, and on the other hand, fear of not being referred on time, diseases during pregnancy and their consequences are among the factors that led to the psychological turmoil of midwives. Unfavorable pregnancy in deaf pregnant women is one of the causes of confusion for midwives. Some studies indicate an increase in both chronic diseases and adverse pregnancy outcomes in deaf pregnant women (28). Therefore, healthcare service providers' fears and concerns about pregnancy complications of deaf women can cause them confusion (29). However, Jackson et al. (2011) believed that midwives could play a key role in improving the health of deaf pregnant women by spending more time and using dynamic communication (29).

Midwives believed that deaf pregnant women need support from the health system, economic support, and psycho-social support. Providing a special care program for deaf pregnant women, assigning special care centers for these women, and visiting deaf pregnant women on specific days were some of the solutions presented by the midwives. Support for deaf pregnant women should be planned based on their needs and preferences (30). Midwives should know the support needs of their patients to optimally support deaf pregnant women (25). Olivia et al. (2023) reported that deaf pregnant women had the right to confident and fair health care (31). The World Health Organization (2018) also announced that planning and implementing the right policies are the ways to support and reduce the adverse effects of deafness and hearing loss around the world (1). Care policies of some countries to improve deaf women's pregnancy care, such as cooperation with qualified sign language interpreters in healthcare systems and sign language training for service providers, can be an example of system support that can be implemented in other countries, including Iran (32). Another strategy was economic support for deaf pregnant women. According to the midwives, the financial problems of this group of women have disabled them from providing continuous care during pregnancy. Although care is free in the health system of Iran, routine pregnancy tests and sonograms make these patients incur medical expenses. On the other hand, not performing these necessary tests or ultrasounds may result in more serious complications and hernias. The midwives' experiences highlight the role of the government and the health system by applying insurance for deaf pregnant women and aiding charitable foundations under the title of economic support. Most deaf pregnant women are not able to pay the necessary expenses related to health due to low household income levels (33). Psycho-social support for deaf pregnant women was another sub-category of strategies. Deaf pregnant women are exposed to more emotional and psychological damage in addition to the mental sensitivities created during pregnancy. Hence, the behavior, attitude, and compliance with professional ethics of midwives and other people related to these women while providing care are very important. Midwives believed that paying special attention to the psychological needs of these women, the empathy of midwives, and the presence of a knowledgeable colleague as a translator during care are necessary. In their study, Mehta et al. (2023) reported that the negative attitude of healthcare service providers towards deaf women causes the wishes of these women to be ignored (34). Also, Casebolt et al. (2020) demonstrated the negative attitude of healthcare service providers regarding obstacles to providing optimal care to women with disabilities (35).

In this study, the second subcategory of strategies was "specific instruction". Training for midwives and training for deaf pregnant women were two sub-categories that were

categorized in this group. The midwives' experiences revealed that midwives did not have enough information to communicate with deaf women effectively; as a result, they came up with problems in providing healthcare services to them. Mitra et al. (2017) found that prenatal care providers did not have enough knowledge to provide care to women with disabilities, and appropriate training must be provided to service providers according to the needs of pregnant women with disabilities (36). Adigun et al. (2020) believe healthcare workers should be trained to communicate with deaf women (6). Lawton et al. (2022) reported that midwives could improve the experiences and overall health of deaf women and their families by increasing information, sufficient literacy, and learning sign language (37). Gichane et al. (2017) also found that training translation services and the sensitivity of how to provide care for care providers are required to improve the maternity care of deaf women (5). Strategies should be considered to facilitate easy teaching and learning for deaf pregnant women. Midwives believed that special methods are needed to provide more effective services. For example, educational cards or posters with simple explanations, short educational clips, virtual space, and special television programs for the deaf can be beneficial. Haricharan et al. (2023) also showed that messaging services can help improve healthcare services for deaf pregnant women (11). Using smart applications for the deaf can improve their health (38). Panko et al. (2023) reported that deaf pregnant women experienced more positive prenatal care when using an appropriate interpreter (25). Increasing deaf people's awareness of correct communication practices and the challenges facing the deaf community would improve their confidence in health regulations and assure them that they can access appropriate and timely information and care (37). As a critical element in the provision of care for deaf pregnant women, midwives encounter numerous obstacles. Ineffective communication barriers to service delivery and personal challenges experienced by deaf mothers contribute to midwives' feelings of inadequacy and hinder their ability to address the needs of these women. Also, special training for deaf women will help a lot to empower them for self-care. Furthermore, concerns about the education of deaf women and midwives' apprehensions regarding potential pregnancy complications within this demographic engender anxiety and psychological strain among midwives. A comprehensive approach involving support from all stakeholders across systemic, economic, social, and psychological domains is imperative. Moreover, the implementation of suitable training programs is crucial for both service providers and deaf pregnant women. It is recommended that midwives receive training in sign language specific to these women to mitigate communication difficulties and develop educational resources such as posters, booklets, or short films about pregnancy and childbirth care. Further research is advocated to identify the challenges faced by midwives and deaf pregnant women, to facilitate the delivery and receipt of appropriate care and solutions to these issues.

In this study, the sample size was relatively small, but we achieved a deep understanding of midwives' experiences. Despite providing detailed explanations on the challenges and solutions of midwives in providing services to deaf pregnant women; however, the generalization of the results is one of the limitations of qualitative studies. This research highlighted the need for more studies to identify the challenges faced by midwives to provide care for deaf pregnant women. Such research can help to facilitate the provision of appropriate care for this vulnerable population.

Conclusion

This research emphasizes the importance of identifying and meeting the specific needs of deaf pregnant women and midwives and insists on the need to create appropriate educational and support infrastructures to improve the quality of care in this area. To overcome these challenges, there is a need for a comprehensive approach in which the stakeholders support each other in systemic, economic, social, and psychological fields. Also, it is vital to implement appropriate educational programs for midwives and deaf pregnant women.

Declarations

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Conflicts of interest

Authors declared no conflicts of interest.

Ethical considerations

This study was approved by the ethics committee of Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.

Code of Ethics

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Use of Artificial Intelligence (AI)

ChatGPT's artificial intelligence was used only in limited areas to edit grammar and provide writing tips.

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Authors' contribution

SM participated in both the interpretation of the results and writing the manuscript and supervised the execution of the plan. PE collected the data and participated in the interpretation of the results. LB designed the study, collected and analyzed the data, and led the research process. All authors read and approved the final manuscript.

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