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Adjustment strategies among Iranian pregnant nurses in continuing nursing care: a qualitative content analysis

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Abstract

Introduction Pregnant nurses often adopt a "prioritizing the fetus" mindset, balancing their professional duties with health concerns. They must adjust to manage, learn, and adapt to new circumstances. This study explores pregnant nurses' adjustment strategies to continue providing nursing care.

Materials and methods This was a qualitative conventional content analysis. Eighteen participants, including 14 pregnant nurses and four nursing managers (two head nurses and two supervisors), were involved in the study. To achieve rich and adequate data, the aim was to achieve maximum variation in terms of age, educational level, departments, and different stages of pregnancy. Data collection tools included in-depth, semi-structured interviews, observations, and field notes based on the central research question. Data analysis was conducted using the Graneheim and Lundman method. MAXQDA version 2020 software was utilized for data management.

Results After analyzing the collected data, five categories emerged: "Strategic Concealment," "Enhancing patience and tolerance," "Attention to internal drivers and emotions," "Efforts to maintain and promote health," and "Efforts to improve professional performance".

Conclusion In providing nursing care during pregnancy, nurses adopt various strategies to adjust and align their caregiving with their pregnancy status. Achieving these strategies requires adequate support from nursing managers, especially head nurses, who are the closest and most influential figures. Therefore, educating nurses and managers on effective adjustment strategies can be crucial in facilitating the adjustment process. Policy-making and the formulation of adjusted regulations for the employment of pregnant nurses can help alleviate the stress associated with the challenges of the nursing profession. These measures contribute to maintaining nurses' physical and mental health during pregnancy and enhancing the quality of patient care.

Clinical trial number Not applicable.

Keywords Pregnant nurses, Nursing care, Adjustment, Qualitative content analysis

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Introduction

Pregnancy is a period of transformation, hope, anticipation, and anxiety for women and their families [1]. It involves profound physical and emotional changes [2] that the body endures relatively quickly [3]. Pregnant women are expected to manage their health and that of their fetus to mitigate various risks associated with pregnancy complications [4]. In high-risk pregnancies, both the mother and fetus face an increased risk of complications, eliciting a range of emotional and psychological experiences largely dependent on the care and support provided by health professionals [1].

The experience of early pregnancy can vary depending on whether it was planned or unplanned and whether it occurs with or without family support. The stress level in pregnant women can be significant, with reports indicating that a large number of infants born today are exposed to high levels of maternal stress during pregnancy [5]. Pregnancy is a critical event for women of childbearing age. Providing appropriate social support to pregnant mothers reduces their risks and helps prevent pregnancy complications and adverse delivery outcomes [2].

Millions of American women are employed, with half of them in their childbearing years [6]. Nurses constitute about 50% of the global healthcare workforce [7], and in the United States, approximately 90.4% of the nursing workforce is female, with 49.2% in the reproductive age group (18–49 years) [8].

Many women work during pregnancy [9], and some workplaces may expose them to known or suspected reproductive hazards [10, 11]. Healthcare environments are rife with occupational hazards that can affect both the health of nurses and the care they provide to patients. Occupational hazards for nurses during pregnancy and postpartum include exposure to infectious agents, imaging, physical tasks (such as lifting and moving patients and performing CPR), cleaning products, patient violence, medication administration [8], prolonged standing, and long working hours, which may lead to uterine contractions and preterm labor. Additionally, irregular shifts exacerbate fatigue and high levels of psychosocial stress [12]. Depending on the workplace environment, specific safety measures, and the stage of pregnancy, it may be challenging for a pregnant nurse to avoid exposure to teratogenic agents and other working conditions that jeopardize their pregnancy [13].

The nursing profession is regarded as a stressful occupation, and various challenges are faced in the workplace [14]. Like other working women, pregnant nurses experience significant pressure to minimize work-family disruptions and continue working throughout their pregnancies [13]. Their efforts to cope during pregnancy can influence outcomes by reducing or preventing negative emotional, behavioral, cognitive, and physiological responses to stressors. Therefore, the ability to choose and employ an appropriate coping response can act as a source of resilience, protecting both the pregnant mother and her fetus from the potentially harmful effects of pregnancy-related stress. For instance, those seeking emotional support or problem-solving coping may experience fewer detrimental effects from stress. In contrast, those who avoid dealing with stressors or adopt unhealthy behaviors, such as smoking to relieve distress, may be more vulnerable [5].

Adjustment is considered a moderating factor, meaning that when individuals face a new environment or situation, they must adjust to manage, learn, and adapt to the new conditions [15]. Psychological adjustment during the transition to parenthood seems linked to a mother's ability to adjust to various changes and fulfill developmental tasks. Maternal adjustment (regarding body image, physical symptoms, and marital relationships) and maternal attitudes (toward gender, pregnancy, and the infant) are critical components of a woman's psychological adjustment during the transition to motherhood. Somatic symptoms are associated with maternal psychological adjustment before and after childbirth. Several factors influence maternal adjustment and attitudes, including maternal age during pregnancy, partner support, socioeconomic status, education, and family lifestyle [16]. Cultural rituals and community support play a crucial role in helping expectant parents navigate the challenges of pregnancy. These practices can provide emotional and psychological support, particularly in non-dominant cultural contexts [17].

A systematic review by Guadino and Schachter (2014) highlighted that the significance of women's coping methods for stress during pregnancy is less clear [5], and existing studies have not explored pregnant nurses' adjustment strategies for nursing care. Moreover, managers, professional health leaders, other health system leaders, and policymakers must know about occupational hazards for pregnant nurses [8]. In addition, the broad dimensions of human phenomena require an understanding of experiences and behaviors [18].

Given the unique socio-cultural and organizational dynamics of Iran's healthcare system, study aims to explore the adjustment strategies employed by Iranian pregnant nurses to continue providing nursing care. Special attention is paid to how individual characteristics shape their perception of occupational stress and influence the selection of adjustment strategies within this context.

Materials and methods

This study employed a qualitative approach utilizing Graneheim and Lundman's (2004) conventional content analysis method. Content analysis reveals conflicting

opinions and unresolved issues regarding the meaning and use of concepts, processes, and interpretations [19].

Data collection, sampling, participants, and data analysis

Eighteen participants, including 14 pregnant nurses and four nursing managers (two head nurses and two supervisors), participated in this study. Participants were selected using purposive sampling, which, although effective for targeting specific populations, may introduce bias and limit the generalizability of the results. The sampling of pregnant nurses was conducted from educational centers affiliated to the University of Medical Sciences in Semnan Province, Iran, between May 2023 and August 2024. To achieve rich and adequate data, the aim was to achieve maximum variation in terms of age, educational level, departments, and different stages of pregnancy. To achieve a comprehensive understanding of the phenomenon under study, and since the adaptation of pregnant nurses in the workplace is a complex social and organizational issue, it is influenced not only by the personal experiences of the nurses but also by institutional factors such as policies, managerial attitudes, and organizational support. Therefore, in addition to interviewing pregnant nurses as the primary subjects experiencing the phenomenon, the authors also conducted interviews with nursing managers.

Study unit characteristics

Inclusion criteria

Pregnant nurses willing to participate in the study were included, preferably experiencing their first pregnancy. Nurses could participate from the time they became aware of their pregnancy. Participants were also required to be physically and mentally healthy. Any inappropriate or sudden changes in a participant's physical or mental condition that could impair communication and withdrawal from participation were criteria for exclusion from the study.

Table 1 Characteristics of the pregnant nurses and managers' participants

Characteristics		Frequency
Age groups (Nurses and managers)	21–25	1
	26–30	6
	31–35	7
	36–40	2
	41–45	2
Educational levels (Nurses and managers)	Bachelor of Science in Nursing	13
	Bachelor of Science in Anesthesia	2
	Master of Science in Nursing	3
Pregnancy trimesters (Nurses)	First	2
	Second	4
	Third	8

The study's average ages of pregnant nurses and managers were 30.92 ± 3.66 and 40.25 ± 4.27 years, respectively. The average gestational age among the pregnant nurses was 25 weeks. The average duration of the interviews was 36.77 min (ranging from 20 to 55 min). The mean experience years of pregnant nurses and managers were 7.5 ± 3.93 and 15.5 ± 1.73, respectively. Interview locations were chosen based on the participants' preference to ensure maximum comfort and minimal environmental distractions. Nurses' workplaces included Medical-Surgical, Emergency, Paraclinic, Critical Care, and Pediatric wards. Additionally, educational levels varied, including a Bachelor of Science in Nursing (BScN), a Bachelor of Science in Anesthesia, and a Master of Science in Nursing (MScN).

Some characteristics of participants are outlined in Table 1.

Data collection

The data collection tools included in-depth, semi-structured interviews, observations, and field notes based on the central research question. All interviews were conducted by the first author (a female faculty member and Ph.D. nursing candidate). After obtaining informed consent from the participants and explaining the study's objectives, questions were asked regarding age, educational level, workplace, number of children, weeks of pregnancy, history of miscarriage, and the spouse's age, occupation, and education level. Following this, more specific questions related to the main aim of the research were posed.

Interviews were recorded with the participants' permission until rich and sufficient data were obtained. Initially, questions were open-ended. For example, nurses were asked, "What issues do you encounter during your work shifts (morning, evening, and night)?", "What challenges do you face in providing individual and group nursing care (such as administering medications, participating in CPR, and managing airways)?", "How do your managers and colleagues interact with you?", "What actions do you take to address these problems and challenges?" and "How is it culturally perceived for women to be pregnant and continue working in our society?". Additionally, exploratory questions such as "What do you mean by that?" and "Could you elaborate further?" encouraged participants to share additional thoughts.

The average duration of the interviews was 36.77 min. The researcher also conducted a complete observer role for one observation, meaning she was present in the nurse's workplace without any intervention and with prior familiarity with the participant. This observation lasted 150 min and took place in a hospital. For data management, MAXQDA version 2020 software was utilized. The choice of MAXQDA software for data analysis

in this qualitative study was based on its strong capabilities in handling and analyzing complex qualitative data.

Data analysis

Data analysis was conducted using the approach outlined by Graneheim and Lundman (2004). According to this approach, analysis began immediately after the first interview. The transcripts of the interviews were word-for-word written by the first author (M.Sh.), capturing participants' non-verbal cues. The researcher listened to the recorded interviews multiple times and reviewed the written transcripts to understand the participants' feelings. Then, the transcripts were re-read and coded by the first author. Data from the interviews, observations, and field notes were analyzed concurrently. Codes representing a single theme were grouped into subcategories and merged to form categories based on the context.

The data obtained were also reviewed separately by other team members. Any ambiguities requiring attention were addressed through participant feedback and subsequent interviews (two interviews were conducted with the first participant). This process ensured that ambiguities were resolved and the coding of each category was clearly defined. Interviews continued until data saturation was achieved, meaning that new data no longer provided additional insights, and no new categories were emerging. The analysis identified several themes representing pregnant nurses' adjustment strategies for continuing to provide nursing care.

Rigor

Lincoln and Guba (1986) suggested credibility, dependability, confirmability, and transferability in assessing qualitative studies [20].

Strategies such as researcher reflexivity, member checking, and maintaining a clear audit trail were employed throughout the research process to mitigate potential bias. The researcher built trust with participants through careful listening and effective communication (such as selecting interview locations based on participants' preferences) and employed various data collection techniques (including observations and field notes) to enhance credibility. Long-term engagement with the data and diversity in participant selection was also aimed at increasing the credibility of the study's findings.

For dependability, the research supervisor and advisory committee members reviewed the interview transcripts and extracted codes and categories. Confirmability and transferability were evaluated upon the study's completion. For confirmability, the extracted codes underwent repeated reviews by several research colleagues, with opinions summarized and compared during joint sessions. Findings were shared with samples not involved in the study, and their feedback on the relevance of the findings was solicited to confirm transferability.

Table 2 Categories and subcategories of strategies for pregnant nurses to adjust to continuing nursing care

Category	Subcategory
Strategic Concealment	Concealing pregnancy
	Compelled silence
Enhancing patience and endurance	Inevitability in accepting conditions
	Spiritual assistance
	Leveraging patience
	Employing relaxation techniques
Attention to internal drivers and emotions	Professional interest
	Financial motivations
	Sense of responsibility
	Hope for the end of pregnancy and the joy of motherhood
Efforts to maintain and promote health	Health care
	Emotional control
	Distraction techniques
Efforts to improve professional performance	Efforts to adapt to the environment
	Seeking help from colleagues
	Creative response to provide care

Ethical consideration

The researcher obtained approval for the research proposal from the Research Council and received the ethical code (IR.SEMUMS.REC.1401.320) from the Ethics Committee of Semnan University of Medical Sciences. Following this, a letter of introduction was provided to the hospital authorities, and work commenced after obtaining their consent. The researcher introduced herself to the study participants, explained the purpose of the research, and began data collection after obtaining informed written consent. Participants were assured that the collected information would remain anonymous and confidential through numbers and codes, and all data were stored securely and accessed only by the research team. They were informed that participation in the study was entirely voluntary and that they could withdraw without any consequences. Participants were also informed that more than one interview session might be necessary. The study results were shared with the hospitals and participants.

Results

After analyzing the collected data, five categories emerged: "Strategic Concealment," "Enhancing patience and endurance," "Attention to internal drivers and emotions," "Efforts to maintain and promote health," and "Efforts to improve professional performance," along with eighteen subcategories (Table 2) which are prioritized.

Strategic concealment

The category of "Strategic Concealment" refers to the secretive and passive behaviors of pregnant nurses, which encompasses two subcategories: "Concealing pregnancy" and "Compelled silence."

Sometimes, due to a lack of appropriate feedback from managers, nurses may attempt to conceal their pregnancy as much as possible. This behavior may also stem from the absence of effective communication with head nurses or nursing administrators. However, in certain situations—such as exposure to radiation or the need to accompany patients in ambulances—they may be compelled to disclose their pregnancy earlier than intended. Moreover, if nursing managers respond inappropriately or display unsupportive behaviors, nurses may choose to remain silent. Overall, these responses reflect a passive approach.

Concealing pregnancy

This concept refers to the reluctance to disclose the timing of one's pregnancy and the act of hiding the pregnancy from managers and other colleagues. One participant noted:

> *I really did not want to tell my supervisor (laughs) because she had a specific attitude, and I did not want to share this with her. I heard from my friends and colleagues who had worked with her and experienced this situation that she did not like it when someone was in this condition and preferred that they leave this department as soon as possible (P8).*

Compelled silence

This subcategory pertains to the nurse's reaction to remaining silent and not responding to the unpleasant behaviors of managers or patient companions. Participant number three commented:

> *If you said anything, she would, for example, say, 'I am the supervisor; you have no right to say anything.' After that, I would not continue the discussion because of this. It does not matter; she can say whatever she wants, just let these few months pass (P3).*

Enhancing patience and endurance

This category reflects the ability to endure the challenges of pregnancy alongside the demands of nursing, with nurses applying patience as one of the facilitating strategies for adjustment. The "Enhancing patience and endurance" category consists of four subcategories: inevitability in accepting conditions, spiritual assistance, leveraging patience, and employing relaxation techniques.

Inevitability in accepting conditions

This subcategory refers to the acceptance of the stressful conditions of the profession, the provision of nursing care, and its associated responsibilities. Two participants expressed the following:

> *We disinfect the devices in our unit. Since I had this problem, I did not think much about it anymore (laughs). In both the endoscopy and bronchoscopy units, the solution we use for disinfection is high-level Sidex, which is very harmful to the lungs, and there is no proper ventilation in treatment either (laughs). We wear masks and have become accustomed to the smell and its harmful effects, but anyone entering the room smells the Sidex. Honestly, there is not much to be done (P2).*

> *In these past few weeks, I was involved in resuscitation, managing the suction of patients who were not in good condition; even a healthy person would induce nausea. I adjusted to these situations, accepting that I was in this condition (P16).*

Spiritual assistance

This subcategory encompasses activities related to seeking help from God and spiritual paths to enhance the capacity to endure circumstances. Participant 17 stated:

> *Overall, I want to tell you that during this time—from the beginning of my pregnancy until now, as I am with you—the only thing I can say I have felt is that I see God protecting both me and my baby (P17).*

Leveraging patience

One of this category's subcategories is drawing on the feeling of patience to help maintain calmness and endure conditions. Participant 11th remarked:

> *She is very patient herself. She was not feeling well sometimes, yet she did not show it and completed her shift. She is very patient (emphasizing) and self-sacrificing. I often tell her she is sometimes too much of a martyr (P11).*

Employing relaxation techniques

This subcategory includes activities to maintain calmness, such as reading books, listening to music, and painting. Two examples of quotes in this regard are as follows:

I mostly listened to music and read psychology books about child-rearing; these books helped me a lot psychologically (P12).

I would go to my shifts and continue painting because it was the only thing that could wash away the exhaustion and fatigue from the hospital. I would go to my shift, come home for a little rest, and then paint to feel better. I truly believe that if it were not for painting, I would have been completely depressed. That is why I could not bring myself to give up painting, and no matter how difficult it was, I kept it up (P9).

Attention to internal drivers and emotions

The "Attention to internal drivers and emotions" category illustrates the personal interests, feelings, and motivations that enhance patience and endurance in challenging circumstances. This category encompasses professional interests, financial motivations, a sense of responsibility, hope for the end of pregnancy, and the joy of motherhood.

Professional interest

An interest in the nursing profession, a desire to work in a hospital, and a preference for this over staying at home are codes related to this concept. Participant number six stated:

I wanted to go to work; I do not like sitting at home. I am not the kind of person who prefers to stay home often (P6).

Financial motivations

One of the internal drivers for this group of nurses is the desire to receive a full salary during pregnancy, leading to efforts to attend work. One participant shared:

I became pregnant under circumstances where, although we wanted it, we had financial issues before due to certain matters. We were planning to move houses and faced some challenges financially. I had planned around my salary, and it was not possible to ignore a month's salary and not show up only to receive half of it. These factors made it necessary for me to endure and come to work because I needed it, but there was no other choice (P6).

Sense of responsibility

This subcategory consists of concepts related to the commitment to providing care, work ethic, a sense of duty in fulfilling responsibilities, and being present at work despite poor physical condition. Two participants noted:

"I had to push through because I was on duty, and it put pressure on the other staff members" (P17).

Well, considering my work ethic, I try to do my job as much as possible (P4).

Hope for the end of pregnancy and the joy of motherhood

The temporary nature of pregnancy and the hope for its conclusion, combined with the joy of anticipating a child's birth, can serve as internal motivators for better adjustment among pregnant nurses. Participant number 17 expressed:

The sweetness of it is that the hardship you are enduring is in anticipation of someone you love; the hope for your future gives you some comfort (P17).

Efforts to maintain and promote health

This category represents the efforts of pregnant nurses and the implementation of strategies aimed at enhancing health and reducing physical issues. It comprises subcategories such as health care, emotional control, distraction techniques, and efforts to reduce physical problems.

Health care

The present concept refers to codes for increased rest at home, personal protection, resting during shifts, efforts for nutritional health, and reducing physical problems. In this regard, four participants stated:

I would not stand for long periods. I really could not manage it anymore. I would just come home to rest before the next shift, mostly like that. Even at home, I would only do light tasks and not be on my feet (P4).

When I was on the morning shift, I would wake up early, have breakfast, and when I was on the night shift, I would eat something before my shift started, knowing I would not be able to eat anything else (P7).

I took sick leave in August because, at the end of July, I started feeling unwell; I was fatigued and had lost weight (P3).

When I was nearing my fourth month and found out that the placenta was low, I had a lot of pelvic pain, back pain, and leg pain. I also have a history of cervical disc issues and mild lumbar disc problems, so I would experience leg pain every night after my shift, which would subside with medication. I was going to physiotherapy (P1).

Emotional control

Emotional control encompasses efforts to maintain self-mastery and calmness, attempts to manage stress, and positive self-affirmation. Three participants noted:

> *I tried not to get upset because I was told that anything that stresses me would affect the baby. I tried to be carefree (P5).*

> *During that time, I talked to myself a lot and completed my tasks slowly, doing whatever amount of work I could (emphasizing). I had no management over my speed; for instance, if I used to tell myself that my reports had to be finished by midnight, I set no limits anymore. I thought I would write my reports whenever I could, and if I could not do it, I would either say it was not done or allocate more time in the morning to complete it. However, I did not cut into my break time and did not stress myself. I kept telling myself that this night would pass and morning would come (P7).*

> *I would tell everyone that it is natural and that I had to endure it until it passed, and then I would come to work (P5).*

Distraction techniques

This concept refers to strategies to achieve mental peace, quicker passage of time, and reduce physical and psychological issues. Participants' statements confirm this:

> *I told myself to keep busy with work because the more I sat at home, the more my mental calmness was disturbed by the countdown of the days (P17).*

> *When you come home, you remember your back pains (laughs), but during the shift, your hours and days go by better (P6).*

Efforts to improve professional performance

This category refers to the strategies employed by pregnant nurses to improve their professional performance, such as adapting to the environment, seeking help from colleagues, and creatively responding to provide care.

Efforts to adapt to the environment

A nurse's effort to adapt to the environment involves transitioning from a challenging setting to working in a familiar environment. A supervisor stated in this regard:

> *Up to now, no one has come to say that they are dissatisfied with their department, and if someone has been, conditions have quickly been arranged for them to be able to relocate unless they refuse and say they are more comfortable in their department. Otherwise, they are moved from a difficult department, especially during pregnancy, to more manageable departments (P18).*

Seeking help from colleagues

This concept illustrates the act of seeking assistance and help from others. Participant number 3 expressed:

> *When we needed to intubate a patient, I mentioned that my problem was with the ventilator that I could not move, so I went and got someone to help (P3).*

Creative response to provide care

This subcategory consists of concepts such as creating the best scheduling for shifts, eliminating unpleasant odors by carrying air freshener, creatively reading the ventilator from a distance, using a chair during shift handovers, striving to complete dressings and suctioning while wearing multiple layers of masks, and minimizing direct care for high-risk patients. Four quotes and one observation support this issue:

> *Considering that the night shift was a night duty and we were free during the day, I somewhat liked to take at least one night shift, like going between four to five shifts because I was free that day and somewhat free the next day (P7).*

> *I had this issue at that time, especially because of the gentlemen (laughs), but I took Ondansetron and Dexamethasone, and I always had a perfume spray with me (P1).*

> *While writing a nursing report and recording notes, she took out her mobile phone and held it at an angle so that she could zoom in from a distance to read the ventilator indicators, then began to rewrite her notes (Observation 1, P5).*

> *Now that I recently had a hemorrhage and returned from sick leave—I was on sick leave for 15 days—I told them that I could not manage anymore, so I brought a chair for the shift handover and sat on it (P5).*

> *I prepared my medications myself and tried to go into the patient's room twice as often because the patient's monitor was in front of me, and I could see it. The patient was not agitated; he was in a light coma, so I tried to organize all my tasks, go into the room twice, and then come out (P5).*

Discussion

In the present study, five categories emerged: "Strategic Concealment," "Enhancing patience and endurance," "Attention to internal drivers and emotions," "Efforts to maintain and promote health," and "Efforts to improve professional performance."

In this study, "Strategic Concealment" comprises "Concealing pregnancy," like hiding pregnancy, and "Compelled silence," like remaining silent and not responding to the unpleasant behaviors of managers or patient companions. These reactive behaviors can pose potential risks to the health of the pregnant nurse and the fetus. Contrary to what emerged in this study as one of the adjustment strategies, Goodman et al. (2024) stated that support for flexible work arrangements can assist pregnant employees in performing their responsibilities more effectively [21]. Laridson et al. (2024) also found that encouraging communication between pregnant employees and managers creates a supportive environment where adjustment can be tailored to individual needs [22].

Spiritual assistance is one of the subcategories derived from "Enhancing patience and endurance." This subcategory includes religious activities such as Quran recitation, experiencing tranquillity afterward, relying on God, and feeling God's presence in safeguarding the mother and fetus. In this regard, Ashaba et al. (2017), in their qualitative study using thematic analysis, found that religious beliefs help some women with HIV during pregnancy and postpartum as one of the coping strategies to manage their challenges [23]. In Iran, the spiritual context is mostly related to Islam and God's beliefs. However, Ashaba et al. found that support from the church community, spirituality support from the church community, and personal religious beliefs and spirituality helped some women manage challenges [22].

"Employing relaxation techniques," which encompass reading books, listening to music, painting, and positive affirmations, emerged as strategies employed by pregnant nurses in "Enhancing patience and endurance" to achieve adjustment. In this context, Nadehoulta et al. (2024) stated that yoga and relaxation techniques can significantly reduce pregnancy-related stress and discomfort while enhancing physical and mental health [24].

One of the subcategories of "Attention to internal drivers and emotions" is "Professional interest," a desire to work in a hospital, and a preference for this over staying at home. Ashrafi et al. (2023) identified interest in the ICU as a facilitator of adaptation for providing nursing care in this department [25].

"Financial motivations" is one of the subcategories under "Attention to internal drivers and emotions" for pregnant nurses' adjustment to providing nursing care, while "Efforts for nutritional health" is one of their strategies in "Efforts to maintain and promote health." As Bishnoi and Bishnoi (2022) noted, access to pregnancy and childbirth benefits, including nutritional supplements and paid leave, significantly enhances the health of pregnant employees by promoting better nutrition and reducing financial stress [26].

Another finding is the "Sense of responsibility" subcategory within "Attention to internal drivers and emotions". It was one of the most frequent concepts in interviews. This subcategory refers to work ethic, commitment, and the effort to be present in the hospital despite unfavourable physical conditions. Consistent with this finding, Rainbow et al. (2021) found that pregnant nurses tend to adopt a "super nurse" mentality, prioritizing patient care even at the risk of their health and that of their child [8].

One of the subcategories related to the "Efforts to maintain and promote health" category is "Health care," which refers to codes for increased rest at home, personal protection, resting during shifts, and efforts for nutritional health. Abderhaldun et al. (2024) referred pregnant employees for consultations regarding protection against workplace hazards in their study, concluding that such consultations can act as an effective intervention by facilitating hazard identification and empowering pregnant employees to work safely [27].

Also, in the present study, sick leave during pregnancy emerged as one of the "Efforts to maintain and promote health" from the "Health care." In line with this finding, Mardiana (2024) stated that comprehensive maternity protection, including pregnancy and maternity leave, can ensure that pregnant employees maintain their health and well-being during and after pregnancy [28]. Furthermore, they should ensure sufficient leave to reduce risks associated with physical exposure in the workplace [29].

The category "Efforts to improve professional performance" encompasses the strategies of pregnant nurses to adapt while providing nursing care. As Ooshige et al. (2023) concluded in their study, support following the disclosure of pregnancy helps them maintain a balance between work and pregnancy while fostering professional growth [30].

One of the subcategories constituting the category "Efforts to improve professional performance" is "Efforts to adapt to the environment." Alejandra et al. (2024) also stated that pregnant employees can protect their health by seeking reasonable accommodations for working under safe conditions [31].

Another subcategory of this category is "Seeking help from colleagues," which Anderson et al. (2022) highlighted. They stated that demonstrating concern, understanding, and appreciation from managers, alongside support from colleagues, is crucial for the successful adjustment of pregnant employees, allowing them to experience workplace adjustment positively [32].

"Creative responses to provide care" in this study included devising optimal scheduling for work shifts, eliminating unpleasant odours with air fresheners, creatively reading ventilator indicators from a distance, using a chair during shift handovers, striving to complete dressings and suctioning while wearing multiple layers of masks, and compressing direct care for high-risk patients. All these strategies emphasize using creativity and modifying prior care practices by pregnant nurses to align care delivery with their pregnancy conditions. Additionally, Hino et al. (2024) found that pregnant nurses balance their professional responsibilities while safeguarding their health, which can act as a strategy for maintaining optimal work conditions [33].

One of the "Creative responses to provide care" found was "Compressing direct care for high-risk patients," which refers to reducing time spent in contact with high-risk patients. In this regard, Donzeli et al. (2023) stated that preventive measures should focus on minimizing exposure to biological, chemical, and physical hazards in the workplace to protect the reproductive health of pregnant employees and their infants [34].

Limitations of the study

This study had several limitations. Unsuitable clinical conditions, pregnancy-related sensitivities, and frequent sick leaves of the participants were among the main limitations that led to a prolonged sampling process. The authors have acknowledged that in qualitative research involving self-report interviews, there is a possibility of response biases, as participants may provide answers that align with social expectations or personal biases. To minimize such biases, the authors emphasized the confidentiality and anonymity of responses to encourage honest and open participation. Additionally, the experiences of nurses who experienced miscarriages were not examined in this study, which requires further investigation. Despite the researcher's efforts, personal and professional experiences, and the reviewed studies in the literature review section, the researcher has attempted to analyze the results without bias. Furthermore, while the researchers endeavoured to reference studies on all categories and subcategories identified in the article's discussion section, some concepts may be novel and not found in other studies.

Conclusion

In providing nursing care during pregnancy, which is accompanied by complex physical and psychological conditions, Iranian nurses often strive to implement positive strategies, like others, that allow them to adjust their care delivery according to their pregnancy status. This approach enables them to maintain their health and that of their fetus while enhancing their professional performance. Achieving these strategies requires adequate support from nursing managers, particularly nurse supervisors, who are pregnant nurses' closest and most influential figures. Therefore, training in effective adjustment strategies for nurses and managers can play a significant role in facilitating the adjustment process, and behaviors that lead to reactions, such as hiding pregnancy, should be avoided. Furthermore, policy-making and the formulation of adjusted regulations for the employment of pregnant nurses, including reducing intensive and night shifts and assigning them to clinical environments with lower risks for both mother and fetus, can help alleviate the stress associated with the challenges of the nursing profession. These measures contribute to preserving nurses' physical and mental health during pregnancy and enhancing the quality of patient care.

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Author contributions

All authors (MS, HB, SJ, and MRA) have participated in the conception and design of the study. MS Study conception/design contributed to the data collection, analysis, interpretation of the data, and manuscript drafting. HB Study conception/ design, data collection/ analysis, manuscript drafting, critical revisions for important intellectual content, supervision, Administrative/ technical, and Final revision. HB and MRA critically revised and closely checked the proposal, the analysis and interpretation of the data, and the article's design. SJ has been involved in critically revising the manuscript. All authors read and approved the final manuscript.

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Data availability

The data supporting this study's findings are available on request from the corresponding author. However, the data are not publicly available due to privacy or ethical limits.

Declarations

Ethics approval and consent to participate

Under the guidance of principles of the World Medical Association Declaration of Helsinki, it was first considered respecting participants' rights and protecting their health and rights. The Semnan University of Medical Sciences Ethics Committee, Semnan, Iran, approved this study (IR.SEMUMS.REC.1401.320). Participants were provided information about data confidentiality, voluntary participation, and freedom to withdraw from the study. Then, written informed consent for participation was obtained from all of them.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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