

Developing a Supportive Care Plan for Women during Labor Based on the Logic Model

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ABSTRACT

Background & aim: A supportive program during normal childbirth with a holistic approach could reduce the cesarean section rate and make childbirth a positive experience. Therefore, the present study aimed to develop a supportive care plan for labor using the logic model.

Methods: The data generated through a grounded theory study were used to develop a program for supporting women during labor based on the logic model. A total of 25 mothers who referred to hospitals for labor as well as eight professionals were recruited through the purposive sampling in Mashhad, Iran during March 2014 to December 2016. The problems and needs of mothers, as well as the viewpoints and recommended strategies of professionals to meet those needs, were elicited through the semi-structured interviews. The stages of supportive program development included identifying the problems, defining the inputs, activities and outputs as well as identifying program outcomes.

Results: In the developed care plan five areas of 'infrastructure', 'equipment', 'facilities', 'training', and 'processes' were classified in the inputs. Three areas of 'designing interventions', 'implementing interventions' and 'following ethical considerations' were categorized under the category of activities. Statements related to assessment were nominated as output. The short-term and long-term results related to the program's intervention were labeled as outcomes.

Conclusion: The developed supportive care plan as a holistic program could be implemented instead of the existing programs. It will be a guide for both decision-makers and practitioners in terms of managing and supervising women in labour through providing support.

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Introduction

Childbirth is a complicated, multi-dimensional, understanding cognition, and unique experience considered as one of the most important events during the reproductive period of females (1-3). The memory of childbirth is an everlasting one in a woman's mind (2) tending to have intense psychological effects (4) that lead to a traumatic experience (5).

Maternal support is a remarkable factor that could turn the experience of childbirth into one

of the most memorable events of life (6). This support will only become a part of the perceived support for mothers, in case it is built on a holistic approach concerning the demands, needs, and preferences of mothers (7). Support results in a balance between the physical and emotional pathways and suppresses the impact of catechol amines secreted due to stress (7-9). Moreover, maternal support directly affects feelings and leads to a sense of healthiness. It

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evokes positive emotions and experiences that impose direct impacts on mental health (10).

Support provided by the midwife and caregiver reduces preeclampsia incidence, cesarean section rate, unnecessary medical interventions in labor, infection rate, postpartum depression, and emotions during labor (10-12). The neonatal outcomes of maternal support include a shortened Apgar score of less than 7 min, which is associated with a diminished hospital stay, increased endurance during breastfeeding, and better maternal-infant bonding (11-13).

The supportive program of labor was designed through a technocratic approach utilizing the opinions of experts in Iran. The present care method augments the medicalization of natural birth. Accordingly, not only the delivery will be performed by the doctor and only 65% of the births are conducted by midwives, but also the medical interventions increase during the delivery (14). Seeking to meet the demands of mothers through a holistic approach during labor helps to elevate their perceived support. Compiling a step-by-step program to help increase the perceived support of mothers during labor and delivery should be regarded as a high priority of health systems (15).

Understanding the basic needs of women during childbirth, taking into consideration the demands and preferences, and increasing the involvement of the family in the childbirth process are some of the advantages of this support program (15). However, program design is an unending process for supporting decision-making that determines the method used to evaluate the objectives and enables the formation of end-goals based on the opinions of experts (16). Although there is a national comprehensive program for pregnancy and childbirth in Iran, the approach to childbirth is technocratic merely designed based on the professional expectations of experts and not mothers (17).

Formulating a program according to the demands and desires of mothers during childbirth is the main aim of holistic care. It seems that the logical approach to program design is suitable for program development as it is a previously-confirmed framework in health settings due to inclusiveness and the fact

that it enables discourse and offers measurable criteria. Logic model has the potential to be turned into a theory and has been more successful than the other models because of minimizing the uncertainties of roadmaps (15-18).

Logic model uses the data and codes extracted from the study to develop a supportive program. It is applicable for designing a model in the health system and is used due to being transparent (18) and practical in designing and evaluating the programs. It was widely utilized in the health system in the past and some health system research centers and departments adapted the model for this system. (19)

Designing a maternal support program needs a field study to examine the perceived support of mothers. No evidence of such programs was found in the literature in Iran. Therefore, the researchers conducted a qualitative study to establish a base for the theoretical structure of the program (20). According to many researchers, a logic model is the most applicable plan for achieving consensus on a subject. Moreover, it is a suitable approach that enables the transparency of processes (21, 22).

In Iran, practical care programs are based on the care with the biomedical approach for pain in the delivery rooms. As a result, it seems that a supportive program is required to be developed based on the needs and desires of Iranian women during childbirth. With this background in mind, the present study aimed to propose a supportive program based on the preferences of women during labor and delivery using the logic model.

Materials and Methods

In the current study, we used several steps for developing a supportive program and applied a logic model for the main part of the program. Logic approach is a previously-confirmed framework in health settings because of inclusiveness and the fact that it enables discourse and offers measurable criteria. Consequently, this approach seems to be suitable for program development (23).

Logic model has the potential to turn into a theory and is more successful than the other models as the result of minimizing the uncertainties of roadmaps (16, 18). This model

is practically applicable for designing programs in the health system and is used because of being highly transparent (16) and practical for designing and evaluating a program. It has been used many times in the health system previously. Creating a program requires a framework consisting of identifying problem, needs, inputs, activities, outputs, outcomes, and impacts (short- and long-term impacts) based on the logic model.

Problem Identification: This stage figures out the problem addressed and the questions answered by the program, such as "What was the most important achievement in this stage?" In this study, the program seeks to offer some procedures that can provide mothers with support during labor and delivery.

It is crucial to define the target population at this stage. The participants of the study were selected through the purposive sampling method of the mothers admitted in labor wards of the hospitals of Mashhad in the North-east of Iran during March 2014 to December 2016. The hospitals included four public and Social Security Organization-affiliated hospitals, two private hospitals, and two charity hospitals.

In order to identify the needs, interests, and preferences of mothers and create an appropriate strategy for compiling the program, 25 interviews were held with the mothers by the first author (TFN). The interviews were carried out in a semi-structured form at a time convenient to the mothers. The interviews were based on the needs, demands, and preferences of mothers and began with a general question followed by more in-depth inquiries. In addition, the ideas of expert members, namely gynecologists, obstetricians, midwives, midwifery students, gynecology interns, and gynecology assistants regarding support during childbirth were evaluated.

All the observations and interviews held with the mothers and involved people, including two midwives, one obstetrician, two interns, and two midwifery students were encoded. A total of 1478 initial codes were extracted from 25 interview and ten observations. Data were saturated and no new items were developed, thereafter.

This step meant to clarify the codes based on the stages of compiling the logic model

programs and consisted of 'inputs', 'activities', 'outputs', 'outcomes', and 'impacts'. The extracted codes proportionate with the program stages were 180 cases.

Embedding of Extracted Codes in the Input Stage of the Logic Model: Following a review of the extracted codes based on the stages of the program, 180 codes remained. Afterwards, another review was completed resulting in 54 codes with 13 codes classified in the input stage. The input stage included infrastructure, human resources, equipment, facilities, education, and process. In this step, nine, four, and seven codes were embedded in preparation, equipment and facilities, and education, respectively.

Embedding of Extracted Codes in the Activity Stage of the Logic Model: Activity step in the logic model entailed episodes and activities which were a proposed part of the plan accomplishment. In the activity stage, the codes were divided into three areas of intervention design, intervention implementation, and following ethical considerations. These interventions are used to bring about the intended program changes or results.

This stage was defined as all the activities or events carried out by obstetricians, midwives, or any crew, staff, and midwifery student that worked together in the delivery room, in addition to the expectations of the mothers. Overall, 33 codes were implemented in the activity stage, including seven codes in education, one in process, nine in the designing of intervention, eight in intervention, seven in ethics.

This part consisted of the items pertaining to the desires and needs of mothers, the privacy of mothers in the labor room, especially during a vaginal examination, cleanliness of bed and gown. Moreover, not restricting mothers to bed, permitting mothers to walk, massaging mothers during delivery, and using non-medical measures for pain relief were among the items of this part. In addition, this part entailed compliance with the code of medical ethics, such as respecting the dignity of mothers, avoiding insulting words, giving freedom to mothers for choosing their delivery position, and the impartiality of midwives and doctors toward the mothers.

Embedding of Extracted Codes in the Output Stage of the Logic Model: The output stage addressed an evaluation system that helped to find out about the satisfaction of mothers in terms of the noted items. Outputs are the direct consequences of the activity part and are usually described regarding the size and/or scope of the services and products delivered or produced by the program. They indicate whether a program was delivered to the intended audiences at the intended “dose” or not. Two initial codes were implemented in this stage. This step was defined by some services that would be designed based on the activity stage and some mothers who perceived these services.

Implementation of Outcome-impact: This step entails changes in the level of organization, community, and/or system expected to result from program activities. These alterations might include improved conditions, increased capacity, and/or changes in the policy arena. Six initial codes were categorized in short-term impacts, namely the satisfaction of mothers with childbirth. Furthermore, a decrease in elective

caesarian section and the promotion of childbirth could be mentioned among the long-term impacts.

Feedback: At this stage, the positive and negative factors that could affect the program were identified. The positive factors were involving mothers and compiling the program with their viewpoints in mind, which proved to be the most influential factor. This efficacy could be because the existing programs either had a biomedical approach or were designed according to the perspectives of the health care managers. Another effective point was that more groups of people had a role in compiling the program, including the relatives and husbands of patients, who were interviewed during the waiting time. However, the previous programs did not consider the viewpoints of these groups. A factor with a negative impact was that the husbands were not allowed to accompany their wives to the delivery room. The research was a part of a Ph.D. thesis and time was not sufficient for continuing the program.

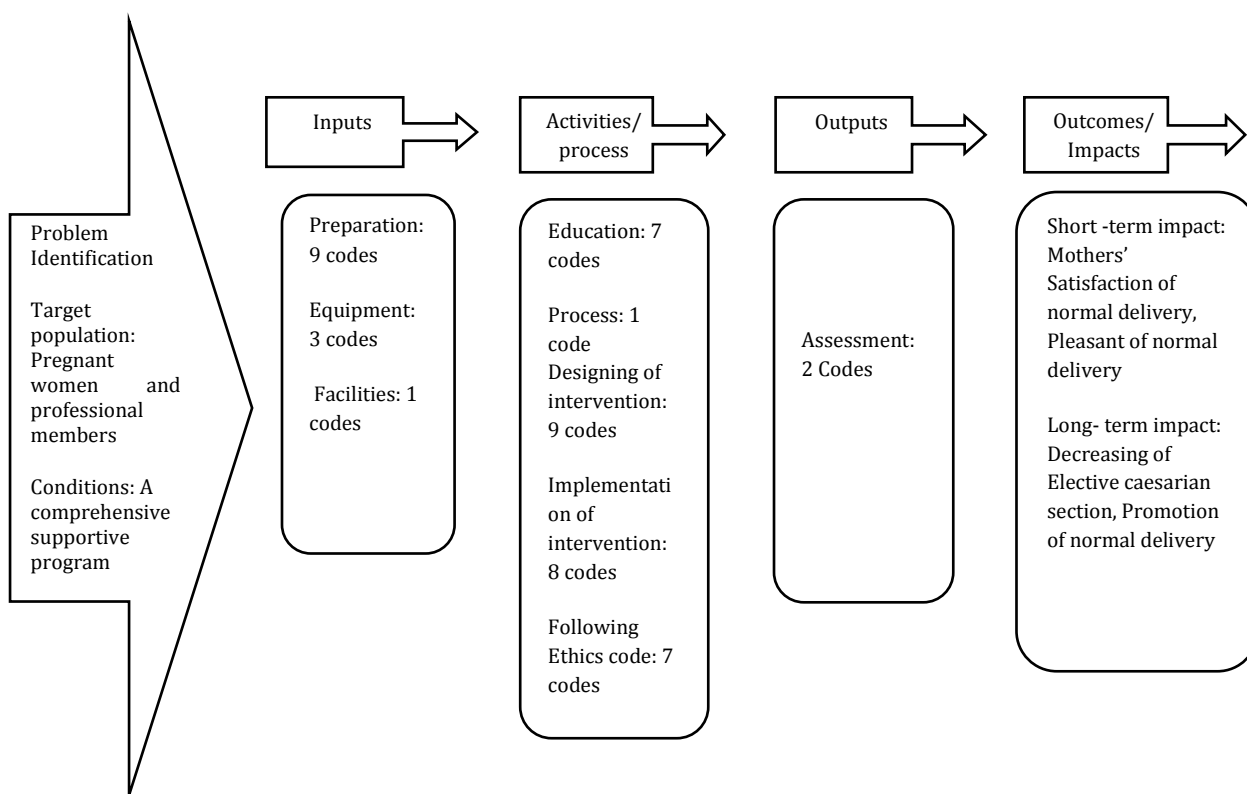


Figure 1. Embedding of initial code to the logic model for supporting the care program

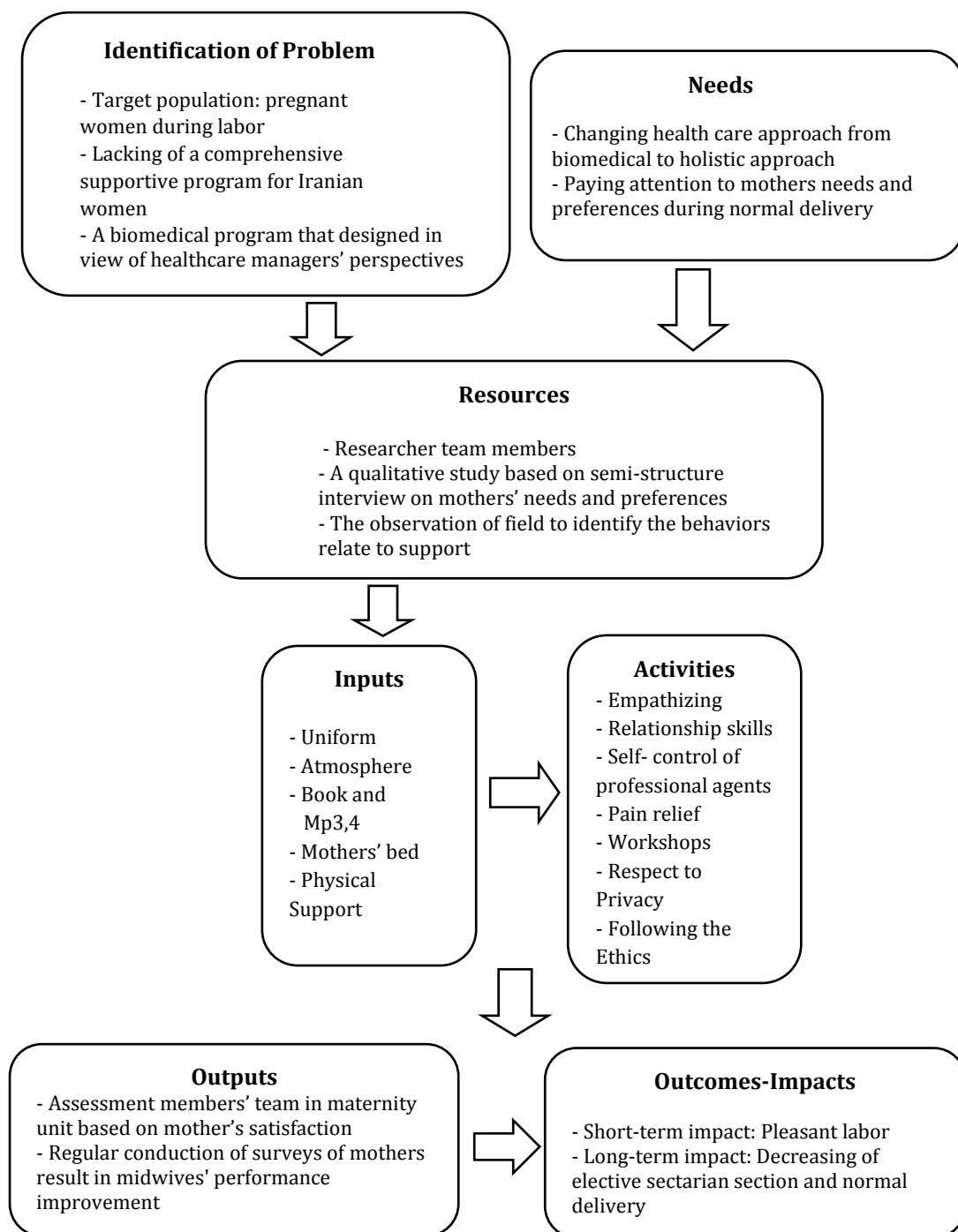


Figure 2. Final draft of the logic model for supportive care program for Iranian women

Results

The initial draft of the logic model was prepared as shown in Figure 1. The input stage included

important items, such as the physical space of the labor room, the color of the uniforms of

midwives, beds and the station setting, verbal communication of midwives with the mothers, empathy and proper instruction-giving, and the

control of delivery personnel over their verbal and non-verbal behaviors (Table 1).

Table 1. Statements for the logic model

Input: Statements for the Preparation

- 1: The color of the formal clothes of midwives is better to be bright resulting in facilitated communications and more freshness for the mothers.
- 2: Physical atmosphere, including heat, noise levels, moisture, and the odor of the maternity unit must be set in conformity with the hospital standards approved by the Ministry of Health and Medical Education. However, these factors should have the potency to vary based on the preferences of the mothers.
- 3: It is better to grant the possibility of having personal stuff, namely MP4, MP3, books, diaries, clothes, or anything else that the mothers insist on carrying (except for wireless telephone).
- 4: Light colors for walls and appropriate lighting in the maternity unit need to be considered as important factors because they help to diminish the feeling of sadness in mothers.
- 5: Arrangement of the maternity unit and midwifery station should be in a way that sections the eye contacts (i.e., having an L form).
- 6: It is better to recognize the psychological needs of mothers by birth agents during childbirth and provide the essential contexts to meet these requests.
- 7: In order to keep the mothers calm, the personnel of the delivery room should not utilize midwifery expressions at their bedside.
- 8: Birth agents should avoid using the expressions, such as *'delivery pain is always like this; you should stand it!'*
- 9: Personnel of the labor room should perceive the contractions of mothers and empathize with them accordingly. In addition, they must try their best to make the situation more comfortable for mothers.
- 10: It is excellent for the birth agents to state the difference of childbirth pain with other types of pain in terms of its fruitfulness.

Input: Statements for the Equipment

- 1: Providing mothers with nutritional products, such as sweet, water, and filtered soup at the maternity unit is necessary.
- 2: Sufficient heating and cooling equipment, such as a blanket, warm bags, and ice bags should be available for mothers in case of request.
- 3: It is better to use electronic equipment or in case of unavailability use other ways to exchange information about the situation of mothers to her assistance.

Input: Statement for the Facility

A private refrigerator for food preservation is essential for all mothers in the maternity unit.

Activities: Statements for the Education

- 1: Understanding the principles of empathy (i.e., to consider others the same as yourself) with mothers should be considered by the agents.
- 2: Personnel of the labor room needs to be familiar with the principles of making conversation with mothers.
- 3: Paying attention to the power of effective and energetic words and using them properly play an important supportive role.
- 4: It is better for the birth agents to develop a sense of humor and have verbal and non-verbal encouraging behaviors.
- 5: Personnel of the delivery room should consider self-control in verbal and non-verbal behaviors associated with the conversation with the mothers at the beginning of the working shifts.
- 6: It is important for the maternity ward crew and staff to be familiar with relationship skills and participate in the related classes for a job promotion.
- 7: Updating the courses of relaxation techniques and deviating the minds of mothers from pain is essential for a job promotion.

Activities: Statement for Processing

- 1: Getting the certifications of relationship skills and women psychology regarding pain and childbirth.

Activities: Statements for Intervention Designing

- 1: In order to maintain higher levels of relaxation for mothers after delivery, it is better to keep them in a separate room far from the labor room noise.
- 2: Mothers should be allowed to visit their husbands in the case of needs and requests at least once during labor.
- 3: It is better if midwives apply non-pharmacological approaches for pain control, such as mind deviation from pain, communicational conversation, imagination, and relaxation.
- 4: Birth agents need to know the culture and traditions of mothers about pain and childbirth.
- 5: Personnel and crew of the labor room must try to reduce the concerns and stress of families and companions.
- 6: Managers should take into consideration holding the courses for familiarizing all the staff with communication skills.
- 7: Participation in communication skill courses should become practically mandatory for delivery staff for a job promotion.
- 8: Participation in the annual courses of patients' rights and medical ethics needs to be mandatory for the personnel of the labor room.
- 9: All the efforts made by the birth agents must be determined in accordance with the satisfaction of mothers.

Activities: Statements for Intervention Implementation

- 1: Midwives should install special curtains around the beds to ensure the privacy of mothers.
- 2: Crew and staff of the maternity unit must pay attention to the cleanness of the clothes, sheet, bed, and bodies of mothers.
- 3: All mothers should have the ability to move freely in the labor room and they should not be limited to the beds.
- 4: Massage of mothers by midwives during pain based on the desires of mothers, especially in the lumbar area is considered as one the most necessary supporting activities.

5: Performing Hogue acupressure to improve the contractile force of muscles without elevating the pain needs to be considered as a mandatory task for the midwives during labor.

6: The presence of a midwife at the side of mothers should be considered as an important emotional support principle.

7: Birth agents should not underestimate the influence of holding the hands of mothers (in case of their preference) during pain.

8: It is better to ban using a wireless telephone for the crew and staff in a childbirth room.

Activities: Statements of Following Ethical considerations

1: Granting freedom for mothers in choosing a comfortable position during childbirth should be considered by the delivery agents.

2: If constant electronic monitoring by the delivery staff is not necessary, it is better to limit its installation to the will of mothers.

3: Birth agents need to be completely familiar with the rights of mothers at the time of admission to the maternity unit and feel responsible for observing them.

4: Birth agents should ask for the permission of mothers prior to performing a vaginal examination or explain the necessity of such an examination in order to preserve their dignity.

5: Personnel of the labor room must inform the mothers of any actions about to be carried out in the maternity unit and explain the reasons to them.

6: Birth agents should behave with openness to preserve the dignity of mothers.

7: Personnel of the delivery room must refrain from any type of discrimination in behaving with mothers.

Output: Statements for Assessment

1: Assessing the performance of birth agents should be based on the views and satisfaction surveys of mothers conducted by the quality control manager twice after a week from the childbirth, first permanently and then randomly.

2: Regular conduction of surveys with mothers will result in the improved performance of midwives.

Outcome-impact: Statements for Short- and Long-term Impact

1: Maternal care free of discrimination can augment the satisfaction of mothers.

2: Regarding the presence of students (midwifery students, interns, and stagers) in educational hospitals, their empathy with mothers affects their selection for the next childbirth.

3: Making a positive memory for mothers during childbirth will reduce the rate of cesarean section.

4: The tendency of mothers toward childbirth will improve when the professional staff creates a good relationship together.

5: Making physical and emotional security for mothers will generate a pleasant memory of childbirth.

Discussion

The present study aimed to develop a program for maternal support during normal labor. The results showed an easier and more practical way of providing support to mothers. Furthermore, it is not difficult to make childbirth a more pleasant experience and ensure that the provided support and care, which can be achieved by simple practices are felt by the mother.

Diverse measures, such as improving the relationship between mother and delivery agents and respecting their needs and preferences are very influential. The consensus of experts and fieldwork was the most practical strategy used for designing a program. The theory for the support model and logic model program was developed based on the codes extracted from the interviews and observations.

Although there is a practical guideline for Iranian women during childbirth, it seems that it has been designed merely based on the biomedical model and the psychosocial needs of women have been ignored (24). Moreover, this guideline has no instructions regarding the ways of supporting mothers during birth.

In addition, it has been designed merely based on the opinions of experts and has not taken into account the needs of mothers. Funnell et al.

(2011) stated that the logic model is now regarded as the best model for behavioral health programs (25). However, qualitative studies are mentioned for designing and developing a program. For example, a labor supporting program for Scottish women formed in 1980 can be mentioned. However, it was not able to encompass all the needs of mothers because their preferences were only investigated by a questioner. Therefore, it was revised in 2014 based on a qualitative study and has been implemented in the hospitals of this country until now (26).

Whitford et al. (2014) issued supporting policies for breastfeeding using the grounded theory for health policy development (27). Moreover, Coal et al. (2019) developed the medical supporting program for the urban young generation in America according to the logic model in 2019 (28). The logic model program is used for operational support in

various contexts due to the nature of this model. The "support" is a context, which can be interpreted as vague and complex for anyone in any field. As a result, the application of the logic model in health systems can play this role well and make it applicable to health care providers.

Furthermore, the present study attempted to illustrate the concept of maternal support during labor and pain based on the implementation of their wishes. The entry phase of the program focuses on meeting the environmental, physical, educational, and verbal as well as non-verbal communication needs of mothers. Delivery agents can provide tremendous help for the mothers and establish better connections with them in case they are aware of the mentioned needs.

At the activity stage, protecting the privacy of mothers, trying to relieve pain by non-pharmacological methods, reducing therapeutic interventions, respecting the rights of patients to perform a vaginal examination, and explaining the reasons for the required actions to mothers are the most important outlined steps. At the output stage of the program, one of the most remarkable demands of mothers was the higher emphasis of managers on the professional and expert performance of labor agents.

Managing the satisfaction of mothers through short- and long-term follow-ups by managers can have important benefits, such as encouraging mothers to realize their rights leading to making delivery a pleasant experience. A long-term benefit can be that mothers would refrain from an elective cesarean section.

The strength points of this study entailed using the qualitative method and data collection tools because mere individual interviews do not suffice to properly understand a phenomenon. Therefore, the observation technique was applied to investigate the phenomenon in-depth and discover the meaning of the behaviors associated with the perceived support of mothers. Another strength of the study was the diversity of the participants in addition to mothers, including the experts in labor and delivery, midwifery students, interns, obstetrics residents, midwifery ward managers, and midwifery instructors.

A program that could enhance the quality of care and consider the needs of the receivers, as well as the views of experts, can be regarded as a high-quality care plan. These experts included midwives, specialist physicians, midwifery students, interns, residents, in addition to the preferences of mothers (29). It has been highly recommended that health care providers are expected to consider the needs of mothers and try to provide holistic support for mothers during labor pain (30).

The limitations of the current study were the limited time for developing the operational program and investigating the results in real life. Moreover, this program was designed based on a qualitative study, in which it was difficult to generalize the findings. However, the results might be generalizable to other countries with similar socio-cultural environments.

According to the findings of this study, respecting the dignity of women, encouraging men for further participation in labor, and further fulfillment of the demands of mothers can help to turn childbirth into a memorable experience. Furthermore, mandatory workshops should be held for specialists and delivery personnel to improve their communication skills, teach them to respect the rights of mothers, and evoke their empathy. All the latter changes can increase the satisfaction rate of patients.

Conclusion

The developed logic model highlights the link between the identified problems, needs, and expectations. Moreover, the strategies that should be taken into consideration in program development to meet these needs have been noted. The findings of this study can guide both decision-makers and practitioners in managing and supervising the program activities.

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Conflicts of interest

Authors declared no conflicts of interest.

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