Barriers and enablers to skin-to-skin contact in healthy neonates: a qualitative study

Abstract

The present study is performed to identify the barriers and enablers to early skin-to-skin contact after vaginal delivery in healthy neonates to promote this basic care in Iran. This is a qualitative study with an inductive content analysis approach. We performed in-depth and semi-structured individual interviews with stakeholders including maternity care providers, medical students, hospital directors, and experts of the Iranian Ministry of Health and Medical Education. The data obtained from these qualitative interviews were analyzed based on the eight steps proposed by Wildemuth, and Zhang (2016) for conventional content analysis.

In this study, skin-to-skin contact barriers appeared in 5 categories: 1) Guideline inefficiency, 2) lack of knowledge and skills, 3) nature (essence) of the context of the skin-to-skin contact process, 4) Inefficiency in supervision, and 5) Limitation of standard facilities. The insight gained from identifying the enablers and obstacles of skin-to-skin contact can assist in developing an implementation strategy at the individual and organizational levels. Moreover, it provides early, continuous, and uninterrupted skin-to-skin contact after birth.

Keywords: *early skin-to-skin contact, birth, barriers, and enablers, healthy neonates, healthcare workers, qualitative study*

Marzieh Ebrahimi[1,2], Shayesteh Jahanfar[3], Amirhossein Takian[4], Zohreh Khakbazan[5], Shabnam Vazifehkhah[6], Mehrnaz Geranmayeh[5]*

[1] Ph.D. Student in Reproductive Health, Department of Reproductive Health and Midwifery, Nursing and Midwifery Faculty, Tehran University of Medical Sciences, Tehran, Iran.
mebrahimi11@yahoo.com
[2] Faculty Member, Department of Midwifery, Faculty of Nursing and Midwifery, Urmia University of Medical Sciences, Urmia, Iran.
[3] Associate Professor, Department of Public Health and Community Medicine, Tufts University, School of Medicine, Boston, MA, US.
shayesteh.jahanfar@tufts.edu
[4] Professor of Health Policy, Faculty of Global Health and Public Policy, Department of Public Health, Tehran University of Medical Sciences, Tehran, Iran.
takian@tums.ac.ir
5 Associate Professor, Faculty of Reproductive Health and Midwifery, School of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran.
khakbaza@tums.ac.ir
[6] Assistant Professor of Obstetrics and Gynecology, Urmia University of Medical Sciences, Urmia, Iran.
vazifekhah@yahoo.com
**Corresponding author: Mehrnaz GERANMAYEH*
Address: Department of Reproductive Health and Midwifery, Nursing and Midwifery Faculty, Tehran University of Medical Sciences, Tehran, Iran. East Nosrat Ave, Touhid Sq, Tehran, Iran
Email: geranmay@tums.ac.ir
Tel: +989143419429/Fax: +982161054221
ORCID ID: 0000-0003-2271-6571

1. Introduction

The first hour of birth is a vital and critical time for both the baby and the mother, known as the golden hour (Neczypor & Holley, 2017). This sensitive time is called the "magic hour", "golden hour", or the "holy hour" (Redshaw et al., 2014). During the first hour of birth, mother and baby experience a unique and special time together by being close immediately after birth. Separating the baby from the mother after birth, even for a short time, may lead to adverse physical and psychological effects on the newborn (Widström et al., 2019). Skin-to-skin contact (SSC) at birth is one of the standards of care for infants without risk factors. A large body of literature has been devoted to SSC in the first hour of life (Brimdyr et al., 2018; Feldman-Winter & Goldsmith, 2016; Hubbard & Gattman, 2017). The critical period of the first hour and after birth is significantly affected by high levels of oxytocin.

Oxytocin, which increases considerably during SSC, causes mother-newborn attachment (Bigelow & Power, 2020; Cong et al., 2015; Vittner et al., 2019; D. Vittner et al., 2018; D Vittner et al., 2018). The other advantages of SSC are controlling cortisol production and reducing the stress and anxiety level of mother and baby (Buckley, 2014; Crenshaw, 2014; Ionio et al., 2021; Lisanti et al., 2021; Pados, 2019). The immediate maternal advantages of SSC are reduced bleeding and early placental expulsion (Al-Morbaty et al., 2017). Evidence also suggests a reduction in postpartum depression following SSC (Cooijmans et al., 2017; Kirca & Adibelli, 2021). The advantages of SSC are beyond the birth moment. The physical and emotional needs of mother and baby continue in the maternity ward or at home, and if they have sufficient initial contact, these needs will be met desirably (Crenshaw, 2014).

Studies have shown that placing a naked baby on the mother's bare abdomen or chest during birth prevents baby hypothermia, reduces crying time, and stabilizes the heart and blood vessels. In infants born by cesarean section who lose the chance of being colonized with bacteria from the mother's vagina, SSC provides the baby to colonize with bacteria from the mother's skin (Girish & Subramaniam, 2019; Guala et al., 2017; Moore et al., 2016). A systematic review conducted in 28 countries across six WHO regions reported an implementation rate of 1%-89% for the SSC between healthy infants and their mothers immediately following their natural childbirth (Abdulghani et al., 2018). A study conducted by Nahidi et al. in Iran found SSC was implemented by 89% of midwives for 2-4 minutes (Nahidi et al., 2013). In the study by Mbalinda et al., the barriers to SSC were perceived obstacles, including medical events, psychosocial problems, and standard midwifery techniques. The practical obstacles included economic constraints in hospitals and society (Mbalinda et al., 2018). A study by Abdulghani et al. in Saudi Arabia showed that the inhibiting factors of SSC are: the absence of policy and accurate instructions for supporting the SSC, lack of ability and motivation to perform the SSC, the lack of tendency among the mothers to SSC, the absence of cooperation of specialized team and staff, time limitations and medical birth environment which prefer intervention over SSC (Abdulghani et al., 2020). SSC has been largely ignored despite the recommendation and emphasis on prioritizing SSC in the first postnatal hour as per the Ten Steps guidelines for successful breastfeeding revised by the World Health Organization (WHO) and United Nations Children's Fund (UNICEF) in 2018 (Alenchery et al., 2018; World Health Organization & UNICEF., 2018). However, the SSC needs minimal organizational effort and executive costs, and its essential significant effects on maternal and neonatal health save money (Lowson et al., 2015).

2. BACKGROUND

Immediate and continuous SSC and the onset of breastfeeding in the first hour of birth are critical in stabilizing breastfeeding and the survival of infants (Aryeetey & Dykes, 2018). Promoting breastfeeding rates around the world could save the lives of more than 820,000 children under age 5 every year, the majority (87 percent) under 6 months of age (UNICEF, 2018). WHO and UNICEF launched the Baby-friendly Hospital Initiative (BFHI) to help motivate facilities providing maternity and newborn services worldwide to implement the Ten Steps to Successful Breastfeeding. According to the BFHI (step 4), newborns should be provided with SSC with their mothers for at least sixty minutes immediately after birth and their mothers should be assisted in initiating breastfeeding within this period (World Health Organization & UNICEF., 2018).

SSC is a standard, simple, and essential care in the field of maternal and infant health. Considering the existing studies in Iran (Adeli & Azmoudeh, 2016; Nahidi et al., 2013) and our own experiences in the delivery room show that such important care is not at a desirable level. So, this study was designed with a qualitative approach to explaining the inhibitors and facilitators of SSC in the first hour of birth in a healthy term baby after vaginal delivery from the perspective of maternity care providers.

3. METHODS

3.1 Design and Setting

This is a qualitative study with an inductive content analysis approach to explaining the factors inhibiting and facilitating the implementation of mother and infant's SSC from the perspectives of maternity care providers and experts. We interviewed 27 staff of the maternity ward of educational, public, and private hospitals in Urmia (Iran), managers, and policymakers of the SSC program. Sampling started purposively because the aim was to select individuals who are a rich source of information to participate in the study actively and give a better description of the desired phenomenon to the researcher (Holloway & Wheeler, 2010).

3.2 Participants

Participants were selected based on the data obtained from Constant Comparative Analysis and considering the maximum diversity and different characteristics (in terms of age, education level, the field of study, work experience, and job position including maternity ward midwife, maternity ward manager, doula in the private sector, midwifery faculty board, midwifery student, obstetrician-gynecologist (OB-GYN), OB-GYN assistants, hospital's breastfeeding consultant and experts of the Ministry of Health. Each participant had at least two years of working experience in the maternity ward or their current job position and worked in Urmia or was one of the

experts in the Ministry of Health in Tehran. Since the staff is working in different educational, public, and private hospitals and the different characteristics of these centers can affect the implementation of SSC, employees from all these sections were also invited to the interview. The selection of senior midwifery students who have spent a long time in the maternity ward was also considered.

3.3 Data Collection

Considering the prevalence of the COVID 19 pandemic in this study, the interview was conducted through virtual sessions under the SKY ROOM, an Iranian platform. Interviews were conducted from October 2020 to February 2021. Semi-structured in-depth face to face interviews was used to collect data. The duration of the interviews varied from 35 to 70 minutes, depending on the participants' responses and tendencies. The mean time of the interviews was 50 minutes. After a brief explanation of the concept and importance of SSC in a healthy full-term baby after normal vaginal birth, the interview started with the question, "Please share your experience with implementation of SSC in the first hour of birth". The following questions were followed based on the interview guideline (**Table 1**). Data saturation was achieved after interviewing 27 participants.

Table 1. Interview guidelines

Q1: Are you aware of the practice of SSC in your hospital?
Q2: What do you feel about the practice of SSC?
Q3: In your opinion, what are the barriers to the proper implementation of SSC?
Q4: In your opinion, what can facilitate the proper implementation of SSC?
Q5 : Why do you think SSC doesn't happen all the time?
Q6: Has any concern arisen regarding the safety of the baby? or
Is there a concern for the baby's safety?
Q7: In conclusion, please talk freely.

3.4 Analysis Method

The content analysis approach was used to analyze the qualitative data of the study. Content analysis is one of the various research methods and techniques for analyzing textual data that explore analyzes the explicit content of the text and analyzes the implicit content (Graneheim & Lundman, 2004). The data obtained from these qualitative interviews were analyzed based on the eight steps proposed by Wildemuth, and Zhang (2016) for conventional content analysis.

3.5 Qualitative Data Validation

The validity of the qualitative data was assured based on Credibility, Dependability, Transferability, Confirmability, and Authenticity criteria (Polit & Beck, 2017). To achieve the validity criterion, the strategies such as immerging with the research topic, assigning sufficient time to data collection, review of the findings by the external viewers in addition to the research team (External Check & Peer Debriefing), review of the participants (Member Check), the written texts of the interviews, with their extracted codes, were returned to several interviewees to assess their accuracy. Also, to achieve the reliability criterion, the steps of conducting research and analyzing the data were clearly described to be audited by every reader. To accomplish the Confirmability criterion, the researcher reviewed all the extracted data and categories with members of the research team and an external viewer familiar with the qualitative research to minimize the effect of the researcher's perceptions. Finally, an attempt was made to record, copy and report participants' speeches carefully to achieve the Authenticity criterion.

3.6 Ethical Considerations

To observe the ethical considerations, the researcher in each interview ensured their right to decide to participate in the study, the possibility of withdrawal in any phase of the study, and keeping information confidential while explaining the aims of the research and receiving informed consent from the participants. The time and duration of the interviews depended on the participants' willingness. The interviews were recorded with the consent of the participants and by observing the confidentiality of the interview. The participants were appreciated at the end of each interview. This study was approved by the Ethics Committee of Tehran University of Medical Science (IR.TUMS.FNM.REC.1399.051).

4. RESULTS

In this study, 27 maternity care providers, managers, and experts of SSC programs were interviewed in the hospitals of Urmia and the Ministry of Health. The age range of these participants was 21 to 54 years. Working experience varied from 2 to 29 years. The participants were categorized as: experts of the Ministry of Health (n = 3), OB-GYN (n = 3) and OB-GYN residents (n = 2), Neonatal subspecialty (n = 1), Midwifery Instructor (n = 2) and Undergraduate midwifery student (n = 3), educational Hospital Midwife (n = 4), Private hospital midwife (n = 2), public hospital midwife (n = 3), Private midwife (Doula) (n = 1), maternity ward manager (n = 2), Hospital's Breastfeeding consultant (n = 1), and experts of the Ministry of Health (n = 3), (**Table 2**). More details of the participants' characteristics are given in the **supplementary table**.

After analyzing the qualitative data, five main categories were extracted: 1) Guideline inefficiency, 2) lack of knowledge and skills, 3) nature (essence) of the context of the SSC process, 4) Inefficient monitoring, and 5) Limitation of standard facilities.

Table 2. Number of participants by job position

Job position of the participants	Number	Percentage
Experts of the Ministry of Health	3	11.11
Obstetrics and gynecology of the educational, public, and private hospital	3	11.11
Obstetrics and gynecology Assistant	2	7.4
Neonatal subspecialty	1	3.7
Midwifery Instructor	2	7.4
Undergraduate midwifery student	3	11.11
Educational Hospital's Breastfeeding consultant	1	3.7
Maternity ward manager (public hospital)	1	3.7
Maternity ward manager (Private hospital)	1	3.7
Public hospital midwife	3	11.11
Private hospital midwife	2	3.7
Educational Hospital Midwife	4	14.81
Private midwife (Doula)	1	3.7
Total	27	100

4.1 Guideline inefficiency

In any health policy, the content of that policy presented to the health care system as a protocol, guideline, or service package, has an important place in the executive structure of that Health care services. Therefore, the category "Guideline inefficiency" appeared in the study process with three subcategories of "Lack of changes and revised to facilitate the implementation of the guideline", "Non-applicability of the SSC guideline", and "Necessity of spending time performing the SSC."

Lack of changes and revise to facilitate the implementation of the guideline All protocols need to be reviewed and changed over time, but there is a prescription for the national guideline "establishing SSC for mother and baby and starting breastfeeding in the first hour of birth", which indicates the absence of continual review.

"I mean, this service pack needs to be revised. I think we have only one version of this package now. This guideline has been introduced for a long time, but it has not been reviewed." **(P: 19, experts of the Ministry of Health).**

Non-applicability of the SSC guideline

One of the obstacles in SSC guidelines is not dealing with details and making them applicable. Only one guideline is translated and made available to health facilities.

"I think the Health Ministry will give all the protocols general. SSC instruction should be detailed and applicable." **(P: 16, Hospital's Breastfeeding consultant).**

The necessity of spending time performing SSC

The time-consuming process of SSC is one of the inhibiting factors which affect this process:

"But one hour of contact is too long. We practically do not perform the SSC for one hour. The reason is that midwives should perform several duties. They do not have time to stay with the mother for an hour to make SSC " **(P: 25, *public & private hospital OB-GYN*).**

4.2 Lack of knowledge and skills

Education is a continuous and dynamic process. Any gap in education, including university education or in-service training, certainly has adverse effects on the performance and implementation of the service package, such as SSC guidelines. Purposeful education is so crucial that theoretical and clinical education together in university education and In-service training could be efficiently and effectively designed and implemented. In this study, the category of "Lack of knowledge and skills" with the three subcategories of "university education gap", "in-service training", and "Mother awareness" emerged.

University education gap and in-service training

One of the best practical ways for standardized implementation of a process is to increase the awareness and skill of healthcare workers (HCWs) about the process. Education with suitable and compelling content is one of the undeniable needs for performing clinical protocols. Any gap in education, including university education or in-service training, certainly adversely affects the performance and implementation of the service package such as SSC.

"education, no, I was a midwife. I was not trained about SSC. It was decided to hold a workshop for us, but the workshop did not take place. Everything we do here is based on our information." **(p: 5, educational hospital midwife).**

Lack of training for OB-GYN assistants and midwives students when entering the maternity ward was also explained as one of the educational barriers.

"*When I was the first-year Assistant, no workshop was held for teaching us about SSC. Therefore, there is no dedicated plan and education SSC. If it is available, participating in these workshops is not mandatory."* **(p: 23, OB-GYN assistant).**

Health program instructors will improve the quantity and the quality of training when they act as an interdepartmental team and combine all the disciplines involved in the program to form a strong team.

"I think that the presence of OB-GYN and midwives altogether can be effective in an educational team. Perhaps, we may not have an educational team for skin-to-skin contact."**(p: 14, OB-GYN assistant).**

Mother awareness

One of the key stakeholders in the SSC process is the pregnant mothers who need empowerment to be mentally and emotionally prepared to accept SSC immediately after birth. Empowerment of mothers is possible during pregnancy and the time of admission to the maternity ward.

*"But a normal mother can fully cooperate in SSC, but we do not work in the system on the mother and her readiness for the SSC process. We do not pay the necessary attention to the mother. The mother only needs a little training."****(P: 12, public & private hospital OB-GYN).***

4.3 Nature (essence) of the context of the SSC process

The phenomenon of childbirth and providing services to the mother for childbirth by the staff of the maternity ward has a unique nature and feature that can overshadow the performance of this staff. A maternity ward is a place full of hope and enthusiasm but a stressful place. In this study, the category of "The context of the contact process" with the three subcategories of "hurry-up childbirth approach", "dominance of routine maternity care", and "ignoring emotional needs of neonate" emerged.

Hurry-up childbirth approach

One of the characteristics of the maternity ward is the dominance of the hasty culture. The staff is all in a hurry to perform the natural process of childbirth. In addition, there is certainly stress on the maternity ward that converts childbirth and maternity ward into a particular condition. In this regard, the participants said:

"The atmosphere of the maternity ward is effective in the SSC process. There is a prevailing stressful atmosphere there. It means that when you enter the maternity ward, there seems to be no comfort. All things are done hastily." **(P: 19, experts of the Ministry of Health).**

The dominance of routine maternity care

According to the participants, one of the other aspects of the context of the SSC process was the dominance of routine care in the maternity ward. one of the obstacles that have been more or less shown in the provision of services for many years is the dominance of routine care. This is also evident in the delivery ward and interferes in the implementation of the SSC instruction:

"The staff insists that they take care of the baby very soon. The baby should be weighed, and their eyes should be checked. The baby is formally placed on the mother's abdomen. Then, the baby is taken to the neonatal ward." **(p: 8, Private midwife [Doula]).**

Ignoring the emotional needs of the neonate

Based on the experiences of many participants, ignoring the infant's needs emerged as one of the important aspects and characteristics of the context of the SSC process. The first hour of birth is called the golden hour. The baby needs standard and special care during this time:

"*This process was really strange for me that my co-workers insisted that the baby should be in the light warmer, and under stress with a few staff gathering around it, they immediately start the painful process of injecting vitamin K. I always thought that we ignored the mental need and support of the baby."***(P: 13, experts of the Ministry of Health)**.

4.4 Inefficient monitoring

One of the important elements of any health policy is to supervise its right performance, get feedback, and correct operational plans frequently. In the operational plan of the national instruction, SSC in Iran, a supervisory tool has been provided for monitoring this program, mostly by completing forms for Baby-Friendly Hospital Initiative (BFHI) and monitoring it again.

The inefficiency in supervision emerged as one of the other main aspects of this study which was related to three subcategories of "Inefficiency of internal monitoring", "traditional monitoring and evaluation", and "Inefficiency of external monitoring".

Inefficient internal monitoring

Hospital managers and authorities have a particular position, and their supervisory feedback plays an essential role in staff performance.

"The supervisor should visit and inspect the maternity wards. However, why have I not seen it? I have not seen an observer come and ask why no SSC is done." **(P: 3, educational Hospital Midwife).**

Direct and indirect supervision by officials can prevent deficient performance of staff, and direct supervision of department officials also plays an essential role in implementing SSC.

"The ward officials should properly supervise the midwives who work in the ward. This should be done. First, SSC should be done properly inside the hospital, but the supervisions are superficial." **(P: 6, Private hospital midwife).**

Another aspect of unprincipled supervision is that childbirth may occur around the clock, but supervision is usually limited to the morning shift and eventually the evening shift.

"Because supervision is done more in the mornings, SSC is done more carefully, that is we do not have constant supervision in all shifts, and if there is no supervisor, the SSC will be very short." **(P: 9, educational hospital midwife).**

Traditional Monitoring and Evaluation

For supervision, one should resort to new and efficient supervisory methods applied by the managerial experts to perform the essential care procedures such as SSC. Applying traditional and old methods such as self-reporting, asking staff and mothers, and completing the forms in any desirable way may be a significant obstacle in establishing SSC.

"We also have monitoring and supervision, but our monitoring may have some weaknesses, or there may be little or no monitoring." **(P: 7 experts of the Ministry of Health).**

The inefficiency of external monitoring

One of the supervision tools is the application of forms and their completion. Some forms have also been designed to evaluate and monitor BFHI in a book with the same title by the Ministry of Health for the SSC and breastfeeding process in the first hour of birth. How the participants should complete these forms is as follows:

"The forms are not filled correctly. Because we do not have external supervision, the officials from the university only tend to receive the forms and statistics and ignore the accuracy of the statistics." **(P: 15, maternity ward manager).**

4.5 Limitation of standard facilities

One of the essential requirements for performing SSC is the availability of a suitable space with the necessary facilities. Limitation of standard facilities was another main category of the study process, which emerged with three subcategories of "non-standard maternity ward (LDR)", " limited of standard facilities", and "insufficient staff". Standard facilities as environmental components mean the space, the physical environment, and the number of staffing of the maternity ward.

Non-standard maternity ward

One of the barriers to SSC at birth is the lack of a standard maternity ward and Labor and delivery room (LDR) in which the whole process before, during, and after childbirth is performed without the need to transfer the mother to a new space.

"*A quiet space is a place in which the mother is comfortable so that the mother can participate in the SSC, where there are several people; it is difficult to do SSC. We do not have LDR."* **(P: 22, educational Hospital Midwife).**

Limited standard facilities

Limited or even lack of some simple equipment such as proper mother's clothes and enough towels to dry the baby to more modern facilities such as proper beds are among the barriers SSC:

"The larger the bed, the better, but our beds are not standard, and the mother does not have the control to hold the baby. Sometimes, the mother's clothes are not suitable." **(P: 21, public hospital Midwife).**

Insufficient staff

The presence of enough staff is required for performing the desirable SSC. In the clinical fields, which face several mothers for childbirth, such as educational and public hospitals, it is necessary to have sufficient staff to perform the SSC.

"Due to lack of manpower and time, we cannot perform SSC, and there are some obstacles, including shortage of manpower." **(P: 1, Midwifery instructor).**

4.6 Faciliatory factors

In our study, participants discussed faciliatory factors such as assigning a helper specifically for SSC, allowing family members in the delivery room, continuing SSC after primary care, prenatal counseling, and continuous reminders in the form of periodic meetings with Audiovisual assistance or posters in the maternity ward recommended training of new doctors, midwives, and nurses.

One of the factors that can positively facilitate SSC implementation and can be used as a basis for evidence-based practice in maternity ward staff is information and awareness about the benefits of SSC for the mother and baby. Study participants expressed these benefits as follows:

"Skin-to-skin contact creates a full emotional bond between mother and baby, and the mother can breastfeed successfully, strengthening the baby-mother relationship. It regulates the baby's temperature." **(P: 16, Hospital's Breastfeeding consultant).**

Father and family support is one of the essential factors facilitating skin contact, which should provide the conditions for the father to be present in the delivery room in all hospitals.

" When I see that the father can be with his wife and give her encouragement, the mother is happy and can better cooperate in the SSC." **(P: 10, Undergraduate midwifery student).**

5. DISCUSSION

Skin-to-skin contact is important, evidence-based care for promoting maternal and infant health. However, it is not usually performed in most maternity wards of Iran. This is one of the first qualitative studies to explain the barriers and enablers to SSC in Iran for healthy neonates after vaginal birth in the first hour of birth. To perform continuous care in the health system, an in-depth study of the inhibitors and facilitators is recommended (Smith et al., 2012). The successful attempt to promote evidence-based methods should consider research that removes barriers and enablers for

acceptance of this process by the staff. Therefore, identifying barriers should be considered the first step in making evidence-based change (Gepilano, 2014).

As the barriers to the SSC in this study in 5 categories, 1) Guideline inefficiency, 2) lack of knowledge and skills, 3) nature (essence) of the context of the SSC process, 4) Inefficient monitoring, and 5) Limitation of standard facilities, were emerging.

In this study, the absence of clear and up-to-date SSC protocol and the necessary arrangements for its implementation were among the important barriers. Failure to provide details on how to perform SSC will result in undesirable SSC performance. Lack of formal procedures and guidelines for performing SSCs are among the professional barriers that Balatero et al. stated in their study that perceived barriers to SSC from the perspective of a midwife nurse (Balatero et al., 2019). Koopman et al. suggest three main categories of barriers to early SSC in healthy full-term infants born with vaginal delivery or caesarean section. One of which is the lack of an algorithm and unclear definition for mothers and infants eligible for SSC (Koopman et al., 2016). Brimdyr et al. state that internal guidelines for examining the baby in warmer are one of the barriers to SSC (Brimdyr et al., 2018).

The time-consuming process of SSC was also explained as one of the inhibiting factors. It seems that performing the SSC for one hour mentioned in the WHO guidelines is not possible in practice. The study by Alenchery et al. and the systematic review of Chan et al. have referred to spending time in SSC and Lack of time as barriers to SSC (Alenchery et al., 2018; Chan et al., 2017). Defrancq et al. believe there is a disagreement on the optimal time and duration of using the SSC, and further research is needed to determine the most helpful time and duration of SSC for mother and infant (Defrancq, 2019). Alenchery et al. also suggested in their study that most participants believed that performing one hour of SSC was not practical and performed SSC for 5-15 min (Alenchery et al., 2018).

The observational study and interviews of Abdulghani et al. with physicians indicate no adherence to hospital policies regarding SSC. The physicians' obstacles to performing SSC include lack of ability and motivation to perform SSC, lack of professional cooperation, staff, and time constraint, and a medical environment where interventions are preferred over SSC (Abdulghani et al., 2020).

In this study, deficiency in the education and training of the HCWs was manifested as another important factor. One of the best and most effective ways to institutionalize the implementation of a care process is to increase individuals' awareness and skills about that process.

High-quality education with suitable and compelling content is one of the undeniable needs for performing clinical protocols and instructions. Any disruption in education, whether university or in-service education, will have adverse effects on the performance and implementation of the guidelines. Almost all participants acknowledged the lack of SSC training and skills for midwives, nurses, physicians, and mothers and families. Continual training that can create motivation and belief in SSC has been a primary barrier in many studies. Mukherjee et al. state that the lack of awareness of maternity ward staff makes them prefer to transfer infants under warmer (Mukherjee et al., 2020). Safari et al. state that it is necessary to prioritize the training of HCWs to implement essential neonatal care, including SSC. Community participation is also critical to ensuring that all women and their families understand the benefits of SSC and start breastfeeding early. Safari et al. also state that it is necessary to present continual training programs on implementing SSC for all midwives in maternity wards (Safari et al., 2018). In a metareview, Nair et al. acknowledge that the gap between theoretical knowledge and clinical skills of service providers in maternal and neonatal care is one of the critical determinants of the quality of clinical services (Nair et al., 2014).

Empowering midwives and mothers to perform SSC is one of the essential components of completing it. In this regard, Price and Johnson state that empowering women and midwives are for practical change. One should facilitate the implementation of this new approach until it is internalized (Price & Johnson, 2005). Balatero et al., in their study, consider the lack of education for mother and family as an inhibitor of SSC (Balatero et al., 2019).

One of the practical elements and actors in SSC is the mother. So, in the chain of this vital action, mothers need to receive education and comprehensive information since pregnancy to be prepared for SSC and cooperation with the treatment and care team. Bidlow et al. state that educating mothers during admission to the maternity ward increases the chance of SSC (Bidlow et al., 2017). According to Fischer, one of the reasons for not performing immediate SSC is the mother's refusal to take care. Childbirth is an arduous experience, and some mothers may feel tired and weak, causing the mother to fear the baby will fall and her inability to hold the baby in SSC. Misinformation and lack of maternal education can exacerbate this problem (Fischer, 2018). Ideally, the mother should receive the necessary SSC training during pregnancy. When they are admitted to the maternity ward, they should receive brief information on contact and its importance again (Widström et al., 2019).

One of the critical structural barriers emerging in the present study was the shortage of the staff, the multiple tasks of the team, and priority over other infant cares. SSC required the presence of sufficient staff to perform this process. There should be adequate midwives in public hospitals, which face a

high number of mothers for childbirth. Most studies have referred to the factors inhabiting SSC, including shortage of nursing staff, increase in the staff workload, and patient-to-midwife ratio (Alenchery et al., 2018; Koopman et al., 2016; Mbalinda et al., 2018).

The present qualitative study revealed the importance of training about the benefits of SSC and understanding its importance in performing SSC in the first hour of birth. In this regard, Hubbard and Gattman state that understanding several benefits of SSC can help healthcare providers best promote this high-quality, evidence-based approach and support mothers, new-borns, and their families (Hubbard & Gattman, 2017).

One of the other critical structural obstacles in implementing SSC is the environmental facilities and standards of the maternity ward. The participants expressed that the lack of LDR was one of the barriers to implementing SSC. In addition, deficiencies, and weaknesses in the physiologic birth approach, especially in educational and public hospitals, were obvious obstacles to performing SSC. physiological birth in a standard environment and creating a relaxing atmosphere can facilitate SSC (Aburas, 2020). Physiologic birth includes spontaneous vaginal delivery using minimal technology and medications, resulting in SSC after delivery and a more effortless breastfeeding experience. Many studies have shown the lowest ratio of physiologic birth to other types of delivery in the world (Abd Al-Kareem et al., 2020).

The need for the presence of a third person for the mother's emotional support, the mother's emotional support during childbirth, and support from the father and doula were regarded as the facilitators of SSC in the present study. In Iran, the father can be present in the maternity ward in some hospitals. The mother needs much support from her husband during childbirth. The spouses should be appropriately trained about prenatal support while in the maternity ward to be appropriately accompanied and supported during birth. Alhassan and Amu also believe that it is crucial to provide facilities for the presence of fathers in maternity wards, particularly in the respective public hospitals in countries lacking a specific policy for such services or in countries that do not have cultures encouraging fathers to attend maternity wards during birth (Alhassan & Amu, 2020).

Based on the results of the present study, it can be concluded that most of the inhibitors and facilitators of SSC in Iran are similar to those of other countries and the difference in some obstacles is in terms of health care system structure and economic, social, and cultural components in the study area.

5.1 Limitations

One of the limitations of the present study was the conduct of interviews. Due to the prevalence of the Covid 19 epidemic, virtual sessions were used to conduct interviews with participants, affecting the quality of the interaction between the interviewer and the interviewee.

This study was conducted in northwest Iran and indicated the viewpoints of the OB-GYN, midwives, and executive staff working in an educational, public, and

Private hospital in Urmia. The results obtained from this study cannot be generalized to the whole country.

6. CONCLUSION

SSC is a simple intervention that is behavior-oriented and is influenced by various factors. This study provides a set of factors regarding the guideline, knowledge, supervision, and facilities barriers to the implementation of early SSC at birth. Providing formal, continuous, and effective training for HCWs and establishing regular organizational and extra-organizational monitoring is one of the basic measures for SSC. Attention to physiologic labor and birth is one of the important factors in SSC, and in addition to providing the possibility of the presence of a doula and families in the delivery room, it promotes this important process. Also, the Success of SSC implementation requires high user engagement and stakeholder involvement. Future research including the design and testing of specific intervention models is proposed to improve the SSC.

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Conflicts of interest

No conflicts of interest were declared for publishing this article. Our study has not received external funding. We confirm whether our study has not undergone peer review by the funding body

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Authors' Contributions

ME and MG contributed to the study concept and design. ME collected data. ME, MG, AT, and ZK, performed the data analysis and drafted the manuscript. SJ edited the manuscript. SV was the supervisor. All authors critically reviewed and approved the final version of the manuscript.

References

Abd Al-Kareem, M., Kadhum, S., & Hadi, S. (2020). Knowledge of Pregnant Women Concerning the Physiological Delivery Process in Babylon Governorate. *Indian Journal of Public Health Research & Development, 11*(12), 161-168. doi:10.37506/ijphrd.v11i12.13233

Abdulghani, N., Edvardsson, K., & Amir, L. H. (2018). Worldwide prevalence of mother-infant skin-to-skin contact after vaginal birth: A systematic review. *PLoS One, 13*(10), e0205696. doi:10.1371/journal.pone.0205696

Abdulghani, N., Edvardsson, K., & Amir, L. H. (2020). Health care providers' perception of facilitators and barriers for the practice of skin-to-skin contact in Saudi Arabia: A qualitative study. *Midwifery, 81*, 102577. doi:10.1016/j.midw.2019.102577

Aburas, R. (2020). An investigation of the birth environment in the UK and Saudi Arabia. *Journal of Xi'an University of Architecture & Technology, XII*, 228-232.

Adeli, M., & Azmoudeh, E. (2016). Influential Factors of Mother-Infant Skin-to-Skin Contact Based on the Precede-Proceed Model from the Perspective of Midwives in Torbat Heydariyeh Hospitals. *Journal of Midwifery and Reproductive Health, 4*(3), 644-653. doi:10.22038/jmrh.2016.6992

Al-Morbaty, H., Ashmauey, A., & Al-Ghamdi, A. (2017). The Effect of Mother and Newborn Early Skin-To-Skin Contact on the Duration of Separation and Expulsion of the Placenta. *J Nurs Health Stud, 2*(2). doi:10.21767/2574-2825.100016

Alenchery, A. J., Thoppil, J., Britto, C. D., de Onis, J. V., Fernandez, L., & Suman Rao, P. N. (2018). Barriers and enablers to skin-to-skin contact at birth in healthy neonates - a qualitative study. *BMC Pediatr, 18*(1), 48. doi:10.1186/s12887-018-1033-y

Alhassan, M., & Amu, O. (2020). Paternal Presence during Childbirth - An Overview. *EC Gynaecology, 9*(7), 25-29.

Aryeetey, R., & Dykes, F. (2018). Global implications of the new WHO and UNICEF implementation guidance on the revised Baby-Friendly Hospital Initiative. *Matern Child Nutr, 14*(3), e12637. doi:10.1111/mcn.12637

Balatero, J. S., Spilker, A. F., & McNiesh, S. G. (2019). Barriers to Skin-to-Skin Contact After Cesarean Birth. *MCN Am J Matern Child Nurs, 44*(3), 137-143. doi:10.1097/nmc.0000000000000521

Bidlow, J., Elfiky, N., Kass, A., Oliveto, M., Reed, E., & Neff-Bulger, M. (2017). Interdisciplinary Approach to Increasing Skin-to-Skin Contact Across Delivery Methods. *Am J Med Qual, 32*(4), 458. doi:10.1177/1062860617712475

Bigelow, A. E., & Power, M. (2020). Mother-Infant Skin-to-Skin Contact: Short- and Long-Term Effects for Mothers and Their Children Born Full-Term. *Front Psychol, 11*, 1921. doi:10.3389/fpsyg.2020.01921

Brimdyr, K., Cadwell, K., Stevens, J., & Takahashi, Y. (2018). An implementation algorithm to improve skin-to-skin practice in the first hour after birth. *Matern Child Nutr, 14*(2), e12571. doi:10.1111/mcn.12571

Buckley, S. (2014). *The hormonal physiology of childbearing*. New York, NY: Childbirth Connection.

Chan, G., Bergelson, I., Smith, E. R., Skotnes, T., & Wall, S. (2017). Barriers and enablers of kangaroo mother care implementation from a health systems perspective: a systematic review. *Health Policy Plan, 32*(10), 1466-1475. doi:10.1093/heapol/czx098

Cong, X., Ludington-Hoe, S. M., Hussain, N., Cusson, R. M., Walsh, S., Vazquez, V., . . . Vittner, D. (2015). Parental oxytocin responses during skin-to-skin contact in pre-term infants. *Early Hum Dev, 91*(7), 401-406. doi:10.1016/j.earlhumdev.2015.04.012

Cooijmans, K. H. M., Beijers, R., Rovers, A. C., & de Weerth, C. (2017). Effectiveness of skin-to-skin contact versus care-as-usual in mothers and their full-term infants: study protocol for a parallel-group randomized controlled trial. *BMC Pediatr, 17*(1), 154. doi:10.1186/s12887-017-0906-9

Crenshaw, J. T. (2014). Healthy Birth Practice #6: Keep Mother and Baby Together- It's Best for Mother, Baby, and Breastfeeding. *J Perinat Educ, 23*(4), 211-217. doi:10.1891/1058-1243.23.4.211

Defrancq, K. (2019). Giving birth: a systematic review of the value of skin-to-skin contact in a medicalized birth. *Journal of clinical chiropractic pediatrics, 18*, 1591-1595.

Feldman-Winter, L., & Goldsmith, J. P. (2016). Safe Sleep and Skin-to-Skin Care in the Neonatal Period for Healthy Term Newborns. *Pediatrics, 138*(3), e20161889. doi:10.1542/peds.2016-1889

Fischer, K. (2018). *Literature Analysis Comparing Mother-Newborn Skin-to-Skin Contact Following Cesarean Section and Vaginal Births.* Oakland University, Rochester, MI.

Gepilano, D. (2014). Barriers to Implementation of Skin-to-Skin Care. *J Obstet Gynecol Neonatal Nurs, 43*(Supp 1), S74-S.

Girish, M., & Subramaniam, G. (2019). The golden minute after birth – beyond resuscitation. *Int J Adv Med Health Res, 6*, 41-45. doi:10.4103/IJAMR.IJAMR_89_19

Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: concepts, procedures, and measures to achieve trustworthiness. *Nurse Educ Today, 24*(2), 105-112. doi:10.1016/j.nedt.2003.10.001

Guala, A., Boscardini, L., Visentin, R., Angellotti, P., Grugni, L., Barbaglia, M., . . . Finale, E. (2017). Skin-to-Skin Contact in Cesarean Birth and Duration of Breastfeeding: A Cohort Study. *ScientificWorldJournal, 2017*, 1940756. doi:10.1155/2017/1940756

Holloway, I., & Wheeler, S. (2010). *Qualitative Research in Nursing and Healthcare* (3rd ed.). Hoboken, New Jersey: Wiley-Blackwell.

Hubbard, J. M., & Gattman, K. R. (2017). Parent-Infant Skin-to-Skin Contact Following Birth: History, Benefits, and Challenges. *Neonatal Netw, 36*(2), 89-97. doi:10.1891/0730-0832.36.2.89

Ionio, C., Ciuffo, G., & Landoni, M. (2021). Parent-Infant Skin-to-Skin Contact and Stress Regulation: A Systematic Review of the Literature. *Int J Environ Res Public Health, 18*(9). doi:10.3390/ijerph18094695

Kirca, N., & Adibelli, D. (2021). Effects of mother-infant skin-to-skin contact on postpartum depression: A systematic review. *Perspect Psychiatr Care, 57*(4), 2014-2023. doi:10.1111/ppc.12727

Koopman, I., Callaghan-Koru, J. A., Alaofin, O., Argani, C. H., & Farzin, A. (2016). Early skin-to-skin contact for healthy full-term infants after vaginal and cesarean delivery: a qualitative study on clinician perspectives. *J Clin Nurs, 25*(9-10), 1367-1376. doi:10.1111/jocn.13227

Lisanti, A. J., Demianczyk, A. C., Costarino, A., Vogiatzi, M. G., Hoffman, R., Quinn, R., . . . Medoff-Cooper, B. (2021). Skin-to-Skin Care is Associated with Reduced Stress, Anxiety, and Salivary Cortisol and Improved Attachment for Mothers of Infants With Critical Congenital Heart Disease. *J Obstet Gynecol Neonatal Nurs, 50*(1), 40-54. doi:10.1016/j.jogn.2020.09.154

Lowson, K., Offer, C., Watson, J., McGuire, B., & Renfrew, M. J. (2015). The economic benefits of increasing kangaroo skin-to-skin care and breastfeeding in neonatal units: analysis of a pragmatic intervention in clinical practice. *Int Breastfeed J, 10*, 11. doi:10.1186/s13006-015-0035-8

Mbalinda, S., Hjelmstedt, A., Nissen, E., Odongkara, B. M., Waiswa, P., & Svensson, K. (2018). Experience of perceived barriers and enablers of safe uninterrupted skin-to-skin contact during the first hour after birth in Uganda. *Midwifery, 67*, 95-102. doi:10.1016/j.midw.2018.09.009

Moore, E. R., Bergman, N., Anderson, G. C., & Medley, N. (2016). Early skin-to-skin contact for mothers and their healthy newborn infants. *Cochrane Database Syst Rev, 11*(11), Cd003519. doi:10.1002/14651858.CD003519.pub4

Mukherjee, D., Chandra Shaw, S., Venkatnarayan, K., & Dudeja, P. (2020). Skin-to-skin contact at birth for vaginally delivered neonates in a tertiary care hospital: A cross-sectional study. *Med J Armed Forces India, 76*(2), 180-184. doi:10.1016/j.mjafi.2018.11.008

Nahidi, F., Tavafian, S. S., Haidarzade, M., & Hajizadeh, E. (2013). A Survey On Midwives' Opinions About Skin To Skin Contact Between Mother And Newborn, Immediately After Birth, A Cross-Sectional Study. *Journal Of Medical Council Of I.R.I, 31*(2), 124-132.

Nair, M., Yoshida, S., Lambrechts, T., Boschi-Pinto, C., Bose, K., Mason, E. M., & Mathai, M. (2014). Facilitators and barriers to quality of care in maternal, newborn and child health: a global situational analysis through metareview. *BMJ Open, 4*(5), e004749. doi:10.1136/BMJ open-2013-004749

Neczypor, J. L., & Holley, S. L. (2017). Providing Evidence-Based Care During the Golden Hour. *Nurs Women's Health, 21*(6), 462-472. doi:10.1016/j.nwh.2017.10.011

Pados, B. F. (2019). Physiology of Stress and Use of Skin-to-Skin Care as a Stress-Reducing Intervention in the NICU. *Nurs Women's Health, 23*(1), 59-70. doi:10.1016/j.nwh.2018.11.002

Polit, D., & Beck, C. (2017). *Nursing research: Generating and assessing evidence for nursing practice*. Alphen aan den Rijn, Netherlands: Wolters Kluwer.

Price, M., & Johnson, M. (2005). Using action research to facilitate skin-to-skin contact. *Br J Midwifery, 13*(3), 154-159. doi:10.12968/bjom.2005.13.3.17635

Redshaw, M., Hennegan, J., & Kruske, S. (2014). Holding the baby: early mother-infant contact after childbirth and outcomes. *Midwifery, 30*(5), e177-187. doi:10.1016/j.midw.2014.02.003

Safari, K., Saeed, A. A., Hasan, S. S., & Moghaddam-Banaem, L. (2018). The effect of mother and newborn early skin-to-skin contact on initiation of breastfeeding, newborn temperature, and duration of the third stage of labor. *Int Breastfeed J, 13*, 32. doi:10.1186/s13006-018-0174-9

Smith, P. B., Moore, K., & Peters, L. (2012). Implementing baby-friendly practices: strategies for success. *MCN Am J Matern Child Nurs, 37*(4), 228-233, quiz 234-225. doi:10.1097/NMC.0b013e318251054e

UNICEF. (2018). Breastfeeding: A mother's gift, for every child. Retrieved from https://data.unicef.org/resources/breastfeeding-a-mothers-gift-for-every-child/

Vittner, D., Butler, S., Smith, K., Makris, N., Brownell, E., Samra, H., & McGrath, J. (2019). Parent Engagement Correlates With Parent and Preterm Infant Oxytocin Release During Skin-to-Skin Contact. *Adv Neonatal Care, 19*(1), 73-79. doi:10.1097/anc.0000000000000558

Vittner, D., McGrath, J., Robinson, J., Lawhon, G., Cusson, R., Eisenfeld, L., . . . Cong, X. (2018). Increase in Oxytocin From Skin-to-Skin Contact Enhances Development of Parent-Infant Relationship. *Biol Res Nurs, 20*(1), 54-62. doi:10.1177/1099800417735633

Vittner, D., McGrath, J., Robinson, J., Lawhon, G., Eisenfeld, L., Walsh, S., . . . Cong, X. (2018). Oxytocin enhances developing relationships with skin-to-skin contact. *Matern Child Nutr, 14*(5). doi:10.1111/mcn.12587

Widström, A. M., Brimdyr, K., Svensson, K., Cadwell, K., & Nissen, E. (2019). Skin-to-skin contact the first hour after birth, underlying implications, and clinical practice. *Acta Paediatr, 108*(7), 1192-1204. doi:10.1111/apa.14754

World Health Organization, & UNICEF. (2018). Implementation guidance: protecting, promoting, and supporting breastfeeding in facilities providing maternity and newborn services: the revised baby-friendly hospital initiative. Retrieved from https://apps.who.int/iris/handle/10665/272943

Supplementary table. Characteristics of the participants (n=27).

Number of participants	age, Years	Sex	Type of hospital place of work	Work experience (years)	Job position	Educational Background	Field of Study
1	38	female	educational Hospital	4	Midwifery instructor	MSc	Midwifery
2	34	Female	educational Hospital	4	Midwifery instructor	MSc	Midwifery
3	34	Female	educational Hospital	6	educational Hospital Midwife	MSc	Midwifery
4	36	Female	Private hospital	24	maternity ward manager	BD	Midwifery
5	39	Female	educational Hospital	18	educational hospital midwife	BD	Midwifery
6	31	Female	Private hospital	21	Private hospital midwife	BD	Midwifery
7	35	Female	Ministry of Health	29	experts of the Ministry of Health	MSc	Midwifery
8	34	Female	Private hospital	15	Private midwife (DOULA	BD	Midwifery
9	33	Female	educational Hospital	17	educational Hospital Midwife	Ph.D. candidate in midwifery	Midwifery

10	**2**	**Female**	**educational Hospital**	**---**	**Seventh-semester midwifery student**	**Undergraduate midwifery student**	**Midwifery**
11	**2**	**Female**	**educational Hospital**	**---**	**Eighth-semester midwifery student**	**Undergraduate midwifery student**	**Midwifery**
12	**1**	**Female**	**public &privet hospital**	**25**	**Private & public hospital OB-GYN**	**Medical specialist**	**OB-GYN**
13	**1**	**Female**	**Ministry of Health**	**20**	**experts of the Ministry of Health**	**Ph.D. in Reproductive Health**	**Reproductive health**
14	**7**	**Female**	**educational Hospital**	**--**	**OB-GYN Assistant, Second Year**	**OB-GYN assistant**	**OB-GYN**
15	**3**	**Female**	**public hospital**	**27**	**maternity ward manager (public hospital)**	**BD**	**Midwifery**
16	**4**	**Female**	**educational Hospital**	**22**	**Hospital's Breastfeeding consultant**	**BD**	**Midwifery**
17	**1**	**Female**	**educational Hospital**	**--**	**Eighth-semester midwifery student**	**Undergraduate midwifery student**	**Midwifery**
18	**0**	**Female**	**Private & educational hospital**	**11**	**Private & educational hospital OB-GYN**	**Medical specialist**	**OB-GYN**
19	**4**	**female**	**Ministry of Health**	**27**	**experts of the Ministry of Health**	**Medical specialist**	**OB-GYN**
20	**9**	**Female**	**public Hospital**	**16**	**public hospital midwife**	**MSc**	**Midwifery**
21	**7**	**female**	**public hospital**	**15**	**public hospital Midwife**	**BD**	**Midwifery**
22	**5**	**Female**	**educational Hospital**	**11**	**educational Hospital Midwife**	**MSc**	**Midwifery**
23	**6**	**Female**	**educational Hospital**	**--**	**OB-GYN assistant second year**	**OB-GYN assistant**	**OB-GYN**
24	**3**	**Female**	**public hospital**	**21**	**public hospital Midwife**	**BD**	**Midwifery**
25	**8**	**Female**	**Private & public hospital**	**20**	***public & private hospital OB-GYN***	**Medical specialist**	**OB-GYN**
26	**4**	**female**	**Private hospital**	**7**	**Private hospital midwife**	**BD**	**Midwifery**
27	**7**	**female**	**educational Hospital**	**21**	**Scientific membership of the Department of Children, UMSU**	**subspecialty**	**Neonatal subspecialty**

BD: bachelor's degree

MSc: Master's degree

Ph.D.: Doctor of Philosophy

OB-GYN: obstetrics and gynecology