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ORIGINAL ARTICLE

Midwives' and mothers' perspectives on skin-to-skin care of premature and low-birthweight infants in Puntland, Somalia

Fatumo Osman[a], Mohamed Said Egal[b], Ahmed Ali Abdi[c], Anisa Abdikarim Mohamud[d], Kerstin Erlandsson[a]

[a]School of Education, Health and Social Studies, Dalarna University, Sweden, [b]International Committee of the Red Cross, Puntland, Somalia, [c]East African University, Galkacyo, Puntland, Somalia, [d]Medicins Sans Frontiers, Puntland.

ABSTRACT

Background: More than 2.5 million children die yearly due to prematurity and low birthweight. Skin-to-skin care provides a thermal-control environment that offers protection from infection and eases breast milk feeding to the advantage of the new-born.

Aim: This study aimed to explore barriers and facilitating factors for introducing skin-to-skin care of premature and low-birthweight infants based on input from mothers and midwives in Puntland, Somalia.

Methods: Qualitative semi-structured interviews with four mothers and four midwives were analysed using qualitative content analysis.

Results: The findings are presented in four categories: enabled by support and hands-on information to the mother and her family; aided by collaboration with the mother's family to overcome the mother's resistance; impeded by limited time, lack of resources and unavailable guidelines; and hindered by traditional and social beliefs. Both mothers and midwives emphasised the importance of information and education concerning skin-to-skin care of premature and low-birthweight infants. Family members and midwives facilitated skin-to-skin contact as the care model. The degree to which the midwives provided information to the mothers and their family members depended on how the two latter groups received and acted on such information and education. Lack of motivation by mothers, their families or midwives were barriers to skin-to-skin contact as a care model.

Conclusion: Standardised guidelines, preferably culturally tailored for low socio-economic groups, for midwives' use when informing mothers and families on skin-to-skin contact as a care model for premature and low-birthweight infants would empower women, families and midwives to facilitate the practice in Puntland, Somalia.

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Introduction

Poor health-seeking for new-borns

Despite the gains made in maternal health, a major challenge faced by Somalia is the infant mortality rate of 66.702 deaths per 1000 live births. The Somali Health and Demographic Survey (2020) presented figures on how low engagement with maternal health services contributes to poor health-seeking for new-borns. Seventy-three percent of the women reported that they faced problems with accessing health care. The low uptake of antenatal care (24%) and number of births occurring in health facilities (21%) or the presence of a skilled health care provider (32%); an overwhelming 79% of births occurring at home and only 10% attending postnatal check-up within two days after the birth (10%). The 24% of women who accessed four antenatal care visits throughout their pregnancy were however more likely to seek support for the health of their new-borns [1]. All these figures are

CONTACT Fatumo Osman, e-mail: fos@du.se, School of Education, Health and Social Studies, Dalarna University, Sweden

strongly connected with neonatal health. To reduce infant mortality and morbidity in Somalia, it is vital to focus on the good-quality care provided by skilled health professionals, encouraging women to care for their new-borns most optimally [1].

Neonatal health

Although progress has been made in reducing infant mortality globally, more than 45% of the five million under-five mortality rate caters for infant deaths in the first months of life, and approximately one million of these children die within their first 28 days from prematurity and low birthweight [2]. In Somalia, 9% of infants have a birthweight below 2.5 kg [1,2]. Several studies have reported that the main causes of neonatal death in preterm and low-birthweight infants in low-and middle-income countries are low body temperature and blood glucose levels. These main causes of neonatal death are preventable by immediate kangaroo-mother care and provision of colostrum or breastmilk [3-6]. In Somalia, 60% of the children are placed in skin-to-skin contact to suckle or suck the breast during the first hour after birth; however, it is unclear how many of these are mature or premature [1]. Placing the preterm and low-birthweight infant in a cot or even an incubator instead of skin-to-skin with the mother or another caregiver can induce hypothermia, low blood sugar, lack of energy to suckle or suck the breast and exposure to bacteria in the environment or formula other than breastmilk. The mother has the unique ability to keep her new-born close to her nipple for early suckling when in a skin-to-skin position [3,5-7]. Low birthweight is a universal challenge and is, to a large extent, associated with poverty, which increases neonatal mortality and morbidity. However, a 60% decrease in hypothermia and respiratory tract infection as well as an extended period of exclusive breastfeeding – all based on the acceptance of a skin-to-skin care model immediately after birth – will strengthen the maternal–new-born relationship and enable the long-lasting survival and growth of the child [8].

Routine skin-to-skin care practice

Kangaroo Mother Care (KMC) was originally described as a therapeutic practice for preterm and low-birthweight infants in Colombia's overcrowded neonatal wards in the 1970s. It was a therapeutic practice, part of the warm chain within the Baby-Friendly Hospital Initiative (BFHI) for preterm and low birthweight infants, to avoid hypothermia, low blood glucose levels and infections. The therapeutic practice promoted breastfeeding among preterm and low-weight infants. The baby was placed naked between the mother's naked breasts and covered with a blanket as an alternative to an incubator [8,9]. There is a difference between skin-to-skin care as a routine practice as part of the warm chain within BFHI and KMC and the therapeutic practice for preterm and low-birthweight infants in the neonatal wards. The Global Health Community (under the auspices of the World Health Organization (WHO) and the United Nations International Children's Emergency Fund (UNICEF)) launched the BFHI implementation guidance to educate on the advantages of skin-to-skin contact as a care model immediately after birth and encourage skilled-health professionals to provide skin-to-skin care between mothers and new-borns to initiate breastfeeding and reduce hypothermia and hypoglycaemia, morbidity and infant death [8, 10-13]. Despite this global evidence and insight, less than half of all new-borns are cared for with this model [12]. In this critical time of life, 77 million new-borns worldwide are not placed skin-to-skin after birth due to culturally related bottlenecks [14]. Health care providers, mothers and family members seem not to prefer placing the new-borns skin-to-skin but rather wrapping them in swaddling clothes or a blanket or placing them in an incubator [15,16]. Based on the Somali situation, with high infant mortality and where skin-to-skin care can make the difference between life and death, this study aimed to explore barriers and facilitating factors for introducing skin-to-skin care of premature and low-birthweight infants, based on the input of mothers and midwives in Puntland, Somalia. 'Skin-to-skin care', equivalent to 'early kangaroo-mother care', is used in this study as the phenomenon of exploration since it is an effective routine care for neonatal health outcomes over a shorter or longer period after birth, while the KMC model is a more comprehensive therapeutic intervention for premature and low-birthweight infants. Barriers were defined as conditions that the target group perceived or experienced as hampering 'skin-to-skin care' and facilitators as what they found made this care model possible to implement.

Methods

Design

This was a qualitative study based on individual semi-structured interviews [17] with mothers and midwives in Puntland, Somalia.

Setting

Puntland is a self-autonomous state of the Somali federal government. Of Puntland's total population, comprising over three million residents, 34% live in urban areas and 22% in rural areas. The nomadic population amounts to 42% of the Puntland population.[1] This study was conducted in Galkacyo City in the Mudug region, one of the highly populated districts in Puntland. Galkacyo has an estimated population of 350,000 residents. The city has one main referral hospital and 11 Maternal and Child Health services (MCH) under the Ministry of Health (MOH), plus six private hospitals. The main referral hospital provides health services for 24 hours. Births are assisted in four of the 11 MCHs.

Table 1. Demographics of the participants

Participants	Age in years	No. of children	Educational level	Work experience
Midwife 1	30	3	Bachelor's degree in nursing	7 years in midwifery
Midwife 2	35	5	Diploma in midwifery	10 years in midwifery
Midwife 3	28	None	Bachelor's degree in nursing	4 years in midwifery
Midwife 4	50	6	Diploma in midwifery	20 years in midwifery and child care
Mother 1	25	2	Bachelor's degree	2 years
Mother 2	55	8	No formal schooling	N/A
Mother 3	26	3	Diploma in nursing	1 year
Mother 4	36	4	Intermediate school level	5 years

Participants

The participants were recruited from the main referral hospital's neonatal ward through the purposive sampling of mothers and midwives with experiences of providing or receiving skin-to-skin care for premature or low-birthweight infants. The co-authors (MSE, AAA, AAM) contacted the hospital manager, who gave access to contact the midwives and mothers at the neonatal ward. The co-authors asked the midwives working in the shift if they wanted to participate in the study. Even mothers at the ward were asked to participate. The sampling aimed to capture participants of different ages, educational backgrounds and employment. For the midwives, it was also important to capture their working experiences. Overall, four mothers and four midwives participated. Their characteristics are presented in Table 1.

Data collection

The interviews were performed during March and April 2016. All invited midwives agreed to participate in this study and none declined; subsequently, two mothers withdrew due to the tape-recording interview. The authors (MSE, AAA, AAM) pilot tested the interview guide with one mother and one midwife in a quiet room. The questions in the interview guide were well understood by both the mother and the midwife when involving emerging follow-up or clarification questions in the Somali language. These interviews were therefore included in the analysis. The interviews took 45–60 minutes each and were recorded and transcribed verbatim in the Somali language before being translated into English by the authors following the guidelines for translation and back translation [18]. The interviewers shared a copy of the transcript with the interviewees to allow them to confirm the accuracy of the conversation and to add or clarify any points that they wished.

The interview guide comprised demographic and two open-ended questions with ten follow-up questions (e.g. What happened then?) to capture the facilitators and barriers affecting skin-to-skin contact as a care model. The two open questions were as follows:

- Could you please tell us your experiences of skin-to-skin care of a premature and low-birthweight new-born baby?
- Could you please explain what you perceive as barriers or facilitators of skin-to-skin care for new-born premature and low-birthweight babies?

Data analysis

All interviews were analysed using inductive content analysis inspired by Elo and Kyngä's [19] methodological description. First, the transcripts were read by all authors to identify information corresponding to this study's aim. In the second phase, three of the authors (MSE, AAA and AAM) extracted sentences or paragraphs from the transcripts and performed open coding [19]. In the next phase, the open codes were reduced to capture the essence of the text and transferred onto a coding sheet. All authors discussed the extracted text and the codes inserted in the coding sheet. Some codes were omitted since they did not correspond to the aim. Finally, codes and text parts with similar meanings were organised into categories (see Table 2). The analysis was performed manually, kept on a manifest level and discussed back and forth by all authors until a consensus was reached.

Ethical considerations

This study obtained ethical approval from the research ethics committee at East Africa University, Puntland. The study applied ethical principles and guidelines for the protection of human subjects of research [20]. All participants were given both written and oral information. They were informed that their participation was voluntary and that all data was going to be kept confidential. Participants were also informed that they could withdraw their participation without explaining the reason for their withdrawal. Written consent in English or Somali was obtained from all participants.

Table 2. Example of the analysis process

Text part	Open coding	Code group	Category
When midwives explain more to the mothers, mothers accept and infant's temperature improved.	Midwife's explanation to the mother helps and improves the infants' health.	Educational support	Enabled by educational support and hands-on information to the mother
Health provider provided me with good service and encouraged to create care about how to practice skin-to-skin contact with low weight infants. She helped me and listened to my worries.	Health providers provide good care to the mothers and they are encouraged to perform skin-to-skin contact.	Encouragement	

Results

Mothers and midwives with experiences of giving birth to preterm and low-birthweight infants identified facilitators of skin-to-skin care, which were grouped into the following categories: *enabled by educational support and hands-on information to the mother* and *aided by collaboration with the mother's family*. The perceived barriers to skin-to-skin care were grouped into the following categories: *impeded by limited time, lack of resources and unavailable guidelines* and *hindered by traditional and social beliefs*.

Enabled by educational support and hands-on information to the mother

Both the midwives and the mothers in this study perceived information and education as the key factors for facilitating skin-to-skin care. The midwives mentioned that when the mothers gave birth to preterm children, they informed the mothers about the importance of skin-to-skin care and the benefits of keeping the babies warm and sharing their mothers' temperature. Placing the infant close to the mother's skin was an activity that the midwives performed while educating the mothers on the benefits of skin-to-skin care. The mothers accepted skin-to-skin care immediately after birth and felt satisfied, particularly when they saw their babies crawl to their breasts. One mother said:

> *'The midwife encouraged me that my child will benefit more from being on my chest rather than beside me, and I did that, and my baby started moving and became active'* (Mother 2).

The midwives thought that explaining further to the mothers made the latter understand the importance of having their babies close to them. The midwives highlighted that this depended on how well they provided the information and the extent of the mothers' willingness to receive it. One midwife explained it this way:

> *'We give them the information and show them practically; if the mother doesn't want, then we do not force her'* (Midwife 1).

This practice was observed by the mothers who appreciated how the midwives had been patient and explained the caring model to them and, simultaneously, respected their wishes. All the midwives stressed the importance of strengthening the mothers' confidence and making them understand the benefit of skin-to-skin care for their child's health. One midwife emphasised this and said:

> *'All mothers want what is best for their child, but we have to encourage them and give them support'* (Midwife 2).

A reflection the midwives made was that giving birth at the hospital allowed the mothers to receive information about the importance of initiating breastfeeding early:

> *'You know, there is a belief within the Somali culture that babies shouldn't be given the colostrum. Because mothers gave birth in the hospital, they could listen to our recommendation on immediate breastfeeding'* (Midwife 2).

The mothers appreciated receiving the health care providers' encouragement and gained confidence in exclusive breastfeeding and placing the baby on their chests. This facilitated warming the baby, thus decreasing the risk of hypothermia. Consequently, this made it easier for them to continue even when they were discharged from the health facility.

The midwives advised each mother who had a premature/low-birthweight baby to stay in the health facility for the first 24 hours until the infant's temperature normalised, but if the baby's condition had not improved by the next day, the mother should remain in the health facility. One midwife explained the reason:

> *We make sure that mothers are told the importance of keeping the child closer to them and the long-term side effects on their children if they are exposed to the outside environment while the low temperature is below the average*. (Midwife 3)

The midwives also took precautionary measures and provided extra care for premature infants in the health facilities until they recovered and were fit to be discharged. After the midwives explained to the mothers the benefits of having their premature infants in the health centre, including observation, support and supervision on exclusive breastfeeding, most mothers accepted and stayed in the facilities until their infants recovered.

Aided by collaboration with the mother's family

According to the midwives, involving the family had two benefits. It supported the mothers who had complications after giving birth and reduced their heavy workload. The

midwives explained that when mothers who gave birth to low-weight infants were unable to conduct skin-to-skin care due to serious medical conditions, such as hypertension and eclampsia, the family was informed on how to conduct the skin-to-skin method. Moreover, when the midwives had a staff shortage or heavy workload, they asked the family members to come and provide skin-to-skin contact until the mother's condition improved. This was appreciated by both the family members and mothers. When a mother was discharged from the health facility, her family members were advised to support her in providing skin-to-skin care. The family members also took on other responsibilities in the household and gave the mother enough time to concentrate on her premature infant. One midwife said:

> *'Trying to involve the mother's family and make them understand the importance of supporting her with practical issues would increase the likelihood that the mother will put the baby skin-to-skin'* (Midwife 4).

In some cases, pressure from family members or other responsibilities at home made mothers decide to leave the facilities against the will of the medical staff. In such circumstances, the midwives emphasised that it was crucial to involve close relatives to ensure that the mothers had support to continue providing skin-to-skin care without the assistance of health care providers.

Impeded by limited time, lack of resources and unavailable guidelines

Some of the mothers perceived that they did not receive the assistance they needed to perform skin-to-skin contact. They felt that the midwives gave them little guidance and information and they were discharged from the health facility too early. The mothers wanted to stay in the health facility until their infants' health status had improved. They had wished to receive more time, attention and medical assistance. The mothers with preterm infants required support, which the midwives could not provide due to their workload. This was stressed by one of the mothers:

> *I have always appreciated my midwife, but at my latest birth, she couldn't give me any support. I don't know how many times I asked for her assistance, but she did not come back to me. She was complaining that she had a lot of work.* (Mother 4)

The midwives acknowledged that they sometimes felt like they were doing things without having enough knowledge about the latest evidence. They were frustrated by the lack of guidelines and instructions to follow concerning the care of the premature/low-birthweight infants. One midwife said:

> *When the NGO, Medicine Sans Frontier (MSF), was involved with the health centre, we used their guidelines, but after their withdrawal, there was no guideline, which made it difficult for staff.* (Midwife 4)

The midwives admitted that they sometimes acted intuitively on what they thought was best for the mother and her baby. They did not know if their advice was based on evidence or experience only. They also emphasised the importance of getting in-service training in different areas of providing care to mothers and new-borns.

Hindered by traditional and social beliefs

The midwives experienced challenges in convincing some mothers about the importance of skin-to-skin care for their low-birthweight, premature infants. A midwife explained that:

> *The mothers believed that their infants were normal, and they disregarded the skin-to-skin practice, claiming that it won't change anything and didn't have any benefits.* (Midwife 1)

When some of the mothers were instructed to hold their premature infants tightly to their skin, they regarded it as strange, inappropriate and a new practice that they had never experienced or done previously. The mothers believed that the new-born should be wrapped in a blanket and not placed on the mother's chest before being washed.

The mothers also found themselves torn between their obligation to do the household chores and to perform skin-to-skin contact. Family members, especially the husbands, also claimed that the skin-to-skin practice was unnecessary and took time away from a mother's more important responsibilities, such as cooking, cleaning and caring for her other children. As one mother expressed the difficulties in performing skin-to-skin care and instead found other solutions:

> *I didn't like to do skin-to-skin because there is more work at the house, and other children need my care and they are waiting for me. So instead, I put more effort into wrapping my child in a blanket so he gets warm.* (Mother 1)

Discussion

In the findings of this study, some of the main barriers perceived by the participants were the hindrances of the mothers' traditional and social beliefs. The lack of motivation from mothers, their families or midwives, was a barrier to skin-to-skin contact as a care model. Another main barrier was the limited time, resources and lack of guidelines that the midwives had. The lack of resources, such as staff shortages, contributed to the lack of quality care and mothers feeling neglected. In turn, the midwives' educational support and hands-on information to the mothers and their families facilitated skin-to-skin care. Low birthweight poses a challenge and is, to a large extent, associated with poverty and low socioeconomic status, which are known to increase neonatal mortality and morbidity worldwide. A 60% decrease in hypothermia and respiratory tract infection and an extended period of exclusive breastfeeding can be taken as standpoints for the acceptance of the skin-to-skin care model immediately after birth. The child's health, wellbeing and growth will be enhanced with increased weight, height and head circumference, and the maternal–newborn bond will be strengthened [8]. Presenting such information in a way that is tailored to the local culture would facilitate efforts to convince the mothers and their family members to

adopt skin-to-skin contact. Preferably, the information on the skin-to-skin care model should already start during the antenatal care visits, continue through the labour and birth period and be repeated during the postnatal care visits. Culturally tailored, standardised guidelines that midwives could use when informing mothers and families on skin-to-skin contact as a care model for premature and low-birthweight infants would empower women, families and midwives to facilitate the practice in Somalia. The findings of this study show that hands-on information and education, not only for mothers and family members but also for midwives, would be important for the successful implementation of the skin-to-skin practice as a care model in health facilities. This follows previous studies conducted in Malawi, where caregivers appreciated the information they received from health care providers and peers [21,22].

Globally, half of the five million infant deaths per year, due to prematurity and/or low-birthweight-related causes, often occur in health facilities, where the reason is the separation of mother and infant immediately after birth. Most full-term, healthy infants separated from their mothers recover, even if they are put in a state of hypothermia with hypoglycaemia. The vulnerable premature and low-birthweight infants are the ones at risk of not recovering and subsequently dying [23]. Therefore, the results of this study and the Somali Demographic Health Survey [1], backed with evidence from the WHO/UNICEF reports [10,12], support providing culturally tailored education and training for health staff on skin-to-skin contact as the care model, emphasising the advantages of starting the practice immediately after birth. During the first hour, the baby, if left alone, crawls to the mother's nipple to suckle on his/her own [24,25]. The infant is guided by the mother's scent, voice and temperature. If there are difficulties with breastfeeding, skin-to-skin care has the potential to solve such issues [26, 27]. A new-born cared for with skin-to-skin contact has a double chance of long-lasting breastfeeding success [28]. Skin-to-skin care also develops an infant's senses through hearing the mother's heartbeat, feeling her touch, making visual contact by sucking the mother's breast and smelling the mother's scent, thereby building the bond between mother and child [29]. It can reduce the mortality rate of infants with complications, such as hypothermia and hypoglycaemia, in premature and low-birthweight babies, who are otherwise stable (< 2000 g) [30]. Skin-to-skin care releases the hormone oxytocin, which reduces infant stress and pain [31].

The clinical implication is that all infants, except those with a breathing deficiency and in need of emergency obstetric care to survive, should be provided with skin-to-skin care for one hour immediately after birth and thereafter, as many hours as possible, during the first couple of weeks and/or until the breast milk has been established [1,31]. Some mothers who participated in this study were unaware of the importance of this procedure and would have appreciated obtaining more information from skilled health care providers. Lack of guidelines, resistance to changing care procedures and lack of training were factors that hindered midwives in introducing skin-to-skin care. The lack of motivation to practice skin-to-skin care that was expressed among midwives, mothers and relatives in this study has also been described as a barrier in several other studies [32].

Strengths and limitations

The main strength of this study is that qualitative data on perceptions and experiences of skin-to-skin contact care was collected in a local context that has not been previously studied. The trustworthiness of the study was addressed using the criteria of credibility, confirmability, dependability and transferability [17]. The credibility of the study was assured by collecting data from both health care providers and mothers, offering insights into their perceptions of both obstacles to and facilitators of skin-to-skin care. There is an interconnection between the researchers' worldview, the design and research method chosen, meaning that in an interview situation, the interviewers (MSE, AAA, AAM) refrained from their preunderstanding by being good listeners, posing open-ended questions and encouraging the participants to talk freely without interruption or influencing the responses. Allowing the authors to conduct the first phase of the analysis separately and subsequently discuss and negotiate the interpretation in peer-debriefing sessions assured both the credibility and confirmability of the study. Qualitative research is an approach for exploring and understanding the meaning individuals ascribe to a social or human problem. Those who engage in this form of research honour a focus on a few participants' individual meaning of a social or human problem and their description of the complexity of a particular problem. Still, a limitation of the study is the small number of informants due to drawing experiences from only one hospital setting. However, the data was rich and allowed for capturing the complexity of skin-to-skin care and the highlighting of areas for improvements in caring for premature and low-birthweight babies. In a qualitative study, it is then up to the reader to assess the transferability of the findings to other settings in Somalia or elsewhere.

Conclusion and clinical implications

This study's findings show that informing and educating both mothers and midwives on the benefits of skin-to-skin care are key factors for the successful implementation of skin-to-skin practice as a care model in health facilities. Another key factor involves informing the mother's family members, especially the father, about the role of skin-to-skin contact in their child's survival. Standardised guidelines for midwives on how to inform mothers and families about skin-to-skin contact as a care model for premature and low-birthweight infants are needed to empower women, families and midwives to facilitate the practice in Somalia. This exploratory study that highlights the topic as an important issue requires further clinical support and research.

Summary in Somali

CINWAAN

Aragtida umulisooyinka iyo hooyooyinka ee laab-saarista ilmaha ku dhasha dhicisnimo iyo miisaan yari ee Puntland, Soomaaliya

DULMAR KOOBAN

Hordhac: In kabadan 2.5 milyan oo caruur ah ayaa sanadkiiba u dhinta dhicisnimo iyo miisaankooda oo hooseeya. Daryeelka laab-saarista hooyadu wuxu ilmaha dhashay siiyaa deegaan leh kuleyl dheellitiran oo ka ilaaliya caabuqa, una fududeeya naasnuujinta, faa´iido badanna u leh ilmaha dhashay.

Ujeeddo: Daraasaddan waxa loogu talagalay in lagu sahamiyo caqabadaha iyo arrimaha fududeeya dhaqan-gelinta laab-saarista ilmaha ku dhasha dhicisnimo iyo miisaan yari, iyadoo lagu saleynayo talooyin laga helay hooyooyinka iyo umulisooyinka Puntland ee Soomaaliya.

Hababka: Wareysiyo qaab ahaan ku saleysan habka barista tayo, ayaa lala yeeshay afar hooyo iyo afar umuliso. Waxaa wareysiyadaas xogtooda la baaray, iyadoo la adeegsanayo qaabka tayo ee falanqeynta nuxurka (qualitative content analysis).

Natiijooyinka: Natiijooyinaka daraasadda ayaa loo kala dhigay afar qaybood: Waxyaabaha suura geliyay taageeridda iyo gacan-siinta hooyada iyo qoyskeeda; Caawinaada iyo wada shaqeynta qoyska hooyada, si looga hortago caabbinta/diidmada hooyada; Caqabadda la xiriirta waqtiga xadidan, iyo dhaqaale la'aan iyo la'aanta tilmaamo la raaco hawl-galkooda; iyo Caqabadaha la xiriira dhaqanka iyo waxyaabaha bulshadu aaminsantahay. Hooyooyinka iyo umulisooyinka labaduba waxay aad xoogga u saareen muhiimadda xogta iyo aqoonta la xiriirta daryeelka laab-saarista dhalaanka dhiciska ah iyo kuwa miisaankoodu hooseeyo. Xubnaha qoyska iyo umulisooyinku waxay fududeeyeen laab-saarista dhalaanka, iyagoo u arkay inuu yahay qaabka daryeel ee ugu habboon. Heerka umulisooyinku macluumaadka u siiyeen hooyooyinka iyo xubnaha qoyskooda waxay ku xirneyd sidey labadan kooxood ee la beegsaday ku heleen kuna fuliyeen xogtaas iyo aqoontaas. Ku-dhiirasho la'aanta hooyooyinka, qoysaskooda ama umulisooyinka ayaa caqabad ku ahaa in la fuliyo habka daryeelka laab-saarista dhalaanka.

Gunaanad: Tilmaamaha la jaangooyey oo la doorbiday in dhaqan ahaan loo habeeyo, looguna talagalay in umulisooyinku adeegsadaan markey wargelinayaan hooyooyinka iyo qoysaskooda ee lab-saarista, ayaa ah daryeelka ugu habboon dhallaanka dhiciska ah iyo kuwa miisaankoodu hooseeyo, oo awood dheeri ah siinaysa haweenka, qoysaska iyo umulisooyinka si ay u fududeeyaan dhaqan gelinta habka lab-saarista Puntland ee Soomaaliya. Xagga ku-dhaqanka caafimaadka, tani waxay ahayd daraasad sahamin ah oo muujinaysa mawduucani inuu yahay muhiim una baahanyahay taageero caafimaad iyo cilmi baaris dheeraad ah.

Author contributions

All authors have made substantial contributions to the study's conception and design and/or the data collection, analysis and interpretation. They have all been involved in drafting the manuscript and/or critically revising its important content. They have further given final approval of the version to be published.

Conflicts of interests

The authors declare no conflict of interest.

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ORCID

Fatumo Osman: 0000-0002-0038-9402

Kerstin Erlandsson: 0000-0002-6910-7047

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