



Neonatal nurses' perceptions of supportive factors and barriers to the implementation of skin-to-skin care in extremely low birth weight (ELBW) infants - A qualitative study



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ABSTRACT

There is currently a lack of evidence around perceptions of implementation of skin-to-skin care (SSC) in infants weighing <1000 gms amongst neonatal nurses. Majority of published work mainly focuses on infants weighing <2500 gms.

Aim: This study aimed to investigate neonatal nurses' perceptions of supportive factors and barriers to the implementation of SSC in extremely low birth weight (ELBW) infants in a tertiary level neonatal intensive care unit (NICU) in London.

Methods: A broad qualitative approach that included semi-structured interviews with seven neonatal nurses was used.

Results: All seven nurses interviewed supported SSC in ELBW infants. There was a general consensus on barriers of its implementation. Humidity was perceived as a significant barrier for SSC in ELBW infants. Other barriers included concerns for infant safety, insufficient training, increased workload, lack of clear guidelines and management support.

Conclusions: This study identified supportive factors and barriers of SSC in ELBW infants in a tertiary neonatal unit. It ascertained the facilitation of parental readiness, development of clear guidelines, provisions of continuing education as well as organisational support as supportive factors in the implementation of SSC in ELBW infants. Furthermore, humidity was perceived as an additional barrier for SSC in these infants.

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1. Introduction

Extended hospital care is vital for the survival of preterm infants (Flynn and Leahy-Warren, 2010). Skin to skin care (SSC) can be defined as the cuddling of a baby dressed only in a nappy on the parent's naked chest with a sheet covering the baby's body (DiMenna, 2006; World Health Organisation, 2003). SSC has been reported to improve cardiovascular system, thermal stability, oxygen saturation, decrease apnoeic episodes and shorten the length of hospital stays in an infant (Bohnhorst et al., 2004; Heimann et al., 2010; Ludington-Hoe et al., 2004). Feldman et al. (2002), Stikes and Barbier (2013) found that SSC reduces maternal anxiety, postnatal depression and facilitates lactation, very likely by improving mother-infant interaction (Johnson, 2007b).

Although SSC has been implemented in many NICUs, its practice

has been inconsistent (Stikes and Barbier, 2013). Studies around SSC mainly focus on infants weighing <2500 gms (Flynn and Leahy-Warren, 2010; Chia et al., 2006; Johnson, 2007a; Olsson et al., 2012). Similar studies in ELBW infants mainly focus on the benefits, safety and feasibility of SSC (Ludington-Hoe et al., 2004; Blomqvist et al., 2012; Conde-Agudelo and Díaz-Rossello, 2014).

There are limited qualitative studies exploring nurses' experiences of SSC in ELBW infants. Therefore this study aimed to investigate the nurses' perceptions on supportive factors and barriers to SSC adoption in this particular population.

According to the WHO (World Health Organisation, 2014) ELBW infants are those with a birth weight of <1000 gms. Most ELBW infants are usually born between 23 and 27 weeks gestation (Subramanian et al., 2014). The survival of ELBW infants has increased with the routine use of surfactant, antenatal steroids and improvements in technologies (Subramanian et al., 2014; Hack et al., 2004).

Skin-to-skin contact, also known as SSC (World Health

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Organisation, 2003) is an element of the kangaroo mother care (KMC) model which includes skin-to-skin contact between a mother and her preterm infant in hospital, after discharge, exclusively breastfeeding and follow-up care (Nyqvist et al., 2010a). KMC was started as an intervention to respond to increasing mortality and morbidity rates in preterm infants in Bogota, Colombia in the late 1970s. Preterm infants were cared for and kept warm by their mothers using KMC to alleviate staff and incubators shortages.

Studies have found that babies who had KMC or SSC had a better outcome (Ludington-Hoe et al., 2006; Nyqvist et al., 2010b). SSC is now widely adapted all over the world to care for preterm infants (World Health Organisation, 2014; Nyqvist et al., 2010a). SSC increases the incidence of exclusive breastfeeding which improves weight gain and promotes early hospital discharges (Conde-Agudelo and Díaz-Rossello, 2014). In addition SSC improves up-takes of breastfeeding in very preterm infants (Nyqvist et al., 2010b; Flacking et al., 2011). It reduces parental stress and fosters maternal-infant interaction (Heimann et al., 2010; Conde-Agudelo and Díaz-Rossello, 2014).

Even though SSC is widely adopted in ELBW infants in NICUs, confusion amongst nurses has impeded its use in this particular population (Chia et al., 2006). Concerns about infant safety during its implementation are common among nurses (Chia et al., 2006; Olsson et al., 2012; Blomqvist et al., 2012; Strand et al., 2014); particularly with ELBW infants needing artificial ventilation and umbilical lines (Chia et al., 2006; Strand et al., 2014; Mallet et al., 2007).

Although parents appreciate the experience of SSC, they need help and support from nurses to alleviate their anxiety. Studies on neonatal nurses' knowledge and attitudes of SSC show that their personal beliefs, experiences and knowledge influence the implementation of SSC (Chia et al., 2006; Olsson et al., 2012; Strand et al., 2014; Mallet et al., 2007).

Bigelow et al. (2012), Eriksson and Pehrsson (2005) discovered that parents experienced fear, anxiety, anger and joy with their preterm infants. Flacking et al. (2006) and Skene et al. (2012) found that parents felt scared to touch their preterm infants, hence, parental education, communication and support are crucial in promoting parental readiness (Strand et al., 2014; Kearvell and Grant, 2010; Kymre and Bondas, 2013).

Barriers to the implementation of SSC include insufficient staff training, busy workload, staff shortages, lack of management support and clear protocols (Chia et al., 2006; Olsson et al., 2012; Strand et al., 2014).

The majority of studies adopted a quantitative approach to describe the attitudes and knowledge of nurses in the application of SSC in infants weighing <2500 gms. Their findings contributed to identifying supportive factors and barriers of SSC (Flynn and Leahy-Warren, 2010; Chia et al., 2006; Olsson et al., 2012; Strand et al., 2014; Engler et al., 2002), however, they did not explore an in-depth understanding of nurses' perceptions of SSC in ELBW infants.

Therefore a broad qualitative study with semi-structured interviews to explore nurses' perceptions on supportive factors and barriers in SSC would be more suitable in order to understand the phenomenon and examine how it influences nursing practice (Creswell, 2014). By identifying supportive factors and barriers of SSC in ELBW infants, one would be able to adopt strategies and changes that can be tailored to suit various NICUs to improve care.

2. Methodology

A broad qualitative framework with semi-structured interviews aimed at understanding the participants' perceptions and viewpoints was used. An interview questions guide was used to provide framework and guidance. This helps to ensure that questions are

answered and do not deviate from the main issues. The interview guide consisted of some specific open-ended questions and probes.

The inclusion criteria were registered neonatal nurses Band 5, 6 and 7 who have more than one year experience caring for ELBW infants. Agency nurses were excluded. The first seven neonatal nurses approached and who were available for interviews were included.

A thematic analysis was used to identify, analyse and inform themes within the dataset. It examines commonality, differences and relationships in various aspects of the dataset (Gibson and Brown, 2009). The verbatim account of all verbal words and sounds was transcribed and encoded to establish themes.

3. Results

The four themes identified from the interview data were: 'Infants' conditions', 'Nursing practice', 'Parental readiness' and 'The NICU environment'.

3.1. Infants' conditions; humidity and instability

ELBW infants are normally intubated and nursed in humidified incubators in the first few days of life. All participants viewed SSC as important and beneficial for ELBW infants. However they expressed similar concerns in implementing SSC in ELBW infants who were cared for in humidified incubators, with umbilical catheters and during the first week of life. All participants would not initiate SSC for ELBW infants who require high humidification in the first week of life. The infants' instability was also perceived as a barrier for SSC. However, they would implement SSC as soon as umbilical lines were removed and the infant required less humidity in the second week of life.

3.2. Nursing practice

All participants described a variety of skills and competencies that nurses were expected to acquire in implementing SSC safely. These include acquiring sufficient knowledge, experience and confidence in SSC as well as skills in the assessment of the infant's readiness. All participants perceived informal teaching, cot-side training and class-room teaching as supportive factors in promoting SSC as these help to improve their skills and confidence in decision making. However none of the participants had participated in any continuing education programme in SSC. Some participants noted that SSC could increase nurses' workload and hence some nurses found it time consuming. Most participants stressed that continuing education would change nurses' attitudes hence improve uptake of SSC. Some participants stressed the importance of policy that incorporated a clear criterion for SSC to ensure infants safety. This helped to avoid inconsistent practices and conflicting information.

3.3. Parental readiness

All participants identified parental readiness as an important deciding factor for SSC. Parental anxiety, lack of information about SSC and its use in preterm infants were perceived as barriers to SSC. Support and reassurance from nurses were perceived as helpful in reducing parental anxiety. Providing education to parents, ensuring privacy and comfort throughout SSC were regarded as supportive factors by all participants in promoting parental readiness.

3.4. The NICU environment

Participants identified increased workload, staff shortage, lack

of space and equipment as barriers in the adoption of SSC in a busy NICU environment. All participants advocated the provision of SSC however they felt divided between supporting SSC and providing safe care as their workload increased. They felt that they had to prioritise patient care and postpone the provision of SSC at times like this. One participant said:

“...sometimes I have three babies, it's very difficult to take them out at the same time, you have a lot of activities going on, and you might have to attend crash calls ...”

However all participants valued the help of colleagues in facilitating SSC when acuity increased. Management support was considered as essential in ensuring safe staffing level and facilitating the provision of SSC.

All participants identified noisy NICU surrounding, hectic activity and insufficient space and equipment as key barriers to SSC in NICU.

4. Discussion

SSC is widely adopted in NICUs. Even though benefits of SSC are well documented (Heimann et al., 2010; Ludington-Hoe et al., 2004; Miles et al., 2005) confusion amongst nurses has impeded its use especially in ELBW infants (Chia et al., 2006; Olsson et al., 2012). This study identified supportive factors and barriers of SSC which corresponded with current literature. In this study, however, humidity was perceived as an additional barrier. The findings of this research was unique as it focused on ELBW infants who require ambient humidity due to fragile skin which is prone to water loss, whereas other studies focused on larger preterm infants who have more mature skin and do not require humidification. In this study, participants' perceptions of supportive factors and barriers were centred on four main themes: 'Infants' conditions', 'Nursing practice', 'Parental readiness' and 'The NICU environment'.

All participants in the study were uncomfortable providing SSC to ELBW infants requiring artificial ventilation and with umbilical catheters. Similar concerns have been reported in other studies (Anderson et al., 2003; Chia et al., 2006; Engler et al., 2002; Mallet et al., 2007). In the current study some participants were uncomfortable in providing SSC to unstable infants, whilst participants with more neonatal experience considered that SSC may help to improve the infant's condition. The WHO (World Health Organisation, 2003) recommends that preterm infants must be stable before receiving SSC and infants requiring inotropes are not suitable for SSC. However Clifford and Barnsteiner (Clifford and Barnsteiner, 2001) found SSC to be safe in ELBW infants with umbilical lines and inotropes infusion. The lack of well-defined criteria on infants' stability may have contributed to the confusion over the suitability of SSC for ELBW infants among nurses (Flynn and Leahy-Warren, 2010; Chia et al., 2006).

The finding of this study showed that all of the participants believed that ELBW infants who require high humidification in the first seven days of life not suitable for SSC. However, there was a lack of consensus among participants in relation to the criteria used to determine the weaning of humidity and maintaining humidity during SSC. Bauer et al. (1997) reported significant heat loss during SSC in the first week and an increase in body temperature during the second week. They suggested that SSC should be delayed until the second week of life in ELBW infants. Karlsson et al. (2012) investigated the relationship between the ELBW infant's thermal balance and physical environment during SSC in the first week of life. They found that transferring of infants to and from SSC caused a drop in temperature, which normalised during SSC, and insensible water loss during SSC was of marginal clinical significance in the

infants' fluid balance. They concluded that SSC can be safely implemented during the first week of life in ELBW infants who require humidification in incubators. The finding of this study has reviewed a gap in the literature that had not been adequately explored or studied earlier. Therefore further studies are warranted to provide a better understanding in relation to humidity and thermal regulation in ELBW infants during SSC in the first week of life.

All of the participants interviewed supported SSC in ELBW infants. They had positive attitudes to the use of SSC and incorporated SSC in their routine care. Negative behaviour of staff has been reported as a barrier in the provision of SSC (Wallin et al., 2005). This corresponds with the experience of participants in this study who expressed that lack of knowledge, time and space could have influenced nurses' negative perceptions in its implementation. Some participants were concerned that providing SSC will increase their workload. However most participants perceived that once instigated, it will benefit both parents and infants significantly and decrease nurses' workloads as the parents gain more confidence in SSC and infants become more stable. Similarly, Engler et al. (2002) and Hunt (2008) found that SSC may reduce nurses' workload by making infants more stable and instilling confidence in parents in the care of their infants.

The finding of this study indicates that participants with more neonatal experience are more comfortable with providing SSC in ELBW infants. Olsson et al. (2012) concur with this finding. In addition, working with ELBW infants requiring more intensive care helps to improve nurses' skills; hence facilitates the uptake of SSC (Engler et al., 2002).

In the present study, none of the participants had participated in any continuing education programme in SSC. However all participants agreed that they acquired skills of SSC in ELBW infants through learning from colleagues and informal supervised training from senior nurses. As they gained more experience with SSC, they felt more comfortable providing it. Therefore the goal should be for all neonatal nurses to acquire the knowledge and skills to promote SSC. Educational programmes should include skill development training on infant transfer techniques, monitoring and assessing the infant's physiological status. These should be included as part of continuing staff training and new staff orientation programmes.

The clinical stability of infants and lack of guidance were reported as barriers for SSC which is consistent with literature. Concerns about infants' stability and lack of clear guidelines are the most commonly reported barriers for SSC (Chia et al., 2006; Olsson et al., 2012; Blomqvist et al., 2012; Seldman et al., 2015; Valizadeh et al., 2012). Participants in this study viewed guidelines as a source of education and knowledge. DiMenna (2006), Ludington-Hoe et al. (2003), Welch et al. (2013) and the WHO (World Health Organisation, 2003) outlined SSC guidelines that leads the practice of nurses and have proved to be successful in improving its implementation (Wallin et al., 2005; Cowan and Lilley, 2013).

Most participants made the decision of SSC without any input from the medical team. Similarly, Engler et al. (2002) identify lack of doctors' backing as one of the barriers in SSC. The inclusion of the senior medical team on ward rounds to discuss suitability of infants for SSC augments the implementation of SSC (Cowan and Lilley, 2013). Therefore it is important to include senior doctors in the discussion of ELBW infants' suitability for SSC.

Anticipating parents' anxiety and fear, all of the participants provided them with support and reassurance. Skene et al. (2012) found that parents felt scared to touch their infants initially because they looked fragile. These findings correspond to the experience of participants in this study, who recognised the changing emotions in parents and responded to their emotion signals and adopted strategies to facilitate parents' readiness for

SSC. The findings in this study indicated that all of the participants perceived parental readiness as an important supportive factor in SSC adoption.

Crowdedness and noisiness, lack of privacy and lack of space are facility-related barriers identified by participants in facilitating SSC. To promote SSC, NICUs must provide parents with adequate space and a suitable environment (Blomqvist et al., 2012; Nyqvist et al., 2010a). The results of this study are consistent with the literature which suggests that adjustments of the NICU environment can improve SSC adoptions. It is vital that NICUs make the high-tech environment less clinical and more family friendly by facilitating unrestricted visits for parents and providing SSC around the clock.

Insufficient time, staff shortages and increased workload were reported as barriers for SSC. All participants conceded that management support was paramount in ensuring adequate staffing, in funding continuing education programmes, developing practice protocols to standardise care and changing culture to make SSC a routine practice.

There were certain limitations in this study. Because of the time constraints, this study was conducted on a small and homogenous sample size that represents a Level 3 NICU in one hospital. It would be better to compare practices of SSC in different hospitals to establish if themes are parallel to other NICUs. Although the findings of the study may not be generalised, it provides a valuable understanding of SSC practices in ELBW infants and whilst supportive factors and barriers of SSC are similar with those of larger preterm infants, it additionally highlights nurses' concerns of SSC in ELBW infants with fragile skin requiring humidification in the first few days of life.

5. Conclusions and recommendations

Nurses are crucial in promoting SSC to facilitate mother-infant interaction. Although SSC has been widely adopted in many NICUs its practice has been inconsistent especially in ELBW infants (Stikes and Barbier, 2013). In this study, barriers to the implementation of SSC in ELBW infants include concerns for infant safety, as well as staff and parental reluctance in implementing SSC. This study highlights the need of education for beginners and continuing training for staff to help them to gain skills in SSC for ELBW infants, as it demands experience and confidence on the part of the provider in assessing infants' suitability, preparing the environment, ensuring parental readiness, and in orchestrating transfer procedures.

Teaching sessions for professionals could be included in staff orientation programmes. Additionally, continuing bed-side teaching may be included for current staff, and training workshops may improve nurses' skills in transfer techniques, knowledge and confidence in the assessment and initiation of SSC in ELBW infants.

The findings of this study show that humidity is perceived as a significant barrier for SSC in ELBW infants, whereas humidity is not a barrier in larger preterm infants. This study highlights the lack of literature regarding the relationship between humidity and SSC for ELBW infants in the first week of life. It also addresses existing gaps in the initiation of SSC in ELBW infants during the first week of life and practice variations in the humidification weaning process. Therefore, further research into the relationship of humidity and thermal regulation in ELBW infants during SSC in the first week of life are warranted to determine the benefits of early initiation of SSC and to develop criteria in the humidification weaning process.

Another area of concern is the fear of umbilical line and respiratory tube displacement. The findings of this study are consistent with current evidence; therefore development of evidence-based guidelines is necessary to ensure safe and effective implementations of SSC. Policies should include criteria for the selection of

infants for SSC, preparing the environment, procedures of transferring the infant and monitoring of the infant during and after SSC.

This study indicates that parental education, effective communication and support from nurses form an integral part of the infant's routine care.

Organisational support is crucial to fund continuing education, to ensure safe staffing, to modify the clinical environment, and to develop policies to standardise practice for staff and information for parents. A multi-disciplinary approach that includes the senior medical team and other healthcare professionals in the discussion of the suitability of infants for SSC at ward rounds would help to advance the implementation of SSC into an everyday routine.

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