Perceptions and attitudes of parents and healthcare professionals about the option of using infant massage in neonatal intensive care units

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Abstract

Background: Infant moderate pressure massage is an effective evidence-based intervention that counters the consequences of prematurity and exposure to the Neonatal Intensive Care Unit (NICU) environment. This touch-based therapy reduces physiological stress and improves physical, cognitive and neurological development in stable preterm and low birth weight (LBW) infants. Currently, little is known about the barriers and facilitators that surround its implementation.

Aims: This study explored the cultural, organisational and contextual factors perceived by parents and healthcare professionals (HCPs) about the option of implementing infant massage in the Lebanese context.

Methods: A qualitative exploratory approach informed by Normalization Process Theory (NPT) was used; 22 parents and 38 HCPs were recruited from three university hospitals over seven-month period. COREQ guidelines were used to inform reporting and as a quality appraisal checklist. Framework approach was used for data analysis of the focus groups (seven with parents, six with HCPs) and non-participant observation. The four constructs of NPT guided data collection, interpretation of the findings and understanding of the implementation issues.

Findings: Four themes emerged: understanding infant massage; perception of massage benefits and risks; perceived barriers for engaging in the practice of massage, and strategies to facilitate future implementation. Participants were accepting of the massage concept. However, HCPs were concerned that workload and lack of time would make implementation difficult and interfere with daily care. Both groups highlighted parental fear and anxiety, entry to NICU, and space availability as main contextual and organizational implementation barriers. Communication, gradual implementation, encouragement and support were potential facilitators perceived by parents while

adequate preparation, commitment, and establishing protocol and guidelines were the identified facilitators for HCPs.

Conclusion: Study findings provide important insights into the barriers and facilitators for the implementation of massage to assist in future evidence-based interventions within and beyond the Lebanese NICU context.

Key words: healthcare professionals, implementation, massage, neonatal intensive care unit, parents, premature infant, Normalization Process Theory.

BACKGROUND

In the last few decades, there has been increasing interest in the effectiveness of massage in the NICU. Massage has been shown to be effective in promoting premature infant growth and development, decreasing stress, regulating infant states, and increasing mother-infant interaction (Badr, Abdallah, Kahale, 2015; Álvarez, Fernández, Gómez-Salgado, Rodríguez-González, Rosón & Lapeña, 2017).

Although systematic reviews provide evidence of effectiveness, many issues that are important to parents and HCPs need to be evaluated before implementing massage for infants in NICUs (White & Wilson, 2015; Nilsen, 2015). There is a lack of adequate knowledge about how contextual issues may affect the implementation of this complex intervention. Massage is acceptable and widely practised in Lebanese society. However, since massage was not applied in NICUs in Lebanon and no qualitative studies have explored such contextual influences, there was a need for further investigation about the factors that may affect its implementation.

The NPT is an "action and sociological theory" that provides a structure to understanding issues surrounding the implementation of complex interventions across a range of clinical settings (May et al., 2009; May, Johnson, & Finch, 2016). In this study, an innovative framework involving the theory's four constructs was used as a heuristic device to guide the research questions and as a lens for the analysis of the contextual and organizational issues that may surround the future implementation of massage in NICU (Figure 1). This theoretical use surpasses the usual application of this theory being during or after intervention implementation.

AIM

The aim of this study was to explore parents' and HCPs' perceptions and attitudes concerning the factors that may affect parent-implemented infant massage in NICUs in a high middle-income country. Our analysis was guided, but not constrained by the NPT. The questions addressed were:

1. What are parents' perceptions and attitudes towards massage as a potential culturally acceptable form of intervention provided by them in the NICU to improve the outcome of their infants?
2. What are the perceptions and attitudes of HPCs concerning massage as a potential culturally acceptable intervention provided by parents in the NICU for infants?
3. What are the cultural, contextual and organisational processes that might hinder or facilitate the application of infant massage in the NICU from the HCPs' and parents' points of view?

METHODS

Design

A qualitative exploratory design was employed using focus group (FG) interviews and observations. Consolidated criteria for reporting qualitative research COREQ guidelines were used (Tong, Sainsbury & Craig, 2007) (Supplementary File 1).

Data collection

A sample of participants with a range of educational, socio-demographic and cultural backgrounds was recruited from three hospitals in Lebanon. These settings were chosen because they are university hospitals with high occupancy rates and patients from diverse backgrounds and regions. Twenty-two parents of clinically stable premature infants were recruited and thirty-eight HCPs (doctors and nurses) were purposively recruited from the three NICUs to provide a maximum variation sample to allow an exploration of common and unique perceptions of the issues surrounding the proposed implementation of massage (Petty, Thomson, & Stew, 2012).

Two complementary methods were used to generate data: 1) FGs with a) parents and b) HCPs (held separately) and 2) Observation in the NICU setting. This triangulation of information was utilised to generate meaningful rich data across a wide spectrum of participants (Gopaldas, 2016; Creswell, 2012).

Focus groups

Recruitment for the FGs of parents and HCPs was initiated by the nurse managers of each NICU. A convenience sample of parents who expressed an interest was included. A purposive sampling of HCPs who volunteered based on education, years of experience and profession providing a maximum variation.

Both FGs started by watching a video about infant massage in a NICU setting (Field, Scafidi, & Schanberg, 1987) as an ice breaker, which provided an operational definition of massage as a stimulus for the initial discussion. Each FG lasted between 60-120 minutes and was audio-recorded. A topic guide was used flexibly and amended as the interviews progressed with four main open-ended questions reflecting the four constructs of the NPT (Appendix A).

Six FGs with parents and seven with HCPs were conducted across the three sites over a seven-month period (2014-2015). One confirmatory FG with HCPs was carried out ten months later as a confirmatory tool for the validation of data (Merryweather, 2010).

Observation

Informal observation was used to understand the NICU organizational context, physical structure, social norms, group processes and conventions (Robson, 2011). This observation focused on staff interactions, staff capacity, staff supportiveness to parents, and the extent to which mothers engaged in the care of their infants. The observations were conducted over the same seven-month period to confirm or refute the data generated in the FGs (DeWalt & DeWalt, 2011). Permission for this observation was obtained from the hospital and an information sheet explaining the study aims was available to parents and HCPs.

The application of NPT in this study was utilized as a sensitizing framework; the first two constructs were process issues: 1) "Coherence" focussing on how massage was valued and perceived by participants, 2) "Cognitive Participation" highlighting the benefits and inhibitors related to the motivation of participants to take part in the proposed intervention. The last two constructs were structural issues: 3) "Collective Action" focussing on how barriers may hypothetically affect the routine and daily work, responsibilities and training needs, 4) "Reflexive

Monitoring" evaluating the facilitators that may affect the processes of implementation (May & Finch, 2009).

Ethical Considerations

Ethical approval was obtained from the organization's Institutional Review Boards (IRB-UOB) and Research Ethics Committee (UREC-UOD 14002 Abdallah). Permission was attained from the hospitals and NICU Departments. The nurse in charge in the three hospitals was approached to ask the team members and parents if they were interested in participating in the FGs. Prior to any data generation, participants were requested to sign a consent form. All parents and HCPs who were interested in participating, were given a briefing about the main objectives of the research prior to signing the consent form. They were reassured that confidentiality and anonymity would be maintained and they had the right to withdraw at any time from the study. Pseudonyms to maintain the anonymity of participants were utilised in addition to codes for the recorded digital FGs, field notes, transcripts, and translations. Participants were reassured that audio recordings would be stored securely and would be destroyed two years after the completion of the study.

This research was guided by the Research Governance Framework for Health and Social Care and the advice pertinent to nursing research from the University of Dundee to ensure that the ethical procedures were in place.

Data Analysis

Framework Analysis was used to analyse the data using five interconnected steps that include familiarization, identifying a thematic framework, indexing, charting, mapping and interpretation (Ritchie & Lewis, 2003). All data from the focus groups and observations were

analysed together. The authors met on a regular basis which helped in raising issues and questioning meanings. Simultaneous analysis of all data enabled triangulation of the different sources. Overall trustworthiness of the data was established through prolonged engagement, reflexivity, member checking by confirmatory focus groups with professionals, and triangulation. In this way, credibility, transferability, dependability, and confirmability were established (Sandelowski, 1993; Guba & Lincoln, 1989).

RESULTS AND FINDINGS

Pseudonyms are used for the participants in reporting all focus groups results. The 22 parents who participated in this study were Lebanese with the majority being mothers (n=13). The mother's age range was between 20 and 47, among which six reported having normal vaginal delivery (NVD) and seven had C-section. Their preterm infants' ages ranged between 27 and 37 weeks gestation. Eight were first time mothers, three were second time mothers and the remaining two had more than two children. Seven mothers were housewives, while the remaining six held full time jobs. Their educational level varied, ranging from complementary to university as follows: six were at the university level; three were at the technical level; one at the secondary school level; and three were at the complementary school level. The other people who participated in the study were six fathers, one grandmother, one mother-in-law, and one sister-in-law. All fathers reported working full time. As for the other family members, they were housewives. Their educational level ranged from elementary to university level as follows: three were at the university level; one was at the technical level, two at the secondary school level, two at the complementary school level, and one at the elementary school level. All parents reported no previous experience in caring for a premature baby. The data collection was mainly through FGs and observations in the NICU.

Four themes were identified: understanding infant massage; the perception of the benefits and risks of infant massage; the perceived barriers for engaging in the practice of massage, and the strategies to facilitate future implementation. The FG findings were supported with notes from the observations. The emergent themes mapped well to the four constructs of the NPT: coherence, cognitive participation, collective action, and reflexive monitoring (Figure 1).

Understanding infant massage

Participants' accounts suggested that the idea of massage was culturally acceptable especially for the older generation. Some parents felt that it was similar to the old or traditional massage performed on full-term babies after having a bath at home; many compared it to physiotherapy as indicated in this discussion.

> *My mother used to do massage for my children after bath …I like the idea (Kamela, FG 9, Parent)*
>
> *Yes we do the same thing more or less. I loved it. …We hydrate the skin …, and you feel the infant is more comfortable after doing massage (Roula, FG1, HCP)*
>
> *I used to do this massage for my children… after the bath; I used to rub them with … olive oil …. I used to rub all their bodies: their shoulders, hands, back, everything…I used the oil for the first 40 days…. (Nahla, FG 7, Parent).*

Parents and HCPs recognised the potential physiological and emotional benefits of massage as a vital intervention for full-term babies. However, parents expressed anxiety and fear that this application could jeopardize the fragile condition of the premature baby.

> *I don't know, nobody talked to me before about it … the doctors say: "no, nobody should touch the baby now"; I am coward… (Kamela, FG 9, Parent)*

Perception of benefits and risks

Parent participation in the care of their infants was limited; however, participants were interested in implementing massage recognizing its mutual benefit. Yet, concern of the infant's frail condition was identified as a risk.

But now I cannot touch him because my baby is connected to machines… When everything is removed [tubes and monitors], I will feel secure to turn him (Rana, FG 7, Parent).

The infant… doesn't have anything except this touch, which is the communication between the infant and me …so massage is included in all the care. (Maria, FG 1, HCP)

HCPs talked about the constraints related to the massage technique and its safe application by parents. The infant's health condition, timing of massage, risk of infection, body temperature, type of pressure used and ability to tolerate the application were the main process issues discussed among participants.

Premature babies may contract infection from the air if there are many people coming into the NICU… (Reem, FG 5, HCP)

Perceived barriers in the practice of massage

Parents identified barriers to engaging in massage such as infant's and mother's health, having other children at home, transportation, personal commitments, and financial constraints. The majority of parents felt that the physical structure of the NICU environment with restricted visiting hours and staff workload did not encourage them to stay with their infants.

Nurses don't let us enter when they are changing my baby, or doing rounds … (Hanan, FG 7, Parent)

We stand for 5-10 minutes, we feel annoyed because the nurses are busy working…we feel shy to stand there more than that… (John, FG 9, Parent)

The financial problem has affected our coming to the NICU on daily basis… the transportation to get here… (Aziza, FG 11, Parent)

The attitudes of parents and staff towards parent involvement were confirmed by observation. Parents were seen observing their child through the glass looking concerned and appearing anxious. The nurses clearly gave priority to the doctors who directed the actions and work flow. HCPs identified possible constraints including their perception of parental fear and readiness as well as the parents' lack of education.

The parents of "Baby T", I don't trust them; … I am sure that they love their infant a million times more than me, but they might have a low IQ (Doris, FG 3, HCP)

Some parents are not capable mentally and emotionally to do this intervention... (Rabih, FG 4, HCP).

Staff overload and attitude as well as NICU restricted entry, space availability and lack of privacy were identified by HCPs. They also reported the level of commitment and resistance to change as barriers. Several HCPs preferred not to involve parents in the care as this would take from their time, increase their workload, or interfere with their routine. In addition, some HCPs were resistant as a shift of control to the parents would be difficult for some nurses who were usually the primary caregivers.

Isn't it enough for us, the intervention we are doing and the workload we have? (Tania, HCP, FG 2).

Overall, while some HCPs were in favour of the parent-implemented massage, the majority had concerns regarding: time constraints, staff resistance, implementation, pejorative views of

parental capability, and workload as well as entry to the NICU and space availability. The need for higher staffing levels was repeatedly highlighted by many HCPs. Furthermore, practical factors beyond the scope of NPT were raised by parents such as their fears and anxieties about touching/handling the infant and transportation issues.

Strategies to facilitate future implementation

The main contextual and organizational facilitators for future implementation identified by HCPs were: having extra staff and the need for a protocol for teaching nurses and training parents to guarantee a safe and smooth daily application. The parents, in contrast, highlighted communication, commitment, encouragement, gradual application and support by HCPs.

> *I need proper time and the opportunity to learn this in the hospital. ...I need the nurses' assistance and presence (Rima, FG 9, Parent)*
>
> *Massage application becomes easier when it is an order, so the nurse is obliged to do it like physiotherapy, vital signs … (Lina, FG 13, HCP).*

Nurses having a higher education and more experience reported a greater willingness to facilitate the implementation of massage.

> *My part will include training and observing closely because the project quality indicator will go up from us to the directors to agree… the general director will need to sign off on it. (Fida, FG 1, HCP)*

Many HCPs showed a readiness to engage in massage as a sustainable intervention discussing how to better accommodate the parents' visits possibly with two shifts.

To organize the time of the appointments for parents to come to visit … not have all of them arrive together; … one visit in the morning, one at noon ... and the last one in the evening. (Farah, FG 5, HCP)

In general, HCPs identified staff education, support for parents, and scheduled entry into the NICU by parents as important contextual factors to facilitate massage implementation.

DISCUSSION

This study explored Lebanese HCPs' and parents' perceptions of infant massage in the NICU. Drawing on NPT, the success of its future implementation would depend on a complex interaction between cultural, organizational and contextual factors. Four themes were found to be relevant; understanding infant massage from parents' and HCPs' perspectives, perception of benefits and risks (RQ 1 & 2), perceived barriers, and facilitators for future implementation (RQ 3) (Table 1).

Participants across FGs agreed that massage is a cultural and intergenerational practice which relates the NPT first construct of "coherence". The physiological, psychological and emotional benefits of massage as well as the safety and risks that might limit or facilitate its application relate to the second construct "cognitive participation" as an intention to engage. The HCPs demonstrated an awareness of the potential positive effect of introducing massage given by the parents, though emphasizing the barriers and facilitators of collective action and reflexive monitoring. This relates to the third and fourth NPT constructs including the importance of having extra staff and a protocol for teaching nurses and training parents. Commitment to the practice, shared decision-making, and establishing a protocol for the parents' visits were discussed as

important issues to guarantee the smooth application of massage. The emergent themes aligned well with the four constructs of the NPT.

In this study, the quality of the parent-professional social interaction was highly affected by the setting. This in turn affected the parents' self-confidence and role in the NICU. The building of parental confidence is supported by literature for early parenting in the NICU and promoting a healthy attachment (Fenwick, Barclay, & Schmied, 2008). Parents expressed a strong desire to touch their infant. However, they articulated concerns about massage technique and safety, risk of infection, fear of small weight, and the infant's physical state within this hypothetical situation. In general, when parents are supported in the NICU they assume a better sense of control and self-confidence when massaging their infant (Chertok, McCrone, Parker, & Leslie, 2014). In contrast, HCPs focused on safety issues related to the physiological state of the infant, mistrust in the parents' abilities and fear of infection as well as parental hesitation to be involved in massage application. They tended to reflect more on the biophysical rather than the psychological benefits involved in cognitive participation unable to fully appreciate or embrace the families' developmental, emotional, educational and social needs within the NICU setting.

Parents and HCPs acknowledged that massage could have a mutual benefit to both the infant and the caregiver, facilitating the parent-infant relationship and/or the nurse-infant communication, and building the parents' confidence. These findings are consistent with a study in the U.S. exploring neonatal nurses' attitudes towards the use of massage in the NICU (Jambulingam, 2016). As Lebanon's high-tech medical industry is fairly similar to that of the U.S., the similarity in attitudes may be seen as a positive indicator for the potential of future implementation of massage. The positive attitudes of some nurses in this study seem to relate to

their age and longer experience in NICU. As observed in one Lebanese hospital, nurses with a higher education and experience might be more willing to facilitate this implementation.

In this study the lack of resources including staff shortage and time constraints, overwhelming workload, and demands of critically sick infants were key limiting factors for staff to dedicate time to the parents' education and training. The notion of excessive workload was also discussed by Alharbi, Olsson, Ekman and Carlström (2014) who concluded that HCPs tend to reinforce the status quo rather than embrace change. Perceiving their limitations, HCPs suggested a decrease in workload, having a dedicated nurse and identifying incentives to support massage implementation. HCPs' further agreed that parents' reluctance to commit would be a major limiting factor as it relates to collective action. However, a few nurses suggested performing the massage themselves which pertains to reflexive monitoring of the fourth construct. This contributed to answer RQ 1 & 2.

The nurses' concerns about balancing between their daily responsibilities in the NICU and addressing the needs and concerns of parents was another major hindering factor supporting the need for contextual integration aligning with the NPT. This finding is corroborated by Gallagher, Marlow, Edgley, & Porock (2012) and Obeidat, Bond, & Callister (2009) who detail the difficulties that neonatal nurses mainly in the U.S. and Europe face meeting parental psychological needs and concerns. For many years nurses in the NICU in Lebanon have been more focused on medical and technical interventions to meet the physical needs of the infant than on psychological and emotional support in promoting parent-infant interaction. This is similar to views expressed in resource rich countries (Heermann, Wilson, & Wilhelm, 2005; Foster, Whitehead & Maybee, 2016). In this study, key issues relating to parental capacity were a major concern that extended beyond the complexity of the HCPs' daily routine in implementing massage in the NICU. Having

only one or two parents enter the NICU at a time was proposed as a solution relative to the efforts of collective action and reflexive monitoring.

The idea that parents should participate in the daily care and be part of decision making as part of therapy is a recent Western concept (Badr et al., 2015; Álvarez et al., 2017; Niemi, 2017). For families and HCPs coming from Eastern cultures, this concept is new, as parents are regarded as outsiders and passive receivers of care (Abdallah, Badr & Hawwari, 2013; Badr, Abdallah, & Purdy, 2011). The parents perceived themselves as passive recipients of care, totally reliant on HCPs, while some HCPs seemed to have a negative stereotypical view of parental abilities and capacities. Some nurses felt it constituted a threat to overturn the balance of power in favour of parents. This highlights the conflicting perceptions and attitudes of parents and HCPs regarding the application of massage which concur with earlier studies about the parents' mixed feelings relative to NICU involvement (Aagaard & Hall, 2008; Sawyer et al., 2013). The apparent disconnect between parents and HCP is very interesting and likely a barrier to implementation of massage in the NICU.

Other barriers reported by nurses were that some mothers were depressed and in pain post C-section or had transportation difficulties which might prevent them to commit to a daily massage application. Similar practical constraints were identified in the literature with other touch-based interventions, such as Kangaroo Mother Care (KMC), where neonatal nurses mentioned the mothers' pain after a C-section as an impediment (Blomqvist et al., 2013). In contrast, the parents' perception of their NICU experience focused on the lack of encouragement and adequate preparation. Parents believe that many organizational factors would hinder their participation demonstrating a lack of collective action as it relates to the third construct of NPT. These contextual and organizational barriers further imply that the NICU physical structure, staff

workload and restricted visiting hours would hinder implementation (Blomqvist et al., 2013; Foster et al., 2016).

The areas that needed to be addressed relative to reflexive monitoring pertaining to the fourth construct of NPT were parent support and access to the NICU: the visiting policy, facilitating their stay in the NICU and helping with transportation. HCPs identified that involving parents in infant massage is one way to prepare and encourage them to touch their infants. Research has shown that nurses can support the bonding of the mother-infant dyad in the NICU by encouraging maternal contact through interaction with their infant significantly diminishing the mother's anxiety and enhancing confidence (Kearvell & Grant, 2010). Relative to facilitators for sustainable intervention, parents and HCPs agreed that with time and more interaction and encouragement parents could feel more confident about their provision of care (Nyqvist & Engvall, 2009; Sawyer et al., 2013). Fathers more than mothers in this study felt massage would be easy to learn and showed a readiness to apply it if well supported by HCPs and the infant was stable. Keller (2013) and Pohlman, (2009) found that fathers enjoyed the experience while increasing their confidence and believed that their infants enjoyed being massaged as well. HCPs discussed the importance of developing a protocol for the implementation of massage, detailing which infants would be eligible, the technique, and parent profile, along with changing organizational and contextual barriers. This all contributed to answer RQ 3.

Findings from this exploratory study show that although parents demonstrated readiness to be part of the daily care of their infants, they acknowledged that they did not have the preparation and their role was very limited. They identified communication, encouragement and support, and gradual application as potential facilitators. On the other hand, HCPs identified contextual and

organizational facilitators: additional staff, teaching nurses, training parents, maintaining a level of commitment to the practice, and openness to innovation.

The nurses' expertise and attitudes as well as NICU ethos might also affect the successful massage application. Furthermore, upper management needs to proactively lead the implementation to facilitate embedding massage application: time management, distribution of tasks and entry to the NICU. This study's novel use of NPT for pre-implementation adeptly informed both data collection and data analysis, helped to explore intentions for innovation, and provided an understanding of the potential massage implementation.

Limitations

The sample of parents and HCPs relied on only three university-affiliated private hospitals. Other parent and HCP opinions in settings such as small hospitals might perceive parent implemented infant massage differently, though this was not attainable within the scope of this study. The NPT as an implementation theory could be better utilized if massage was actually carried out and not presented hypothetically as in this study.

IMPLICATIONS FOR RESEARCH, EDUCATION AND PRACTICE

This study, strengthened by the underpinning theory of the NPT used in an innovative manner for a hypothetical situation, was unique in exploring perceptions and attitudes towards massage. The findings that emerged from this study although pertinent to massage implementation in the Lebanese NICU environment may resonate in other settings. Further research is needed to corroborate the findings of this study. Improving the education of HCPs and correcting misconceptions around parental capability is needed to encourage parental involvement in the care

of their infants in Lebanon. Efforts should be made to have an open door policy for parents and minimize the workload of nurses to accommodate parents dedicating time for such interventions.

LINKING EVIDENCE TO ACTION

- The multiple barriers identified by both groups will need to be addressed within the design of any future implementation of infant massage.
- Although infant massage is culturally acceptable, adopting this complex intervention in the Lebanese NICUs without preparation would be premature and problematic.
- Parents were heard to want more involvement in the NICU care in general, not just to do massage.
- HCPs need to develop a protocol for the implementation of massage.

CONCLUSION

This study explored how parents and HCPs perceive massage intervention and the potential complexity of the barriers and facilitators for future parent-implemented massage embedded in the social context of the NICU. Massage was intuitively appealing to both groups demonstrating coherence and buy-in to the idea reflecting their cognitive participation (RQ1 and 2). This includes the lack of parental involvement and the parents' reluctance to engage so as not to jeopardize the health of the infant as they focused on their fears and worries about the potential risks of massage. Identifiable practical barriers and facilitators to future application were revealed by both groups based on their cultural perspective and context (RQ3). The majority of HCPs, hesitant to include parents in the process, stressed that massage is a complex intervention that requires mainly time commitment, training and staffing. Developing a culture where parents can take part in the care of

their infant not only requires a change in NICU practices and institutional support, but also challenges the organizational and traditional roles of both parents and HCPs.

The findings of this study underpinned by the NPT have great potential to assist HCPs, administrators, and researchers to understand the complexity of future parent-implemented massage. Adopting infant massage in the Lebanese NICUs without understanding and preparing the setting in terms of human and material resources would limit the success of any form of implementation.

Conflicts of interest: none

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