



The Experiences of Nurses and Physicians Working in the Neonatal Intensive Care Unit on Developmental Care: A Qualitative Study

Yenidoğan Yoğun Bakım Ünitesinde Çalışan Hemşire ve Hekimlerin Gelişimsel Bakıma İlişkin Deneyimleri: Nitel Çalışma

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This study was presented as orally in 2nd International 3rd National Postpartum Care Congress, 3-6 October 2019, Konya, Turkey.

ABSTRACT Objective: This study was carried out to reveal the experiences of nurses and physicians working in a neonatal intensive care unit (NICU) about developmental care practices. **Material and Methods:** In this study, the qualitative interpretative approach was adopted. The data were collected in May 2019 through a semi-structured interview form consisting of seven main questions. They were asked in questions including sociodemographic and professional characteristics of the participants. In-depth individual interviews were conducted with a three nurses and two physicians working in a neonatal intensive care unit. The qualitative data obtained were analyzed by the researchers using the content analysis method. **Results:** Three themes and five sub-themes emerged from the data analysis. The three main themes achieved are: (1) working in the NICU (2) developmental care practices (3) establishing and maintaining developmental care in the NICU. Five subthemes are: (1) the known developmental care practices, (2) developmental care practices in the NICU, (3) the benefits of developmental care, (4) difficulties in providing developmental care, (5) different developmental care practices. The findings revealed general views on developmental care practices. **Conclusion:** Nurses and physicians working in NICU reported their thoughts about developmental care, knowledge and practices, benefits, difficulties in implementation, different practices for developmental care, and difficulties in placing and maintaining this care. As a result of the study, opinions can be made about increasing the awareness of developmental care practices, standardizing the practices, providing training and developing tools for evaluating the practices.

Keywords: Infant care; intensive care units; neonatal; qualitative research

ÖZET Amaç: Bu çalışma yenidoğan yoğun bakım ünitesinde (YYBÜ) çalışan hemşire ve hekimlerin gelişimsel bakım uygulamaları hakkındaki deneyimlerini belirlemek amacıyla yapıldı. **Gereç ve Yöntemler:** Bu çalışmada nitel araştırma yöntemi kullanılmıştır. Veriler Mayıs 2019'da yedi ana sorudan oluşan yarı yapılandırılmış görüşme formu aracılığıyla toplanmıştır. Katılımcıların sosyodemografik ve mesleki özelliklerini içeren sorular da sorulmuştur. Yenidoğan yoğun bakım ünitesinde çalışan üç hemşire ve iki hekim ile bireysel derinlemesine görüşme yapılmıştır. Elde edilen nitel veriler araştırmacılar tarafından içerik analizi yöntemi ile analiz edildi. **Bulgular:** Verilerin analizinden üç ana tema ve beş alt tema elde edilmiştir. Elde edilen üç ana tema: (1) YYBÜ'nde çalışma, (2) gelişimsel bakım uygulamaları, (3) YYBÜ'ne gelişimsel bakımın yerleştirilmesi ve sürdürülmesidir. Beş alt tema ise: (1) gelişimsel bakıma yönelik bilinen uygulamalar, (2) YYBÜ'nde gelişimsel bakıma yönelik yapılan uygulamalar, (3) gelişimsel bakımın yararları, (4) gelişimsel bakım uygulamalarıyla yaşanan güçlükler, (5) farklı gelişimsel bakım uygulamalarıdır. Bulgular gelişimsel bakım uygulamaları ile ilgili genel görüşleri ortaya koymuştur. **Sonuç:** YYBÜ'nde çalışan hemşire ve hekimler gelişimsel bakım hakkındaki düşüncelerini, bilgi ve uygulamalarını, yararlarını, uygulamadaki güçlükleri, gelişimsel bakıma yönelik farklı uygulamaları ve bu bakımı yerleştirme ve sürdürmedeki zorlukları bildirdi. Çalışmanın sonucu olarak gelişimsel bakım uygulamalarına yönelik farkındalığın artırılması, uygulamaların standartlaştırılması, eğitimler verilmesi ve uygulamaların değerlendirilmesine yönelik araç geliştirilmesine yönelik görüşler söylenebilir.

Anahtar Kelimeler: Bebek bakımı; yoğun bakım üniteleri; yenidoğan; nitel araştırma

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It is known that the chances of survival of premature infant have increased in the last thirty years with new technological developments, and the duration of stay in neonatal intensive care units (NICUs) has been prolonged.^{1,2} Physical and motor disorders are more prominent in premature infants, and many risky situations such as cognitive, social-emotional and mental development problems are encountered.^{3,4} Developmental care practices are used to reduce these risks. Developmental care is a care model aiming to minimize the negative effects of NICU environment on high-risk infants.^{5,6} The impact of the complex environment of NICU on the developing nervous system of the premature infant has become increasingly important over the years, and the developmental care models and practices have become more comprehensive.^{5,7,8} Some studies in the literature report that when developmental care is provided to premature infants, the duration of ventilator stay is decreased, feeding is provided earlier, the duration of hospital stay is shortened, there is a significant decrease in the number of complications, and neurodevelopmental findings are better.^{9,10} Developmental care practices particularly support the neurological development of premature infants and contribute to the improvement of the practices of nurses and physicians. Supportive practices for developmental care are adopted in many NICUs around the world. It is known that NICU developmental care practices are partly seen in Turkey, and trainings related to these practices have recently been given in some hospitals. NICU developmental care practices are also a part of the Ministry of Health's Neonatal Intensive Care Nursing Certificate program and scientific meetings.¹¹ It is believed that there are important problems regarding what NICU developmental care practices are and how they could be established and maintained. It is also essential to reveal evidence-based information in this area, and nurses and physicians at NICU are the key actors in this respect. Knowledge levels of nurses and physicians providing developmental care and their opinions on this care are highly significant. The in-depth examination of the views of NICU nurses and physicians within the scope of this study is expected to contribute to the field and to provide guidance and a perspective on developmental care practices.

Over the years, the importance and implementation of developmental care have increased as the effect of the complex environment of the NICUs on the developing nervous system of premature babies has become more important.^{5,8} Developmental care applications have many benefits in terms of neurological development, especially for premature babies. Today, it is seen that developmental care practices are implemented with the Newborn Individualized Developmental Care and Assessment Program (NIDCAP). NIDCAP provides the formal clinical framework and training to implement developmental care in NICUs.¹² Numerous studies have shown that preterm babies who underwent individualized developmental care have decreased intraventricular hemorrhage and chronic lung diseases, increased weight gain, decreased feeding time with nasogastric catheters, and reduced risk of retinopathy and feeding difficulty in addition to neurodevelopmental benefits.¹³⁻¹⁵

The aim of this study is to qualitatively evaluate the opinions of nurses and physicians working in a NICU about developmental care practices.

MATERIAL AND METHODS

DESIGN

The case study design, one of the qualitative research methods, was used in the study. Case study, which is a research method based on "how" and "why" questions, allows the researcher to thoroughly examine a phenomenon or event that he cannot control.¹⁶ In the present study, in-depth interviews were conducted to collect data. In-depth interviewing is an open-ended, discovery-oriented method. The purpose of the interview is the in-depth exploration of the interviewer's emotions, views and perspectives.¹⁷ This study was written according to the COREQ checklist criteria.¹⁸

SETTING AND SAMPLE

The study was conducted with the participation of nurses and neonatologists working in the NICU of Selçuk University Medical Faculty Hospital in Konya, Turkey. In the hospital, nine incubators are used for the newborns in the second level and 36 in-

TABLE 1: Demographic characteristics of participants (n=5).

Age	Mean (SD)	39.60 (9.23)
	Range	29-54
Gender	Male	2
	Female	3
Educational status	Postgraduate	2
	Graduate	3
Profession	Neonatologists	2
	Nurse	3
Working time in the profession	Mean (SD)	14.60 (9.34)
	Range	5-30
Working time in NICU	Mean (SD)	9.60 (5.03)
	Range	4-16

SD: Standard deviation; NICU: Neonatal intensive care unit.

cubators are used for the newborns in the third level. A total of 40 nurses and two neonatologists work at the NICU. In addition, 11 nurses work during the day and nine nurses work at night. The mother's adaptation room can accommodate up to eight patients, with babies and their mothers preparing for discharge.

Although there are no clear rules and clear numbers in qualitative research regarding the prediction of sample size in advance, it is recommended to select individuals until data reaches saturation and excess as can be understood from the statements of participants.¹⁹⁻²² The purposive sampling method enables an in-depth study of participants thought to be rich in information, and in many cases, it is useful in discovering and explaining facts and events.¹⁶ The study was conducted with nurses and neonatologists who volunteered to participate in the study.

Inclusion criteria were: (1) working in the NICU for at least one year, and (2) being a neonatologist or a nurse. This study was conducted with five nurses and physicians including two neonatologists and three nurses. The characteristics of the participants are shown in [Table 1](#).

DATA COLLECTION

The data were collected using an individual semi-structured interview form developed by reviewing the literature on developmental care in May 2019. In the meeting room, under the supervision of two researchers, individual interviews were made using

note-taking technique and a tape recorder. Each interview lasted for about 15-20 minutes. During the individual interviews, when it was seen that five participants started to express similar opinions, the data collection process was terminated considering that the data reached saturation. In the interviews, one of the researchers directed the interview process, while the other researcher was the reporter.

In the semi-structured interview form, the participants were asked the following seven questions:

- 1) What do you think about working as a nurse and physician in the NICU?
- 2) What practices do you know about developmental care?
- 3) Which practices do you implement within the scope of developmental care?
- 4) What are the benefits of developmental care practices?
- 5) What difficulties do you experience when providing developmental care?
- 6) What different practices could be adopted for developmental care?
- 7) What would you recommend for the establishment and maintenance of developmental care in the NICU?

In addition, questions including sociodemographic and professional characteristics of the participants (age, gender, occupation, educational background, years of experience in the profession, years of experience in the NICU) were asked.

DATA ANALYSIS

Content analysis was used to analyze and interpret the data. Content analysis enables to uncover themes and dimensions that require in-depth data analysis.¹⁶ The aim of content analysis is to reach the concepts that can explain the collected data and the relationships between the concepts.¹⁹ In content analysis, the content is classified by grouping it under appropriate themes (categories). Themes are the structures comprising the units of analysis. In the analysis of data, coding serves as a dictionary.²³ In the study, a code list was created by both researchers independently; the data were coded, and appropriate themes were

created. During data analysis, it was seen that both researchers created similar codes and themes. Similar codes were combined and the data were reported under three main themes.

INTER-RATER RELIABILITY AND CREDIBILITY

Within the scope of the study, at the end of each interview, member checking was done for the answers given to the questions in the semi-structured interview form. Furthermore, after the study was completed, it was read by an independent researcher, and feedback was received (expert review- peer debriefing).¹⁶

ETHICAL CONSIDERATIONS

Ethical consent of the study was obtained from the Non-interventional Clinical Research Ethics Committee of Selçuk University Faculty of Health Sciences with the decision numbered 2019/47 (6/2/2019). Institutional permission was obtained. Approval was obtained from the participants. The names of the participants were kept confidential. While reporting the findings, participant numbers were used instead of names. The study was carried out in accordance with the Helsinki Declaration principles.

RESULTS

Based on the questions in the semi-structured interview form, qualitative findings were grouped under three main themes: working in the NICU, developmental care practices, and establishing and maintaining developmental care in the NICU.

MAIN THEME 1: WORKING IN THE NICU

All the participants stated that working in the NICU is stressful, but enjoyable. They reported that although they are very busy and working in the NICU is exhausting, they work there happily. They further stated that their job requires attention and alertness, and they learn new things every day.

“Working in the NICU is mostly enjoyable, sometimes stressful and tiring (P1). A sudden change in the patient’s condition increases stress, but it is a place where we generally enjoy working. (P2)”

“It is a job that I like to do but it is stressful and busy (P3), different from other jobs. It requires at-

tention and constant alertness. Nothing should be overlooked. (P4)”

“Working in the NICU is very different from working at other departments as new things are constantly learned in the NICU. (P5)”

MAIN THEME 2: DEVELOPMENTAL CARE PRACTICES

The sub-themes of developmental care practices are the known developmental care practices, developmental care practices in the NICU, the benefits of developmental care, difficulties in providing developmental care, and different developmental care practices.

Sub-theme 1: The known developmental care practices: While two participants reported the known developmental care practices as giving kangaroo care, some participants listed the known practices as touching the infant minimally, minimal invasive procedures, starting feeding earlier, providing intrauterine environment, reducing noise and light, giving collective care, giving different positions, regulating heat, nesting, ensuring that the baby smells the mother, supporting breastfeeding, using pacifiers, listening to music, and using swing.

“The strategy of not touching babies weighing less than 1,000 grams during the first 3 days, minimal blood collection, early feeding. (P1)”

“Reducing light and sound to provide an intrauterine environment (P4), reducing touching (P2), providing care based on needs, giving the proper position, regulating temperature, using a nest, using the mother’s belongings so that the baby can feel the mother and can feel safe. (P3)”

“Kangaroo care (P4, P5), breastfeeding, using a pacifier, listening to music, using a swing. (P5)”

Sub-theme 2: Developmental care practices in the NICU: Developmental care practices reported by the participants are minimal touch, collective care, reducing light, regulating temperature, nesting, and kangaroo care.

“Touching less, giving collective care (P2), reducing the light using incubator cover, monitoring heat, and practices like nesting that help babies feel safe. (P3)”

“We also include fathers in kangaroo care. (P4)”

Sub-theme 3: The benefits of developmental care: The majority of the participants stated that developmental care practices increase life span, have a positive psychosocial effect in the long term, increase the bond between the family and the baby, positively affect the vital signs, reduce stress, make the baby calmer, help the baby sleep well, shorten the hospitalization period, and have positive effects on nutrition.

“Touching the babies weighing less than 1,000 grams less for the first 3 days has an incredible effect on the survival of infants. (P1)”

“We believe that developmental care contributes to the growth of a healthy individual, a person who thinks more freely and does not have antisocial features. (P2)”

“Developmental care practices strengthen the bond between parents and the baby, maintain body temperature and reduce stress. The baby sleeps better in the dark and becomes calmer. (P4)”

“These practices shorten discharge time, better tolerate nutrition, and improve sleep quality. (P5)”

Sub-theme 4: Difficulties in providing developmental care: Most of the participants reported that they experience difficulties in providing developmental care such as insufficient number of nurses and heavy workload, caregivers’ not providing the same care and lack of continuity, differences in the care provided by nurses and other health care personnel, rotation in health personnel, risk of infection posed by parents, the risk of extubation during kangaroo care, the baby’s critical condition, and inadequacy of products that support developmental care.

“Neglecting developmental care practices due to heavy workload of the personnel. (P2)”

“It is difficult to ensure the compliance of all people. Not all healthcare personnel provide developmental care or know its importance. Also, it is difficult to perform some practices and to maintain the practices. Furthermore, health personnel rotation is very high. (P3)”

“The risk of infection increases when the parents are included in the care. Also, there is a risk of extubation when providing kangaroo care to an intu-

bated baby. Other difficulties are lack of nurses, the difficulty in providing developmental care due to the patient’s clinical situation, and the lack of products that support developmental care such as swings and pacifiers. (P5)”

Sub-theme 5: Different developmental care practices: Some of the participants stated that there might be different developmental care practices such as offering nutrition and care programs, giving different positions, having very small premature babies in the same area, bathing in the bathtub, and providing the smell of the mother and milk.

“Providing some nutritional programs such as SINC. (P1)”

“Giving different positions. (P2)”

“Having very small premature infants in the same place. (P3)”

“Bathtub bathing. (P4)”

“Putting a mother’s belonging or breastmilk near the infant. (P5)”

Main theme 3: Establishment and maintenance of developmental care in the NICU

The majority of the participants stated that some factors have an effect on the establishment and maintenance of developmental care in the NICU, namely giving training to nurses and other health personnel at regular intervals, supervising the practices, supporting the results of practices with research, raising awareness about developmental care, increasing the number of nurses, providing supplementary materials that support developmental care, and giving psychosocial support to the family.

“Supervision of the training sessions and practices. (P1)”

“Revealing the results of the care provided and obtaining evidence concerning its use. (P2)”

“Raising awareness about developmental care, including it in the training sessions, ensuring that all health personnel receive this training and the training is repeated. (P3, P5)”

“The number of patients and nurses should be appropriate, work load should be reduced, products that support developmental care should be increased;

families should be prepared psychosocially before including them in the process, in-service trainings should be provided. (P5)”

DISCUSSION

Three main themes, namely, working in the NICU, developmental care practices, and establishment and effective maintenance of developmental care in the NICU emerged as a result of the analysis of the views of the participants.

WORKING IN THE NICU

The participants stated that working in the NICU is enjoyable, but at the same time stressful, busy and tiring. Many factors can cause stress in the work environment and stress can be higher, especially in risky units such as intensive care units.²⁴ It is known that high-risk patients are monitored in the NICU and a wide range of special care practices are performed.²⁵⁻²⁷ In qualitative studies conducted with nurses working in NICU, nurses express that they experience stress.^{28,29}

DEVELOPMENTAL CARE PRACTICES

Known and performed developmental care practices: The study revealed that the participants knew and applied kangaroo care, but they were not aware that it was an important part of developmental care. Kangaroo care is one of the most important applications of developmental care which has many benefits.^{1,30,31} It turned out that the participants knew and applied the practices of reducing noise and light, preserving heat, providing the environment in the mother's womb, and providing maternal scent. However, there are also practices such as having zero discrimination between the parents and the baby, providing moisture, changing the position of the baby gently and slowly, providing an odorless environment, exposing the infant to the parents' voice, and providing the smell of breast milk.^{1,31} Participants know and apply practices such as using nests, giving different positions, and using a swing. Therapeutic positions support neuromotor and musculoskeletal development, provide physiological function and stability, and can affect skin integrity, thermal regulation, bone density, easy sleep, and brain development.^{31,32} Participants

know and apply techniques such as lowering the light and sound levels, not waking the baby frequently by providing collective care, and touching the baby less to maintain the baby's sleep. Other applications include using scales to assess sleep-wake states, providing supportive positions, and providing appropriate developmental care. It was observed that the participants used pacifiers in order to minimize stress and pain and also used them to support sucking. Prior to small invasive procedures, non-pharmacological methods, parental care and pain assessment can also be used.^{1,31} Participants mentioned only bathing the baby for the premature baby's skin. There are also applications such as providing moisture in the incubator, reducing the use of adhesives, and using a skin assessment measurement tool. It was observed that the participants knew and applied early feeding, supported breastfeeding and used pacifiers. The use, maintenance and support of enteral nutrition with breast milk is the focus of NICUs because of the benefits of breast milk for premature infant.^{1,31}

Benefits of developmental care: The participants stated that developmental care practices increase life span, have a positive psychosocial effect in the long term, strengthen the bond between the parents and the infant, affect vital signs positively, decrease stress, calm the infant down, increase sleep time, shorten the hospitalization period, and have beneficial effects on nutrition. It is seen in the literature that developmental care applications have many benefits.^{9,10}

Difficulties in providing developmental care: The difficulties are reported to be resulting from family, nurses and physicians, and institution. Among the difficulties experienced in the neonatal environment, the insufficiency of products that support developmental care was mentioned. Another difficulty reported by the participants is that there may be a risk of family-induced infection and extubation. NICU employees can teach these measures by interacting with families as it has been proven that family participation is highly important for both the family and the baby.^{1,31,33} The difficulties related to nurses and physicians are the lack of nurses and heavy workload, the differences in the practices of nurses and other health personnel, and the frequent rota-

tion of the health personnel. According to the baby's risk status, the number of nurses should be optimal. In the study, it was stated that there were differences in the applications of health care professionals. In this context, standard care protocols or guidelines are needed.

Different developmental care practices: It was revealed that the opinions about what may be different in developmental care include the existing practices in developmental care. This suggests that the participants lack knowledge on what developmental care is. In this context, relevant trainings including up-to-date evidence should be given.

ESTABLISHMENT AND MAINTENANCE OF DEVELOPMENTAL CARE IN THE NICU

The participants stated that due to individual, managerial and institutional reasons such as lack of training and supervision of practices, not showing the positive results of developmental care, lack of guidelines, insufficient number of nurses, heavy workload, and parents' not preparing for the process, developmental care may not be established or maintained in NICUs. The main problem in our study is that developmental care is not known exactly. The training of nurses and physicians in NICUs is critical for the successful adoption of developmental care.

In a study, it is stated that developmental care is not applied consistently. In addition, it is stated that NICU nurses require more systematic developmental care training at both unit and hospital levels.³⁴ In another study, it is recommended to increase the competencies of NICU nurses to improve their developmental care practices, to create a positive perception of developmental care, and to provide a practical training program for nurses.³⁵ Similar to the studies, it can be suggested to have regular trainings both in NICU and hospital for the implementation and maintenance of developmental care in our country and to create a positive perception of developmental care.

CONCLUSION

The study revealed that nurses and physicians in the NICU know and apply some of the developmental care practices; however, there are significant short-

comings in evaluating these practices as a part of developmental care. On the other hand, it was found that among developmental care practices, nurses and physicians frequently implement improvement of the environment and providing the best nutrition, but other practices including partnership with families, giving position and care, maintaining sleep, minimizing stress and pain, and protecting the skin are limited. It can be said that nurses and physicians have suggestions that can be effective in establishing and maintaining developmental care in NICUs. In this respect, it is important to develop strategies to adopt developmental care practices and to raise awareness about them.

Future research should focus on embracing developmental care practices fully and concretizing its benefits. It is also important that institutions are willing to create and evaluate guidelines for developmental care practices. There is also a need to develop tools to evaluate developmental care practices.

LIMITATIONS

As the research was conducted with a case study design, one of the qualitative research methods, the results are limited to the group studied. The study is limited to one NICU and only the opinions of five nurses and physicians working in a single center were obtained.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

All authors contributed equally while this study preparing.

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