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DOI: 10.4103/jehp.jehp_371_19

# Assessment of educational performance of nurses in neonatal intensive care unit from parents' perspective

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Received: 08-07-2019  
Accepted: 05-10-2019

## Abstract:

**INTRODUCTION:** One of the key elements in family-centered care is educating parents with hospitalized infant at intensive care unit. Education is a fundamental role of nursing at intensive care units to satisfy parents and accelerate disease progression that eventually reduces hospital re-admission.

**MATERIALS AND METHODS:** This was a cross-sectional study conducted in 2018, and the study population was admitted infants ( $n = 90$ ) in the neonatal intensive care unit (NICU) of Shahid Beheshti University of Medical Sciences hospitals. We used a questionnaire including sociodemographic characteristics and performance of nurses in educating parents. Nurses' performance was assessed in five major areas composed of family-centered care, delivering cares according to individualized needs, education on equipment, basic needs of infants, and finally, nutritional education. All statistical analyses were conducted using SPSS version 22. The data were analyzed using *t*-test, ANOVA, and nonparametric tests.

**RESULTS:** Findings from the current study indicated that nurses performed their educational role weakly (37% of standard level). We also found that nurses who participated in neonatal educational courses had better performance compared to their counterparts. The results showed that year of experiences working as a clinical nurse was significantly associated ( $P < 0.05$ ) with performing standard education.

**CONCLUSION:** Our findings indicated that nurses performed their educational role weakly which might be due to staff shortage, heavy workload, and lack of time for educating parents. Therefore, it is necessary to improve the quality of education among nurses working at the NICUs and provide the necessary standards and indicators to evaluate this important task.

## Keywords:

Education, neonatal intensive care unit, nursing

## Introduction

Infancy is a vulnerable period in which many of the physiological compatibilities necessary for extrauterine life are formed.<sup>[1]</sup> Birth of a healthy infant is the best gift given by God which makes the parents blessed, whereas the birth of unhealthy one causes

severe mental tensions to parents.<sup>[2]</sup> Hospitalized infant in a neonatal intensive care unit (NICU) is a very stressful and disturbing experience for parents; they are often confused in such an NICU environment, and they may feel helpless and guilty and get fear about survival or disease lasting effects of their infants.<sup>[3]</sup> The

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**How to cite this article:** Mansourian M, Ziapour A, Kazemian M, Damanabad ZH, Rastegarimehr B, Mirzaei A, *et al.* Assessment of educational performance of nurses in neonatal intensive care unit from parents' perspective. *J Edu Health Promot* 2020;9:8.

survival of premature infants with very low birth weight and congenital malformations has been increased due to the advances in technology, new drugs, and the increase in knowledge of neonatal physiology. This means that infants and their parents have to experience long-term hospitalization and stay in hospitals and the infants may be discharged with special health-care needs.<sup>[4]</sup> With the birth of a premature baby, the family gets a lot of stress due to lack of physical, emotional, and psychological preparation for that event which causes them to face different needs.<sup>[5,6]</sup> Preterm birth is a worldwide epidemic with a global incidence of 15 million/year, and nearly 1 in 10 babies is stillborn preterm.<sup>[7]</sup> Researches showed that mothers who are separated from their babies had high level of anxiety and depression and demonstrated numerous psychological reactions.<sup>[8-10]</sup>

Furthermore, studies indicated that the appearance of infants and its behavior and changes in the role of parents are the main causes of increasing their stress in NICU.<sup>[11]</sup> Families have an important role to determine the specific needs of the baby, and they are an essential role in setting their care program.<sup>[12]</sup>

Regarding the therapeutic, technical, and technological improvement, NICU mortality rate was decreased, and modern technological advances and medical equipment can be caused to reduce hospitalization time and early discharge.<sup>[13]</sup> It can increase maternal anxiety.<sup>[9]</sup>

The role of mothers and their knowledge in dealing with the infant properly and correctly is well known.<sup>[14]</sup> After discharge, the parents are forced to take care of their baby at home; therefore, it is necessary to identify their abilities, especially the mother as the first caregiver of the baby. Mothers should be taught how to communicate with her baby and should be prepared for its discharging.<sup>[15]</sup> Mother awareness about how to deal properly with problems of the baby and how to provide essential care during this period may have a major impact on raising the confidence of mothers about the care of her baby and on eliminating many false beliefs and traditions about this matter.<sup>[16]</sup>

Nursing is an independent disciplinary and a branch of medical science that its graduates work as a member of the team of providing health care in various fields related to health care, training, research, consulting, prevention, management, protection, care, treatment, and rehabilitation.<sup>[17,18]</sup>

Education is one of the patients' rights and a means to achieve health promotion, disease prevention, increased patient autonomy, improved self-care, and reduced readmission. Since training is cost-effective on all aspects of patient care, treatment, and recovery, it is important

to understand patient education by nurses.<sup>[19]</sup> Education is a fundamental role of nursing at intensive care units to satisfy parents and accelerate disease progression that eventually reduces hospital re-admission.<sup>[20]</sup> In general, evaluation of educational performance of nurses by parents can represent the educational role of nurses in the hospital, and necessary activities can be done in order to better playing of this role of the nurse which may reduce bad consequences of neglecting it such as repeated hospitalizations due to lack of proper care at home.<sup>[21]</sup>

As parent education is one of the important duties of nurses and since nurses spend a lot of time with them, this study aimed to assess the educational performance of nurses in NICU from parents' perspective.

## Materials and Methods

This descriptive comparative study was performed on the training process of parents who have infants admitted to the NICU of a selected center affiliated to Shahid Beheshti University of Medical Sciences. All the parents who have infants which were admitted to the NICU 1 (under 1500 g) and NICU 2 (above 1500 g). Inclusion criteria were as follows: 1. lack of congenital malformations. The data related to the educational performance of the nurses were collected using the checklist made based on the standards for the training of parents. The checklist comprised two parts: 1. demographic information of the infants, nurses, and parents and 2. information related to the way of doing standard training and both included the existence of family-centered care approach. Second, specifying a training plan based on needs assessment and providing it to the parents and care providers, 3. training about the equipment, 4. primary care of the infants, and 5. infant nutrition training. Ranking instrument of the checklist items was determined after validation of the checklist because it was researcher-made. The scoring was as follows: "yes" (done correctly [2 points] and done incorrectly [1 point]) or "no" [0 point].

$$\text{Checklist Score} = \frac{2 * \text{correctly done frequency} + \text{incorrectly done frequency}}{2 * (\text{correctly done frequency} + \text{incorrectly done frequency}) + \text{Zero points frequency}}$$

Then, the obtained scores were converted to percentile values and were analyzed. Once the scores of different areas of the checklist were calculated, they were classified under three ranks of low (scores 0–49), middle (scores 50–74), and favorable (scores 75–100). The validity of the checklist for the infant discharge process was determined using content and face validity indexes. To do so, questions of the questionnaire and checklist were

formulated using books and articles in this regard, existing protocols and standards, and comments of advising and consulting professors. Then, the questions were judged by 13 specialists and faculty members of nursing. The content validity index was calculated as 94%. The reliability of the checklist was determined using the inter-rater agreement method. The observers agreed with each other by 95%. Based on a review of the related literature, and given that no study was found in this regard, the sample size was obtained as 88 infants using the following equation, where  $\alpha = 0.5$ ,  $P = 0.35$ , and  $d = 0.1$ . However, in this study, ninety infants were examined.

The researcher attended in some night shifts and completed the checklist to know the training and continuation of care and the correlation of observations. The assessed indexes included: (1) The existence of family-centered care approach, (2) Specify training plan based on needs assessment and provide it to the parents and care providers, (3) Training about the equipment, (4) Basic care of the infants, and 5. Infant nutrition training. Then, Researcher conducted a structured observation on the process of training which was done during the procedures, and between them, and the results of observations were represented through selecting choices of the checklist, that is, “yes” (done correctly or incorrectly) or “no.”

All statistical analysis was conducted using SPSS 22 (version 22.0, SPSS Inc., Chicago, IL, USA). Normal distribution was shown with Kolmogorov–Smirnov test. Data were analyzed using *t*-test, ANOVA and nonparametric tests (Mann–Whitney).

### Ethics approval and consent to participate

This study was drawn from a research project (No. SBMU.REC.1392.353) sponsored by the Deputy of Research and Technology at Shahid Beheshti University of Medical Sciences (SBUM).

## Results

The average age of our participants was 28 years, with an age range of 19–39 years. Most women (66%) had high school diploma, and 62.2% of the mothers were nulliparous. The majority of women (93.3%) in this study had no previous experience of infant admission in the NICU. Among the nurses, 86.7% and 13.3% were married and single, respectively, and 80% of them take specialized training courses for infants. Most nurses (60%) were observed in rotating shifts. The educational level of most nurses (97%) was bachelor’s degree. The mean age and years of service and experiences of participants was shown in Table 1. As shown in Table 2, minimum and maximum years of service in the NICU were 3 months and 16 years, respectively. The results of the study

**Table 1: The statistical indexes of nurses’ age, years of service, and experience of working in the neonatal intensive care unit**

Variable	n	Mean (SD)	Minimum	Maximum
Nurse’s age	90	31.04 (6.41)	23	49
Years of service	90	85.7 (6.77)	1	28
Experience of working in the neonatal intensive care unit	90	5.39 (4.07)	0.3	16

SD=Standard deviation

**Table 2: The implementation rate of educational standards in neonatal intensive care unit**

Checklist items	n
Number of items done completely	432
Number of items done incompletely	595
Number of items that were not done but necessary	936
Checklist score	37
Implementation rate of educational standards in neonatal intensive care unit	Moderate

**Table 3: The relationship between the implementation of educational standards for nurses’ education level**

Variable	Nurses’ education level	n	Mean (SD)	Ratings mean
Implementation of educational standard scores	BS	77	14.5 (5.78)	43.88
	Patient care technician	11	17.5 (9)	49.77
	MSc	2	31 (0)	84.50

SD=Standard deviation, BS=Bachelor’s degree, MSc=Master of sciences

**Table 4: The relationship between the implementation of educational standards in the neonatal intensive care nurse with clinical experience**

Educational degree	neonatal intensive care nurse (years)	n	Mean (SD)	Ratings mean
Implementation of educational standards	0-2	25	13 (4.90)	35.14
	2-5	28	14 (6.02)	42.05
	>5	37	17.5 (7.55)	55.11

SD=Standard deviation

showed that the implementation rate of educational standards was weak (37%) [Table 2].

Parents determined that evening shift nurses had trained better. Furthermore, through studying the relationship between the implementation rate of educational standards and neonatal intensive care specialized training courses showed that the nurses who have completed neonatal training courses have gotten a higher mean score in implementing educational standards. In this regard, the Mann–Whitney test showed that the variables of training about the equipment item and medication item had a significant difference with  $P < 0.05$  [Table 3].

According to the results, the examination of the correlation between the educational level of nurses and the implementation rate of educational standards,

using Kruskal–Wallis test, showed that there was a significant difference with  $P < 0.05$ . Having performed Dunn’s multiple comparison test, there was a significant difference between nurses with bachelor’s degree and nurses with master’s degree in terms of implementation rate of discharge standards in the fourth and sixth parts ( $P = 0.031$ ), as the mean score of the nurses with master’s degree was higher than others. However, the difference between nurses with bachelor’s degree and patient care technicians and also the difference between nurses with master’s degree and patient care technicians were not significant. It must be noted that the number of nurses with master’s degree and patient care technicians was very low. Using comparison of multiple range Duncan’s test, it was found that there is a significant relationship ( $P = 0.005$ ) between the clinical experience of neonatal intensive care nurses and the implementation of educational standards so that a higher mean score is obtained when the experience increases. There are significant differences ( $P = 0.005$ ) between the groups with 0–2-year and >5-year clinical experience in the NICU [Table 4].

## Discussion

The results of the study show that the implementation rate of educational standards in the NICU is in the weak range (37%).

Seyedamini showed that the needs related to sick child was ranked as the most important need from mothers’ point of view and the trust needs were ranked as highly met,<sup>[22]</sup> whereas Mok and Leung reported that mothers experienced the most communication and educational support from nurses.<sup>[23]</sup> Valizadeh *et al.* showed that the mothers wanted more supports than they received from nurses.<sup>[24]</sup>

Research has shown that supporting families and giving information and education make them feel more in control and power over their situations.

Parents like to get correct information about the status of their infants hospitalized. They expect health-care providers inform them about the expected changes that may occur to the baby’s physical state and condition.<sup>[25]</sup> Rasti *et al.* showed that parents need to receive knowledge and information about current and future problems in premature infants.<sup>[26]</sup>

Jackson *et al.* showed that the infant unit gained a high score for the quality of care and information.<sup>[27]</sup> When parents receive incorrect or incomplete information about their infant, they get stressed.<sup>[28]</sup> Furthermore, Van Rooyen *et al.* showed that correct and effective training by

nurses is important to overcome the negative emotions of parents.<sup>[29]</sup>

Implementing clinical supervision system through observation, feedback, discussion, and investigation may develop nurses’ knowledge and professional skills in patient education.<sup>[30]</sup>

The results of Hekmatpoor *et al.*’s study showed that some factors influenced the structure and process of training patients and in some cases resulted in failure to properly implementing the training in clinical areas. These factors included (1) curriculum and performance of the faculty (routine education and insufficient attention to the needs of students), (2) the inappropriate syllabus of “learning process and principles of training patients” (the course sectionality, superficial emphasis on application of learning theories in clinical areas, and failure to make the students familiar with method of training the patient), (3) paying little attention to the conditions of clinical nurses, (4) paying relative attention to training and cultural needs and habits of patients and their family, (5) training management, and (6) the participants’ attitude toward to training patients.<sup>[31]</sup> Moradi *et al.* results showed that Considering the low percentage of education in all domains in terms of patients, nurses’ performance is not desirable. patient education, the necessary measures should be taken by the direct authorities of this profession. Considering the low percentage of education in all domains in terms of patients, nurses’ performance is not desirable.<sup>[32]</sup>

Klein-Fedyshin *et al.* showed that nurses did not have enough time to train patients. They emphasized on training patients with videotapes and other audiovisual resources from libraries to save nurses’ time, as the confusion and stress of the patients and their family inhibited the training.<sup>[33]</sup>

Adib-Hajbaghery and Zare explained that barriers to patient education in Iran identified five main areas that were (1) barriers related to nurses: lack of time due to workload of nursing staffing; (2) barriers related to patients: the patients’ unfavorable physical and psychic status; (3) management barriers: lack of managers’ support; (4) organizational obstacles: the inappropriateness of nurse–patient ratio; and (5) environmental barriers: lack of cooperation of the medical team members to implement educational programs. Most of the barriers to patient education are those related to nurses. To improve the status of patient education, it is essential for managers to encourage nurses in this important task by adopting measures such as increasing in nursing staffing, allocating sufficient funds, and proper supervision.<sup>[34]</sup>

Training to the parents needs activities of training managers and audiovisual unit, using computer networks, the Internet, and active sessions of face-to-face education. It may include group training sessions, videos, compact discs, booklets, and educational pamphlets and individual training. Other methods are the Internet, newspapers, and magazines. These can be used to take all free times of the family (parents) to empower them.<sup>[35]</sup>

The relationship between the implementation of discharge standards and nurses' education level shows the mean scores of nurses with a master's degree were more than the others. However, it should be mentioned that the visit number of nurses with master's degree was very low. However, the mean scores of unregistered nurses in the implementation of discharge standards are more than that of nurses.

In Jaloo *et al.*'s study, it was demonstrated that there is a significant difference between the education levels of nurses with the implementation of nursing care standards in which nurses with master's degree got the highest score (180.2) ( $P < 0.005$ ). However, it is noteworthy that the number of nurses and unregistered nurses was very low. The mean scores of unregistered nurses (71.5) are lower than registered nurses (96.37).<sup>[36]</sup>

Studying the relationship between the implementation of educational standards and nurses' clinical experience in the NICU shows that more clinical experience in NICUs leads to higher mean scores in the implementation of discharge standards. The highest mean score was related to nurses with the experience of more than 5 years.

Saadati in his study showed that there was a significant relationship between the implementation of nursing care standards in the intensive care unit of educational hospital and the work experience of nurses in there and there greatest amount was related to the group with the experience of 6–10 years (53.4).<sup>[37]</sup>

The relationship between the implementation of educational standards and the working shifts shows that the nurses who worked in the evening shift had trained better. However, in Saadati's study, there was not a significant relationship between them.<sup>[37]</sup> However, in Jaloo *et al.*'s study, there was a significant relationship between them, and the highest score was related to the nurses who worked in the morning shift (129.93) ( $P < 0/001$ ).<sup>[36]</sup>

The relationship between the implementation of educational standards and neonatal intensive care training courses shows that the nurses who had passed these courses get higher mean scores in the implementation of educational standards. Aline with these results, there was shown a significant relationship

between the implementation of educational standards and neonatal intensive care specialized training courses, in Mansouri study ( $P < 0.025$ ).<sup>[4]</sup>

## Conclusion

The results showed that all of the training which was provided in the NICU were at a weak level. According to the survey, it can be concluded that in the inpatient parts, nurses are faced with the lack of time for patient education. The severe shortage of nurses and lack of time to perform nursing interventions are other factors which cause the parents to be trained not properly. They are some other reasons that may lead to bad training including lack of physical space for continued presence of parents in the section and the hospital, low literacy level, sociocultural problems of families in this region, some incompletely training which have been routine, nurses' fears from parents for use of this information against them, and lack of correct systematic attitude in hospital and nursing managers about training to the parents and the correct method of family-centered care. Therefore, it is necessary to improve quality of education among nurses working at the NICUs and provide the necessary standards and indicators to evaluate this important task.

## Acknowledgment

The researchers appreciate all the professors, students, nurses, and head nurses who cooperated with them in this study and also the Infant Research Center of Shahid Beheshti Medical Sciences University.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

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