



Evaluation of the Clinical Performance of Nurses Employed in the Neonatal Intensive Care Units

Fateme Amiri Simkooii ^{1,*}, Anahita Masoumpoor ², Azam Shirinabadi-Farahani ³, Bagher Pahlevanzadeh ⁴

¹ MSc in Neonatal Intensive Care Nursing, Student Research Committee, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran

² PhD in Nursing, Department of Pediatric Nursing, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran

³ Assistant Professor, PhD in Nursing, Department of Pediatric Nursing, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran

⁴ PhD Student, Department of Biostatistics, School of Paramedical, Shahid Beheshti University of Medical Sciences, Tehran, Iran

*Corresponding author: Fateme Amiri Simkooii, MSc in Neonatal Intensive Care Nursing, Student Research Committee, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran. E-mail: fa_qi50@yahoo.com

DOI: 10.21859/anm-280203

Submitted: 20-12-2017

Accepted: 05-2-2019

Keywords:

Health Personnel
Nurses, Neonatal
Intensive Care Units,
Neonatal

© 2019. Advances in Nursing
and Midwifery

Abstract

Introduction: Nurses are as the most important health care providers who require extensive knowledge and skills in this field. Despite the high importance of the issue, our knowledge of the current status of clinical performance and levels of nursing skills in the neonatal intensive care units is very low. The present study was done with the aim of determining the status of clinical performance of neonatal nurses in the NICU.

Methods: The present research is a descriptive study, through which the clinical performances of 96 neonatal nurses were observed in eight areas. Data collection was done using a researcher-made Scale. The data were analyzed with SPSS version 21.

Results: The neonatal nurses' clinical performances were acceptable (69.74%) in all the areas which includes vital signs control, daily cares, respiratory cares, infants feed, vessels' access, medicine prescription, phototherapy and using required equipment for neonates (such as warmer, Infusion pump, Defibrillator, Incubator, Ventilator and Phototherapy). The highest and lowest practices were assessed in the fields of infant nutrition (84.11%) and equipment utilized (51.93%), respectively.

Conclusions: The nursing skills in the study areas seems within an acceptable range, which could be due to the NICU nurses' interests in this field. In order to improve the performance of nurses in areas where there is a weakness, we suggest considering the importance of these care and disadvantages due to negligence.

INTRODUCTION

Most of mortality rate in infancy is in the first 24 hours and totally is dedicated to 65% of infant mortality [1]. Infant mortality is an important health index. In Iran, according to an official announcement of the ministry of health, treatment and medical education, there are 9 deaths for every 1000 live births [2], which are related to quality of inefficiency in midwifery, medical and nursery cares [3]. Today, improvement in medical science and

nursery cares has been a cause of survival of premature infants [4]. Pediatric nurses are in the front line of preventing from many side effects which may effect on the infant and his or her family [5]. Therefore, presenting qualitative services in today's sanitary world has been a mandatory work which its fulfillment needs nurses' clinical performance [6]. The weak clinical performance can cause a considerable increase in infant

mortality rate and also choose to create problems such as increasing the hospitalization period and expenses [7]. Clinical performance evaluation specifies using standards in performing safe cares by nurses [8]. Also, it is considered as the main responsibility of nurses [9]. Nurses should have been evaluated to do their tasks functionally desirable [10]. As quality improvement has been the main characteristic of successful organizations, there is a need to expand clinical performance for effectiveness of what nurse do [11]. Nurse's evaluation can accelerate decision making trend about infant and reducing expenses and complications of unprincipled cares of nurses for infants. Evaluation enables the healthcare team to promote service presenting quality to this vulnerable group in addition to correct programming [12]. One of the basic discussions in our country is the lack of performance evaluation system in organizations [13]. Based on evidences, several findings of doing studies in Iran have expressed discontent of many nursery personnel of common process of clinical evaluation. In their opinion, existed clinical evaluation cannot specify their theoretical and performance knowledge rate [14]. Participated nurses in Kalmen qualitative study [15] were claiming that evaluation instruments pay attention for their functional experts very little. Multiplicity and diversity of tests and measurement tools and evaluation have been caused that the correct selection of instrument or evaluation method is one of the important challenges in nurses' evaluation fields [16]. Evaluation of nursing staff performance by using some common criteria in Iran is done for nurses of all sections periodically and there are not many studies in this field in our countries [17]. According to mentioned cases and because of not being enough information about it, this study has been done with the aim of determining clinical performance of employed nurses in Neonatal Intensive Care Units (NICU).

METHODS

This is a descriptive study in NICUs of selected university hospitals of Yazd in 2017. This study has been dealt with evaluation of eight areas of caring for infants (vital sign control, daily cares, respiratory care, infants feed, vessels' access, medicine prescription and serum therapy, phototherapy and using required equipment for neonates). The study population consisted of all neonatal nurses working in the NICU of selected university hospitals in Yazd. The number of 96 neonatal nurses from six hospitals were entered into the study by total population sampling. Data collecting tools include demographic information questionnaire for nurses working in the NICU and a researcher-made nurses' clinical performance scale, including 68 items related to performing common procedures in infants, i.e., vital signs control, daily cares, respiratory cares, infants feed, vessels' access, medicine prescription and serum therapy, phototherapy and using required equipment

for neonates (such as warmer, Infusion pump, Defibrillator, Incubator, Ventilator Phototherapy) which were collected and recorded by using reference books (such as Core Curriculum for Neonatal Intensive Care Nursing) and opinions of professionals of this field, such as faculty members of Pediatric Nursing Department of Shahid Beheshti University of Medical Sciences. The content and face validity of the researcher-made neonatal nurses' clinical performance scale were determined. For this purpose, scale was evaluated by 10 experts, after designing and collecting items' scale based on the texts and required revisions were done. Using Intra-Class Correlation Coefficient (ICC), the test-retest reliability was calculated. For this purpose, the researcher completed neonatal nurses' clinical performance scale for 10 nurses at the first stage, and then after two weeks, recompleted it again for the same nurses. Then, obtained scores of two tests were calculated for the ICC which was 0.95.

In order to evaluate conformity of each care with standards, every item of the scale was ranked on a four-point measurement: professional: score 4 (he/she is professional, he/she can do skill without any help and he/she can teach), moderate experience: score 3 (he/she has medium experience, he/she can do skills but by the help of others' colleagues), for limited experience: score 2 (he/she has limited experience and just know job method), for inexperienced: score 1 (without any experience or skill) and for any option for evaluation: score 0 [18]. Total score of the scale was between 0 to 100, which was classified in three categories of 0-33% (weak) 34-67% (medium) and 68-100% (acceptable) [19].

For ethical consideration, hospital's names were not mentioned in expressing study results and authorities were getting insured that information will be in privacy. After obtaining permission from the university and educational hospitals, written consent form was taken from all the participants. Then, the first researcher was attended in the NICUs during three work shifts of morning, evening and night, and did a structured observation based on the scale. Results from 6318 observations for total areas of neonatal nursing care was extracted. Data on the status of provision of care were qualitative type, categorized into quantitative degrees. The resulting scores were calculated as percentages and scores were calculated for each section. All observations were done by the first author. Data analysis was done by SPSS version 21, using descriptive statistics.

RESULTS

Based on obtaining results of demographic information record of participating nurses in the study, average age of the research units was 32.20 ± 0.6 . 95 of the nurses had Bachelor of Science in Nursing. Average of clinical work experience was 7.08 ± 0.59 years and average of work experience in NICU was 5.38 ± 0.55 . Nearly, half of nurses (56.6%) were working contractual. 10.8% of

nurses had mandatory overtime and 9.6% of nurses were working in another hospital. All nurses (100%) were willing to work in Neonatal Intensive Care Units. Table 1 shows that Nurses' performance status in relation to total care in neonatal wards in all areas was acceptable (69.74%). Best performance of nurses in the field of infants feeding was acceptable (84.11%) and least rate related to the field of used equipment was Medium (51.93%). Table 2 shows nurses' performance situation that in the field of vital sign control was the least skill related to pain evaluation item (67.71%) and the most skill was related to report unusual cases to shift responsibilities (78.13%).

In the field of daily cares of infant, the least skill was related to accurate record of the amount and quality of the stool (62.50%) and the most skill was related to infants' umbilical cord (66.67%). In the field of respiratory cares, the least skill was related to infants' respiratory situation evaluation (28.13%) and the most

skill was related to infant's position change (55.21%). In the field of infant feeding, the least skill was related to help to correct feeding from mother's breast (13.54%) and the most skill was related to the way of preparing dried milk for infant (80.63%) and the most skill was related to caring of infant's central vein (47.92). To the field of using required equipment for infants, the least skill was related to periodical control of phototherapy set the lamp (55.21%) and the most skill was related to the way of using phototherapy set (39.85%). In the field of infant's phototherapy, the least skill was related to measuring infant temperature (15.63%) and the most skill was related protecting genitals during phototherapy (94.79%). In the field of medicine prescription and serum therapy, the least skill was related to the way of computing drug dose and drug prescription with a pump syringe (15.63%) and the most skill was related to the way of drop ears (88.54%).

Table 1: Nurses' clinical performance in different procedures according to the clinical performance scale in NICU, 2017

| Type of Procedure | Score (percent) | Performance evaluation |
|------------------------|-----------------|------------------------|
| Vital signs control | 63/70% | Medium |
| Daily cares | 65/59% | Medium |
| Respiratory care | 63/89% | Medium |
| Infant feed | 84/11% | Acceptable |
| Vessel access | 69/08% | Acceptable |
| Used equipment | 51/93% | Medium |
| Phototherapy in infant | 79/69% | Acceptable |
| medicine prescription | 79/96% | Acceptable |
| Total score (percent) | 69/74% | Acceptable |

Table 2: Frequency distribution of the level of nurses' clinical performance in different procedures, according to the clinical performance scale in NICU, 2017

| Columns | Procedure | Inexperienced | Low-experienced | Medium experienced | Expert | Not seen |
|---------|---|------------------------|------------------------|------------------------|------------------------|------------------------|
| A | | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) |
| 1 | Measuring and recording temperature of auxiliary | 0 | 7 (29.7) | 33(38.34) | 56(33.58) | 0 |
| 2 | Correct placement of skin sensors of temperature | 0 | 45(88.46) | 42(75.43) | 0 | 9(38.9) |
| 3 | Apex pulse measurement | 8(33.8) | 24(25) | 42(75.43) | 22(92.22) | 0 |
| 4 | Evaluation and reporting environmental pulses | 7(29.7) | 33(38.34) | 31(29.32) | 25(04.26) | 0 |
| 5 | Measuring blood pressure by non-aggressive method | 0 | 25(04.26) | 50(08.52) | 21(88.21) | 0 |
| 6 | Selecting suitable size of blood pressure cuff | 0 | 16(67.16) | 57(38.59) | 23(96.23) | 0 |
| 7 | Recognizing numbers and respiratory rhythm of infants | 25(04.26) | 31(29.32) | 30(25.31) | 10(42.10) | 0 |
| 8 | Periodical change of skin sensors places | 9(38.9) | 39(63.40) | 33(38.34) | 15(63.15) | 0 |
| 9 | Identify and report pulse Oximeters records | 6(25.6) | 26(08.27) | 16(67.16) | 48(50) | 0 |
| 10 | Reporting unnatural cases to shift authority | 5(21.5) | 0 | 16(67.16) | 75(13.78) | 0 |
| 11 | Pain evaluation | 65(71.67) | 23(96.23) | 0 | 8(33.8) | 0 |
| 12 | Pain control | 63(63.65) | 29(21.30) | 4(17.4) | 0 | 0 |
| 13 | Pain reevaluation | 58(42.60) | 28(17.29) | 0 | 10(42.10) | 0 |
| B | Daily cares | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) |
| 1 | Infection control rate observation | 6(25.6) | 9(38.9) | 30(25.31) | 51(13.53) | 0 |
| 2 | Measuring infant weight | 8(33.8) | 32(33.33) | 7(29.7) | 49(04.51) | 0 |

| | | | | | | |
|----------|---|------------------------|------------------------|------------------------|------------------------|------------------------|
| 3 | Skin evaluation report in terms of changes | 10(42.10) | 30(25.31) | 12(50.12) | 44(83.45) | 0 |
| 4 | Correct bathing of infants by (tub-sponge) methods | 48 (50) | 26(08.27) | 14(58.14) | 8(33.8) | 0 |
| 5 | Caring infant's umbilical cord place | 0 | 13(54.13) | 19(79.19) | 64(67.66) | 0 |
| 6 | Control and infant's absorption and desorption record | 14(58.14) | 10(42.10) | 44(83.45) | 20(83.20) | 8(33.8) |
| 7 | Reporting any change in stool and urine | 26(08/27) | 6(25.6) | 16(67.16) | 0 | 48(50) |
| 8 | the exact amount of stool quality | 60(50/62) | 21(88/21) | 8(338.8) | 7(29.7) | 0 |
| 9 | Rush report of pampers | 15(63.15) | 27(13.28) | 0 | 14(58.14) | 40(67.41) |
| C | Respiratory care | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) |
| 1 | Suction method by time and depth observation | 19(79.19) | 9(21.31) | 40(67.41) | 8(33.8) | 0 |
| 2 | Respiratory problems report | 16(67.16) | 40(67.41) | 24(25) | 16(67.16) | 0 |
| 3 | Respiratory situation evaluation | 27(13.28) | 21(88.21) | 18(75.18) | 30(25.31) | 0 |
| 4 | Infant's changing position | 17(71.17) | 7(29.7) | 19(79.19) | 53(21.55) | 0 |
| 5 | Infant's cyanoses evaluation | 15(63.15) | 24(25) | 33(38.34) | 24(25) | 0 |
| 6 | Infant's retraction evaluation | 18(75.18) | 30(25.31) | 28(17.29) | 12(50.12) | 8(33.8) |
| D | Infant feed | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) |
| 1 | Setting NGT for infants in the correct way | 7(29.7) | 7(29.7) | 24(25) | 58(42.60) | 0 |
| 2 | Setting OGT for infants in the correct way | 9(38.9) | 7(29.7) | 24(25) | 56(33.58) | 0 |
| 3 | Recording reminder content of the stomach | 0 | 19(79.19) | 14(58.14) | 63(63.65) | 0 |
| 4 | Correct gavage of infant | 8(33.8) | 8(33.8) | 17(71.17) | 63(63.65) | 0 |
| 5 | Helping to correct feeding from the mother's breast | 13(54.13) | 11(46.11) | 24(25) | 48(50) | 0 |
| 6 | Correct warming of mother's milk | 0 | 16(67.16) | 22(92.22) | 58(42.60) | 0 |
| 7 | Accurate recording of infant's feet | 0 | 12(50.12) | 25(04.26) | 59(46.61) | 0 |
| 8 | Preparing method of dried milk for infant | 0 | 3(13.3) | 16(67.16) | 77(21.80) | 0 |
| E | Vessel access | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) |
| 1 | Vessel sampling | 34(42.35) | 14(58.14) | 17(71.17) | 31(29.32) | 0 |
| 2 | Peripheral venous line | 39(63.40) | 9(38.9) | 12 (50.12) | 36 (50.37) | 0 |
| 3 | On-time change of IV place | 20 (83.20) | 13 (54.13) | 3 (96.23) | 40 (67.41) | 0 |
| 4 | Fluid prescription from IV permanently | 8(33.8) | 25(04.26) | 22(92.22) | 41(71.42) | 0 |
| 5 | Infant caring by central vein catering | 16(67.16) | 16(67.16) | 18(75.18) | 46(92.47) | 0 |
| 6 | Correct sampling of foot heel | 8(33.8) | 21(88.21) | 35(46.36) | 0 | 32(33.33) |
| 7 | Blood and blood product prescription | 5(21.5) | 18(75.18) | 33(38.34) | 32(33.33) | 8(33.8) |
| 8 | Caring during blood transfusion | 4(17.4) | 12(50.12) | 32(33.33) | 40(67.41) | 8(33.8) |
| F | Using infant's required equipment | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) |
| 1 | Using the method of warmer | 8(33.8) | 65(71.67) | 15(63.15) | 8(33.8) | 0 |
| 2 | Using method of infusion pump | 15(63.15) | 30(25.31) | 17(71.17) | 34(42.35) | 0 |
| 3 | Using the method of scales | 0 | 19(79.19) | 40(67.41) | 37(54.38) | 0 |
| 4 | Using the method of the defibrillator | 37(54.38) | 24(25) | 8(33.8) | 11(46.11) | 16(67.16) |
| 5 | Using the method of the incubator | 8(33.8) | 60(50.62) | 9(38.9) | 19(79.19) | 0 |
| 6 | Using method of ventilator | 25(04.26) | 37(54.38) | 20(83.20) | 14(58.14) | 0 |
| 7 | Using the method of phototherapy set | 0 | 20(83.20) | 22(92.22) | 38(58.39) | 16(67.16) |
| 8 | Periodical control of phototherapy sets, lamp | 53(21.55) | 19(79.19) | 8(33.8) | 16(67.16) | 0 |
| G | Phototherapy in infant | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) |

| | | | | | | |
|----|---|------------------------|------------------------|------------------------|------------------------|------------------------|
| 1 | Consider infant's temperature | 15(63.15) | 49(04.51) | 11(46.11) | 12(50.12) | 9(38.9) |
| 2 | Control bilirubin by skin sensors | 0 | 6(25.6) | 32(33.33) | 50(08.52) | 8(33.8) |
| 3 | Protecting genitals while phototherapy | 0 | 0 | 5(21.5) | 91(79.94) | 0 |
| 4 | Protecting eyes while phototherapy | 0 | 0 | 6(25.6) | 90(75.93) | 0 |
| H | medicine prescription and serum therapy | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) | Frequency (Percentage) |
| 1 | Computing drug dose | 15(63.15) | 49(04.51) | 18(75.18) | 14(58.14) | 0 |
| 2 | Giving way of oral drugs | 7(29.7) | 33(38.34) | 33(38.34) | 23(96.23) | 0 |
| 3 | Giving an injection drug by environmental veins | 5(21.5) | 19(79.19) | 31(29.32) | 41(71.42) | 0 |
| 4 | Giving way of drug by subcutaneous injection | 5(21.5) | 35(46.36) | 24(25) | 32(33.33) | 0 |
| 5 | Giving a drug by intramuscular injection | 6(25.6) | 34(42.35) | 12(50.12) | 44(83.45) | 0 |
| 6 | Giving way of ear drops | 0 | 0 | 11(46.11) | 85(54.88) | 0 |
| 7 | Giving way of nose drops | 0 | 0 | 13(54.13) | 83(46.86) | 0 |
| 8 | Asian way of local drugs | 0 | 5(21.5) | 17(71.17) | 74(08/77) | 0 |
| 9 | Giving way of rectal drugs | 0 | 4(17.4) | 44(83.45) | 48(50) | 0 |
| 10 | Giving way of eye drops | 0 | 4(17.4) | 11(46.11) | 81(38.84) | 0 |
| 11 | Asian way of the nebulizer | 8(33.8) | 28(17.29) | 36(50.37) | 24(25) | 0 |
| 12 | Computation and prescription way of drugs by syringe pump | 15(63.15) | 25(04/26) | 43(79.44) | 13(54.13) | 0 |
| 13 | Computation way of prescribed rate of serum | 0 | 30(25.31) | 0 | 66(75.68) | 0 |

DISCUSSION

The clinical performances of employed neonatal nurses were acceptable (69.74%). It can be the result of the willingness of nurses to work in in this field and applying high accuracy in caring of infants. In this regard, Pyrus results in 2011 showed that the lack of motivation, especially in nurses has a direct effect on their performance [20]. Current study findings in the field of vital sign control express the desirability of some cares such as measurement and recording temperature and identifying and reporting unnatural cases to shift responsibility and also the least skill was related to the evaluation and control and pain reevaluation. In this respect, Mohammad Khani et al result study [21] showed that nurses awareness rate of evaluation and infants' pain which was one of the evaluated items in the field of vital signs was low and they suggest that regular performing the in-service training programs, encouraging nurses for permanent and accurate evaluation can promote the awareness of this layer of country medical society. According to alignment of results, we can use suggestions in order to improve existed conditions. In another study, cares consistency rate with existed standards is reported in the field evaluation of pain in medium level [22]. The coherence of the findings of the current research with the findings of the research, Indicates a weakness in the care of the neonatal intensive care unit. Control and fixation of temperature is a very important element of infants' care; because hypothermia is an important factor in infants' disease and mortality [23]. Reason of weakness in nurses' performance in this respect can be the result of

lack of awareness or their carelessness to the importance of this subject [24], which fortunately, in this study, nurses show an acceptable skills in this field. In order to improve the performance of nurses in this field, it is necessary to highlight the importance of these cares and disadvantages caused by negligence in good care should be addressed in-service training.

Current study results were medium in the field of nurses' performance situation in daily cares. In this respect, Goodarzi et al [25] result study show that performing usual and daily care rate was 46.79%. Today's, the base of caring of infants is a complementary care; therefore, more attempts for expanding performance and evaluation of complementary cares should be done. In Karim Yar Jahromi et al, the results show that nurses had the best performance in the field of care activities which results of this study is no aligned with current study. The weakness of nurses' performance in this study can be due to lack of time, Lack of manpower, neglect of this issue by nurses or parents' anxiety as a barrier to appropriate training. Study results in the field of respiratory cares express desirability of some cares such as infant's position change and evaluation of infant's respiratory situation. In this respect, Jalo et al [26] show that respiratory cares of infants' nurses had been medium (56%) that in researcher's mind, cares had very distance with standards and therefore needs training and in the following, periodical evaluations were suggested and obtained results of study in the field of respiratory cares were medium. From the viewpoint of this researcher, this subject can show the needs to train and suitable

teaching of usual cares for infants, especially respiratory cares in evaluated hospitals. Also, current study results show that nurses' performance situation in the field of infants fed was acceptable. In a study by Baktash et al [27], study results show that most of the researches cases didn't receive desirable care and in the patients who receive better cars, the outbreak possibility of negative results had been less. In the current study, the consistency of nursery cares performing related to immature infants feeding with researcher-made checklist criteria, evaluation of clinical performance of infants' nurses was more in comparison with other evaluated nursery cares which its reason can be awareness and nurses' familiarity with infants feeding instruction [28]. In a study by Najafi Anari [29], consistency rate of cars with existed standards in different fields of research has been reported acceptable which its results are aligned with current studies.

Current study results in the field of vessel access was so that the least skill was related to catch perimeter vessel line and the most skill was related to performing cares during blood transfusion and infant care by central vein cater. In a study by Hossein AllahVerdi [30], all study results show that awareness and expertise of working nurses in infants sections were medium. Therefore, it is suggested that by doing approaches, awareness and performance of nurses about finding vessels of infants should be promoted. Other study results which were done by Tajalli [31] in 1392, showed that consistency rate with the standards during blood transfusion was medium (59.6%).

Researcher attributed this to lack of care of the caregiver in this respect and insufficiency in training. Of course, among these, equipment lacks also were considered. The results of these studies are aligned with current research. Also, current study findings were evaluated medium in the field of using required equipment which was the least skill in the field of periodical control item of phototherapy set lamps (55.21%), which unfortunately there isn't found any study in this respect for comparison. Findings of infant's phototherapy were also evaluated acceptable. Piri [32] study results showed that generally cares performing rate based on standards was medium and has a very long distance with standards. This study results were not aligned with current study. Current study findings were acceptable in the field of nurses performance situation in drug prescribing and serum therapy. In Hasani Kheyri study [33], nursery cares in relation with performing medicine prescription in these infants were medium (58.23%). Results of this study were not aligned with current study.

CONCLUSIONS

In this study, nurses' performance situation was acceptable in relation with all cars in the infants section in all researched fields (69.74%). Comparison of these study findings with other studies express that infants' care quality in different fields are desirable and this cause

to supply immature infants who are more vulnerable. From the viewpoint of researchers, this subject can show the acceptance of usual infancy cares especially mentioned cares. According to performed evaluations, researcher presumes that the main reasons are high skill rate of nurses in evaluated fields, nurse's interest in working in infants' special care unit and willingness to obtain awareness and clinical trainings and supplying required equipment and facilities for performing nursery cares which cause to increase the quality of nursing services. In addition to this synchronization, research performing with the accreditation program for Yazd hospitals can be of effective factors in acceptable performance of nurses. Based on evidences, researcher believes that nurses of infants' special care unit in Yazd present acceptable infants' care. Of course, we shouldn't forget that evaluated fields in this study had been a part of common and basic cares of nurses.

STUDY LIMITATIONS

Behavior changes and nurses performance because of presence of the researcher.

ETHICAL CONSIDERATION

Permission for this study was through the Ethical Committee of Shahid beheshti University of Medical Sciences. All nurses' were informed of the purpose and design of the study. Participants signed a written consent for their participation. The research ethics committee of Shahid Beheshti University of Medical Sciences approved the study (ir. sbmu. phnm. 1394.249).

ACKNOWLEDGEMENT

This study was done by ethical code (IR.SBMU.PHNM.1394.249) approved by ethical committee in 19/01/2016 at Shahid Beheshti University of Medical Sciences. We appreciate Shahid Beheshti and Sadoghi Universities of Medical Sciences for cooperation.

CONFLICT OF INTEREST

None declared.

FUNDING

This research was funded by Shahid Beheshti University of Medical Sciences, Tehran, Iran.

AUTHOR S' CONTRIBUTIONS

Study design: Fateme Amiri, Anahita Masoumpoor; Statistical analysis of data: Fateme Amiri, Bagher Pahlevanzadeh; Revision of the manuscript: Azam Shirinabadi-Farahani, Anahita Masoumpoor; Technical and material support: Anahita Masoumpoor, Azam Shirinabadi-Farahani

REFERENCES

1. Robert M, Kliegman M. Nelson textbook of pediatrics. 19th ed. Malassezia, Philadelphia2011.

2. Heydarzadeh M. Citing computer references: *Salamat Online*; 2017 [cited 2017]. Available from: <http://www.salamatonline.ir/news/18616>.
3. Sheikh Bahauddinzadeh E, Raii E. [Neonatal Intensive Care Nursing]. Tehran: Tohfe; 2006.
4. Tramo MJ, Lense M, Van Ness C, Kagan J, Settle MD, Cronin JH. Effects of Music on Physiological and Behavioral Indices of Acute Pain and Stress in Premature Infants: Clinical Trial and Literature Review. *Music and Medicine*. 2011;3(2):72-83. doi: [10.1177/1943862111400613](https://doi.org/10.1177/1943862111400613)
5. Neonatal Nursing Standards. New Zealand Nurse's Organisation Neonatal Nurses College. New Zealand 2012.
6. Safadi R, Jaradeh M, Bandak A, Froelicher E. Competence assessment of nursing graduates of Jordanian universities. *Nurs Health Sci*. 2010;12(2):147-54. doi: [10.1111/j.1442-2018.2009.00507.x](https://doi.org/10.1111/j.1442-2018.2009.00507.x) pmid: 20602685
7. Patricia R, Tammy E, Patrick A. Reviews of human factors and ergonomics. In: Durso F, editor. *Performance in nursing: Human Factors and Ergonomics Society*; 2013. p. 1-40.
8. Cashin A, Chiarella M, Waters D. [Assessing nursing competency in the correctional environment: The creation of a self-reflection learning and development tool]. *J Nurs Profes Dev*. 2008;24:267-73.
9. Bahreini M, Moattari M, Kaveh M, Ahmadi F. [A Comparison Of Nurses'clinical Competence In Two Hospitals Affiliated To Shiraz And Boushehr Universities Of Medical Sciences: A Self-Assessment]. *Iran J Med Educ*. 2010;10(2):101-10.
10. Goudarzi Z, Tefagh M, Monjamed Z, Memari A, Kamali P. [The Effect Of Continuing Education Of Neonatal Intensive Care Nursing On Knowledge And The Practice Of The Nurses Working In The Children's Hospitals]. *Hayat*. 2004;10(1):25-31.
11. Cummings JN, Haas MR. So many teams, so little time: Time allocation matters in geographically dispersed teams. *J Organ Behav*. 2012;33(3):316-41. doi: [10.1002/job.777](https://doi.org/10.1002/job.777)
12. Snijders C, van Lingen RA, Molendijk A, Fetter WP. Incidents and errors in neonatal intensive care: a review of the literature. *Arch Dis Child Fetal Neonatal Ed*. 2007;92(5):F391-8. doi: [10.1136/adc.2006.106419](https://doi.org/10.1136/adc.2006.106419) pmid: 17376782
13. Asgharpour R, Taleghani G. [360 Degree Feedback Strategies, Approaches And Ways For Managers]. Tehran: Sapco Publications; 2000.
14. Imanipour M, Jalili M, Mirzazadeh A, Dehghan Nayeri N, Haghani H. [Viewpoints of Nursing Students and Faculties about Clinical Performance Assessment Using Programmatic Approach]. *Iran J Med Educ*. 2013;12(10):743-55.
15. Calman L, Watson R, Norman I, Redfern S, Murrells T. Assessing practice of student nurses: methods, preparation of assessors and student views. *J Adv Nurs*. 2002;38(5):516-23. pmid: 12028285
16. van der Vleuten CP, Schuwirth LW. Assessing professional competence: from methods to programmes. *Med Educ*. 2005;39(3):309-17. doi: [10.1111/j.1365-2929.2005.02094.x](https://doi.org/10.1111/j.1365-2929.2005.02094.x) pmid: 15733167
17. Bahreyni M, Moatari M, Akaberian SH. [Determining Nurses'clinical Competence in Hospitals of Bushehr University of Medical Sciences By Self Assesment Method]. *South med*. 2008;11(1):69-75.
18. The nurses network. Neonatal iCU skills checklist: The nurses network; 2013 [cited 2018]. Available from: <http://thenursenetwork.com.previewdns.com/wpcontent/uploads/2013/01/neonatal-icu-skills-checklist.pdf>.
19. Karimyar Jahromi M. [Nurses' Quality of Performance in Intensive Care Units Based On Synergy Model]. *Iran J Nurs*. 2013;26(82):74-83.
20. Piers RD, Azoulay E, Ricou B, Dekeyser Ganz F, Decruyenaere J, Max A, et al. Perceptions of appropriateness of care among European and Israeli intensive care unit nurses and physicians. *JAMA*. 2011;306(24):2694-703. doi: [10.1001/jama.2011.1888](https://doi.org/10.1001/jama.2011.1888) pmid: 22203538
21. Mohammad Khani Ghiasvand A, Karimi R, Mohammadi E. [Comparison Of Nurses And Doctors Of The Assessment Criteria Pain In Preterm Infants]. *Congress on Newborn Health Promotion; Mashhad* 2012.
22. Najafi Pur S, Rassouli M, Masoum Pur A, Kavousi A. Auditing of preventive nursing care regarding neonatal hypothermia at Shahid Beheshti Medical Sciences University selected hospitals in 2011. *Mod Care J*. 2012;9(2):104-13.
23. Cleveland LM. Symbolic Interactionism and Nurse-Mother Communication in the Neonatal Intensive Care Unit. *Res Theory Nurs Pract*. 2009;23(3):216-29. doi: [10.1891/1541-6577.23.3.216](https://doi.org/10.1891/1541-6577.23.3.216)
24. Ugwu G. Pattern of morbidity and mortality in the newborn special care unit in a tertiary institution in the Niger Delta region of Nigeria: A two year prospective study. *Glob Adv Res J Med Med Sci*. 2012;1(6):133-8.
25. Godarzi Z, Rahimi O, Khalesi N, Shamshiri A, Mohammadi N, Soleimani F. [The rate of developmental care delivery in neonatal intensive care unit]. *J Crit Care Nurs*. 2015;8(2):117-24.
26. Jaloo Z. [Auditing of nursing care of neonatal respiratory distress in NICU at Shahid Beheshti University of Medical Sciences selected hospitals in 2008]. Tehran, Iran: Shahid Behshti University of Medical Sciences; 2008.
27. Gupta B, Agrawal P, Soni KD, Yadav V, Dhakal R, Khurana S, et al. Enteral nutrition practices in the intensive care unit: Understanding of nursing practices and perspectives. *J Anaesthesiol Clin Pharmacol*. 2012;28(1):41-4. doi: [10.4103/0970-9185.92433](https://doi.org/10.4103/0970-9185.92433) pmid: 22345944
28. Bektash S. [Evaluation Of Nursing Care Of Patients With Parenteral Nutrition In Intensive Care In Teaching Hospitals Affiliated To Tehran University Of Medical Sciences And The Consequences Of The Shahid Beheshti University Of Medical Sciences In 1995]. Tehran, Iran: Shahid Beheshti University of Medical Sciences; 1995.
29. Najafi Anari H, Rasouli M, Atashzadeh-Shoorideh F, Namdari M. [Auditing preterm neonatal nutrition nursing care at Shahid Beheshti Medical Sciences University selected hospitals]. *J Nurs Manag*. 2013;2(4):29-37.
30. Allahverdi Pour H. [[Najafi Anari, 2013 #32]]. Tabriz Tabriz University of Medical Sciences; 2013.

31. Tajali S. [Auditing Heamovigilance naring care in NICU at Shahid Beheshti Medical Sciences University selected hospitals]. Tehran, Iran: Shahid Beheshti University of Medical Sciences; 2014.
32. Piri Naghabadi F. [Auditing of nursing care in phototherapy in NICU at Shahid Beheshti Medical Sciences University selected hospitals]. Tehran, Iran: Shahid Beheshti University of Medical Sciences; 2014.
33. Hasani Kheiri M. [Auditing of nursing care of Medication in NICU at Babol Medical Sciences University selected hospitals in 2014]. Tehran, Iran: Shahid Beheshti University of Medical Sciences; 2013.