

Auditing of Infant Discharge Process in Neonatal Intensive Care Unit of Tehran, Iran

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ABSTRACT--- Purpose: *The discharge process begins upon the admission of the infant in neonatal intensive care unit and continues to even after the infant is discharged and taken home. The survival of premature infants with very low birth weight and congenital malformations has increased with development of technology and new drugs and the increase in knowledge of neonatal physiology. This study was conducted to audit the process of infant discharge from the neonatal intensive care unit of a selected center in Shahid Beheshti University of Medical Sciences and Health Services.*

Study Design and methods: *In this study, 90 infants admitted to the neonatal intensive care unit were selected using convenience sampling method. The data were collected using demographic information of the nurses, infants, and parents; and a checklist formulated on the basis of existing standards for infant discharge process. The checklist consisted of six parts: 1- available evidence-based guidelines to support the clinic and treatment, 2- documentation, 3- an available plan for individual discharge of every infant simultaneous to the admission according to the ward's guidelines, 4- training the parents, 5- the plan of the discharge day, and 6- parent questionnaire. The validity and reliability of the checklist was examined using content and face validity (94%) and the inter-rater correlation coefficient (ICC=95%).*

Results: *The results of the study showed that the implementation rate of the discharge process in the first, second, third, fourth, fifth, and sixth part were weak, moderate, moderate, weak, moderate, and weak, respectively. The discharge process cares in all the studied areas were moderate. The entire provided care was of a moderate level. Regarding the importance of the neonatal intensive care unit and also the comparison made between results of this study and those of other studies performed in other countries, the provided care were not qualified and there was a need to more attempts for improving the quality of discharge process in Iranian hospitals, especially in neonatal intensive care units.*

Keywords--- neonatal intensive care unit, audit, discharge process

1. INTRODUCTION

The infant is very vulnerable during the neonatal period in which many of the physiological compatibilities necessary for the extrauterine life are formed. In this respect, the mortality rate is very high during the neonatal period. In the United States, 2.3% of the total mortality rate of the first year of life is related to the neonatal period. Infant mortality rate does not equal to that of any year up to the seventh decade of life (1). Due to the development of technology and new drugs and the increase in knowledge of neonatal physiology, the survival of premature infants with very low birth weight and

congenital malformations has increased. This refers to the fact that the infants and their parents have to experience long admission periods and stay in hospitals and the infants may be discharged with special healthcare (2, 3, & 4). The discharge planning is a process beginning upon the admission of the infant in neonatal intensive care unit and continues to even after the infant is discharged and taken home (5). The implementation of patient discharge planning is a key concept in nursing care. In the discharge planning, the nurse checks the patients and their family, determines their care needs, and trains the proper care to the family. The discharge planning has many advantages for patients, their family, and the society (6). Some researchers believe that if the discharge process is not done properly, it will result in increased readmissions and hospital stay and other adverse conditions. Furthermore, nosocomial infections increase with long hospital stays. Therefore, the discharge planning reduces the risks of readmissions and nosocomial infections (7). The decreased hospital stay might be useful for both the infant because it reduces the period the infant and parents are apart from each other and the subsequent adverse effects on the parent (2). Previous studies showed that the scheduled discharge process could save extra costs and diminish the heavy economical burden of the society besides making behavioral changes in families. Moreover, teams doing the discharge process and providing healthcare in home can considerably reduce the number of readmissions and national health-related costs (6). As nurses spend more time with infants and their family and are more aware of their conditions, they can improve the quality of healthcare, self-confidence of families, and parents' ability to care for infants; reduce families' concerns, duration of hospital stay, treatment costs, and readmissions; support families (financially, mentally, etc.); decrease and avoid developmental and cognitive complications of infants; and regulate follow-ups and trainings through implementing the discharge process properly (7). The role of nurses in discharge instruction is so important that absence of nurses in execution of discharge process in American hospitals led to the publication of thousands articles about negligence of nurses at work. In fact, one of the effective and basic factors for determining nurses' competency is their familiarity with the standards of discharge process (8). The success of every system is subject to a comprehensive accurate plan, which is not excluded for the health treatment system. Various objectives are followed in the health care system, and one of these objectives is continuous care. Furthermore, the key part of those objectives is the patient discharge planning that is of the exclusive principle responsibilities of nurses (9). In this regard, most medical institutions in various countries face with numerous evident problems in discharge planning, and lack of standards and criteria for measurement and assessment of the discharge planning has weakened working process of hospitals to the extent that without a discharge planning, treatment outcomes would differ significantly (10). An appropriate evaluation or control requires overall assessment of programs related to nursing - care - or units. An essential component in this regard is the quality management, and continuous promotion is the key concept in the quality management. With regard to the increasing number of patients and healthcare providing centers, the use of quality improvement programs and standards seems necessary to satisfy needs and provide care (11). Clinical governance is a new comprehensive mechanism for continuous promotion of service quality and adherence to the highest possible standards in the health system, and its ideal goal is to develop an environment in which the healthcare personnel think continuously and regularly about how they can work better. In many developed and developing countries, the governments and health systems are involved in processes whose purpose is to maintain and promote the quality of health services continually (12). Managers follow a process consisting of components such as planning, organizing, leading, and monitoring. Any kind of management without a monitoring system is not qualified for accurate and complete implementation of programs (13). Today, the quality and quantity of nursing care are unfortunately very low, as most patients complain about the care. Although these inconveniences may have many reasons, failure of nursing managers to employ an appropriate scientific quality control and auditing system may lead to nurses' dissatisfaction, and consequently, their reluctance to work and decreased quality of care (14). The major part of the clinical governance is the audit process with its different types (15). Paying attention to the effect of accurate implementation of nursing care on patients' health and feedback of the nursing practice motivates nurses to struggle for promotion of care procedures, and allows them to plan various dimensions of nursing care, especially for the neonatal intensive care units that have been less focused, and promote the quality of services (13). In this respect, the current status of the discharge process in neonatal intensive care units should be assessed using a checklist made according to the existing standards in order to know current conditions and estimate the gap between the standards and the provided care. Therefore, appropriate suggestions can be offered regarding the available utilities for promoting the quality of care and avoiding complications related to discharging from the hospital. This study was conducted to audit the process of infant discharge from the neonatal intensive care unit of a selected center in Shahid Beheshti University of Medical Sciences and Health Services in 2011.

2. METHODS

This descriptive comparative study was performed on the infants admitted to the neonatal intensive care unit (units 1 and 2) of a selected center affiliated to Shahid Beheshti University of Medical Sciences and Health Services. All the infants who were admitted to the neonatal intensive care unit 1 (under 1500 g) and unit 2 (above 1500 g) and met the criteria: 1- lack of congenital malformations and 2- the presence of a parent were included in this study. The information related to the discharge process was collected using the checklist made on the basis of the standards for infant discharge process. The checklist comprised two parts: 1. Demographic information of the infants, nurses, and parents, and 2. Information related to the way of practicing standard care, and both included: 1- available evidence-based guidelines to support the

clinic and treatment, 2- documentation, 3- a plan for individual discharge of every infant simultaneous to the admission according to the ward's guidelines, 4- training the parents, 5- the plan of the discharge day, and 6- parent questionnaire. Ranking instrument of the checklist items was determined after validation of the checklist because it was researcher-made. The scoring was as follows: "Yes" (acceptable [2 points] and unacceptable [1 point]) or "No" (necessary [zero point] and not necessary [zero point]).

$$N = \frac{z_{1-\alpha/2}^2 p(1-p)}{d^2}$$

Checklist score

$$= \frac{(2 \times \text{number of acceptable items}) + \text{number of unacceptable items}}{(\text{undone items that were unnecessary} + \text{number of unacceptable items} + \text{number of acceptable items}) \times 2}$$

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 in terms of clarity, simplicity, relevance, and content, with grading range of 1 to 4, by 13 specialists and faculty members of nursing. The content validity was calculated as 94%. The reliability of the checklist was determined using the inter-rater agreement method. To do so, the checklist was given to a second observer who was similar to the first observer in terms of precision, skill, and knowledge. Both observers completed the checklist for 10 infants at the same time, and the intra-class correlation coefficient of their observations was calculated. 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 $\alpha = .05$, $p = .35$, and $d = .1$. However, in this study 90 infants were examined.

The researcher identified the following by being present in the study setting and observing the process of providing care and instructions and the presence of parents for collecting data: most admissions in the neonatal intensive care unit 1 (under 1500 g) were done in the evening and night shifts; the parent were in the hospital mostly during the hours 10:00 am to 00:30 pm and 05:00 pm to 08:00 pm; the admission rate in Oct.-Nov. (one Persian month) was 31 infants of whom 28 infants were discharged and 4 infants died, and mean length of hospital stay was 16.3 days. In the neonatal intensive care unit 2 (above 1500 g), most admissions were done in the morning and evening shifts; the parent were in the hospital mostly during morning and evening shifts; the admission rate in Oct.-Nov. (one Persian month) was 64 infants of whom 58 infants were discharged and 6 infants died, and mean length of hospital stay was 8.5 days. There was no problem communicating with parents. Regarding the performed pilot study after receiving the written consent from Education Deputy, Faculty of Nursing and Midwifery and Post-graduate Management of Shahid Beheshti University of Medical Sciences and Health Services, the researcher introduced herself to the related center and gained the administrators' permission. In the morning and evening shifts, the researcher went to the study setting with the checklist and examined the discharge process of infants. The researcher attended in some night shifts and completed the checklist in order to know training and continuation of care and the correlation of observations. The assessed indexes included 1- available evidence-based guidelines to support the clinic and treatment, 2- documentation, 3- an available plan for individual discharge of every infant simultaneous to the admission according to the ward's guidelines, 4- training the parents, 5- the plan of the discharge day, and 6- parent questionnaire. Then, the researcher examined the care provided during the discharge process, during each procedure, and between procedures, and the results of observations were represented through selecting choices of the checklist, that is, "Yes" (acceptable or unacceptable) or "No" (necessary or unnecessary).

3. RESULTS

The results showed that 40% and 60% of the infants were female and male, respectively. Most infants (49%) had birth weight of 2000 g. Gestational age of most infants (61%) was 30-35 weeks. As shown in table 1, minimum and maximum gestational ages were 25 weeks and 38 weeks, respectively. Most infants' mothers (66%) had high school diploma, and 62.2% of the mothers were nulliparous. Of the parents, 93.3% had no previous experience of the infant admission in the neonatal intensive care unit. Among the nurses, 86.7% and 13.3% were married and single, respectively, and 80% of them had passed specialized training courses for infants. Most nurses (60%) were observed in rotating shifts. The

educational level of most nurses (97%) was bachelor's degree. As shown in table 2, minimum and maximum years of service in the neonatal intensive care unit were 3 months and 16 years, respectively. The results of the study showed that the implementation rate of the discharge process in the first, second, third, fourth, fifth, and sixth part were weak, moderate, moderate, weak, moderate, and weak, respectively. The discharge process cares in all the studied areas were of moderate (tables 3 & 4). The examination of the correlation between implementing discharge standards and nurses' educational level, using Kruskal-Wallis test, showed that there was a significant correlation between educational level of nurses and implementing discharge standards in the fourth part ($P=0.007$) and sixth part ($P<0.05$) of the checklist. Having performed Dunn's multiple comparison test, 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 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 technician and also the difference between nurses with master's degree and patient care technician were not significant. It must be noted that the number of nurses with master's degree and patient care technician was very low. However, mean score of patient care technician for implementing the discharge process was higher than that of nurses with bachelor's degree. The examination of the correlation between implementing discharge standards and nurses' clinical experience, using Kruskal-Wallis test, showed that there was a significant correlation between clinical experience of nurses and implementing discharge standards in the second part ($P=0.018$), third part ($P=0.013$), fifth part ($P=0.014$), and sixth part ($P<0.015$) of the checklist. In this regard, Dunn's multiple comparison (paired) test revealed a significant difference between nurses with 0-2 years of clinical experience and nurses with 2-5 years of clinical experience ($P=0.019$) in terms of implementing infant discharge standards in the second part, as mean score of the nurses with 2-5 years of clinical experience was higher than others. In the third part of the checklist, a significant difference was found between nurses with 0-2 years of clinical experience and nurses with 2-5 years of clinical experience ($P=0.010$), as mean score of the nurses with 0-2 years of clinical experience was higher than others. In the fifth part of the checklist, there was a significant difference between nurses with 0-2 years of clinical experience and nurses with more than 5 years of clinical experience ($P=0.035$), as nurses with 0-2 years of clinical experience had higher mean score. In the sixth part of the checklist, a significant difference was observed between nurses with 0-2 years of clinical experience and nurses with more than 5 years of clinical experience ($P=0.017$), as nurses with more than 5 years of clinical experience had a higher mean score. The examination of the correlation between implementing discharge standards and nurses' clinical experience in the neonatal intensive care unit, using Kruskal-Wallis test, showed that there was a significant correlation between clinical experience of nurses and implementing discharge standards in the third part ($P=0.017$) and the sixth part ($P=0.005$) of the checklist. In this regard, Dunn's multiple comparison (paired) test showed a significant difference between nurses with 0-2 years of clinical experience and nurses with 2-5 years of clinical experience ($P=0.016$) in terms of implementing infant discharge standards in the third part, as nurses with 0-2 years of clinical experience had a higher mean score. In the sixth part of the checklist, a significant difference was observed between nurses with 0-2 years of clinical experience and nurses with more than 5 years of clinical experience ($P=0.005$), as nurses with more than 5 years of clinical experience had a higher mean score. The examination of the correlation between implementing discharge standards and nurses' working shift, using Kruskal-Wallis test, showed that there was a significant difference in the second part ($P=0.002$) of the checklist. In this regard, Dunn's multiple comparison (paired) test indicated a significant difference between morning shift and evening shift ($P=0.034$) and between evening shift and night shift ($P=0.006$) in terms of implementing infant discharge standards in the second part, as evening and night shifts had a higher mean score. Moreover, an examination of the correlation between implementing discharge standards and nurses' specialized training courses for neonatal intensive care showed that nurses who had passed infant training courses achieved a higher mean score for implementing discharge standards. In this regard, Mann-Whitney test revealed a significant difference between the status of specialized training courses for neonatal intensive care and implementing discharge standards in the second part ($P<0.001$), third part ($P=0.004$), fourth part ($P=0.004$), fifth part ($P<0.002$), and sixth part ($P=0.025$).

4. DISCUSSIONS

The results about the relationship between implementing discharge standards and the first part of the checklist (available evidence-based guidelines to support the clinic and treatment) showed a low score (33%) for this part. Meanwhile, nursing profession in the developed countries tries to base its practices on research evidence. Nikbakht (2002), Adib Hajbagheri (2006), and Ahmadi and Salsali (2004) introduced the gap between the theory and practice in nursing healthcare and lack of evidence-based care as the major problems of nursing profession in Iran (16, 17, & 18). A study in this regard examined nurses' attitudes and needs in relation to the evidence-based performance and reported that, in nurses' view, doing clinical practices on the basis of research evidence resulted in quality improvement, however, only 46% of the nurses considered their clinical practices as evidence-based (Adib Hajbagheri, 2006). These nurses believed that factors, including insufficient time, lack of access to resources, lack of financial support, traditional thoughts, lack of knowledge, and lack of support on the part of managers and physicians inhibited evidence-based practices (Adib Hajbagheri, 2006).

The results about the relationship between implementing discharge standards and the second part of the checklist (documentation) showed a moderate score (68%) for this part. In Mashoofi et al.'s study (2004), mean percentage of nursing records on admission and discharge forms was 26%. In general, mean percentage of nursing records on 6 forms was 51.2%, which indicated weak performance of those nurses in documenting therapeutic procedures (19). A study performed by Ariyayi (1998) on the content of medical documents, in Kerman, showed 100% for lack of nursing records (20). In a study by Asgari and Kahouyi (2003), performance of nurses working in hospitals affiliated to Semnan University of Medical Sciences in relation to documentation principles was reported as weak (21).

The results about the relationship between implementing discharge standards and the third part of the checklist (an available plan for individual discharge of every infant simultaneous to the admission according to the ward's guidelines) showed a moderate score (64%) for this part. Results of Ranjbar et al.'s study (2011) and other similar studies on implementing psychiatric patient discharge revealed that one of major problems of psychiatric patients was non-implementing the discharge planning and not being followed up after the discharge (22). Fallahi Khoshknab's study (2001) showed that the patients stopped taking medicines some time after the discharge due to their little knowledge about their illness, and consequently, they got sick again and readmitted to the hospital. It seemed that this relapse of the illness was due to the failure of implementing an appropriate plan prior to discharge. Unfortunately, the nurses in the present study practiced the items of the third part of the checklist at a moderate level without knowing the fact that these items were a part of the discharge process (22).

Wanpen et al. (1999), as cited by Lions (1991), conducted a study to determine the level of nurses' knowledge of the discharge planning and concluded that 50% of the failure to implement the discharge planning was due to nurses' unawareness and lack of a specific uniform definition for it (8). A study (2000) was performed on 502 nurses to determine nurses' definitions for the discharge planning in Australia. The results of the study conformed to those of the present study in that failure to holding service training courses was introduced as the main reason of nurses' unfamiliarity with the discharge planning (9).

Aghebati (2005) also commented that the service training led to not only nurses' continuous learning but also exchange of ideas and lessons among nursing personnel, and this in turn increased nurses' knowledge and extended research areas directly or indirectly. However, the discharge planning include the entire care process of the patient from admission until after discharge, therefore, the service training can enhance the discharge planning and, consequently, the comprehensive care of patients (24).

The results about the relationship between implementing discharge standards and the fourth part of the checklist (training the parents) showed a low score (29%) for this part. In Jackson et al.'s study (1997), the infant unit gained a high score for the quality of providing care and information (25). As cited by Mok and Leung (2006), Esther's study (2006) revealed that the parents mostly received informative-communicative support while the emotional support comprised the minimum level (26). Results of Hekmatpoo et al.'s study (2007) showed that some factors influenced the structure and process of training patients, and in some cases, resulted in failure to proper implementing the training in clinical areas (27). 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 (27).

In their study, Klein Fedyshin et al. (2005) explained that, in admission wards, nurses did not have enough time to train patients. They emphasized on training patients with videotapes and other audio-visual resources from libraries in order to save nurses' time, as the confusion and stress of the patients and their family inhibited the training (28).

The results about the relationship between implementing discharge standards and the fifth part of the checklist (the plan of the discharge day) showed a middle score (61%) for this part. In Tennessee Hospital, the discharge process begins with a written order of the physician. Then, the written order given to the nurse, and the discharge process that includes the reception of the written order, arrangement of the rest of treatment at home, and talking to other physicians who are involved in patient's care, is done regularly in order to ensure everything is included in the discharge order before the patient leaves the hospital. After the patient settles with the hospital and is introduced to a social worker if needed, the nurse prepares the discharge instruction that consists of self-care training for the disease, medical treatment, follow up visits, the date for home visit, etc. and help the patient get to his/her car (29). A study conducted by Ajami and Ketabi (2007) to examine barriers to the discharge process in Isfahan's Shahid Beheshti Hospital found a similar result. The two hospitals differed from each other mainly because the communication among sections that were doing the final documentation after ordering the discharge was poor and patients' status was not followed up after the discharge in Beheshti Hospital (30).

The results about the relationship between implementing discharge standards and the sixth part of the checklist (parent questionnaire) showed a low score (37%) for this part. It must be noted that questions of this part were related to the instructions the personnel trained to parents. In Soltani Khabisi et al.'s study (2006) titled "Nurses' Performance in Training Patients from the Point of View of Patients Discharging from Medical- Surgical Wards of Hospitals Affiliated to Kerman University of Medical Sciences," the results related to nurses' training performance showed that the nurses had trained areas including the nature of the disease by 19%, complications of the disease by 23%, drugs by 43%, activity by 32.7%, nutrition by 42.8%, and others for 41.3% (full and partial training). There was a significant difference in the total scores of nurses' training performance in terms of their sex, the hospital, and the level of education regarding individual characteristics ($P < 0.0005$). In this respect, from the patients' point of view, the nurses' performance was not favorable due to the low percentage of training (full and partial training) in all the areas (31).

On the discharge planning, Clark et al. (2005) stated that this planning should be reciprocal and real. When the nurse plans the objectives with regard to the patient's idea, achievement of the expected results of the care program would be more possible. The discharge planning also involves the patient's family and relatives who contribute to the patient care (31). Taylor et al. (2004) explained that the success key of the discharge plan was the exchange of information among patient, caregiver, and others involved in the care process (32). The table related to the scores of the discharge planning checklist for all the areas showed that most of the care provided during discharge process was at a moderate level (50%). In Goudarzi et al.'s study (2004), nurses' performance (95.3%) in the neonatal intensive care unit was at the low and very low levels (33). Results of the study conducted by Ward Plott et al. (2004) to compare nursing specialized care for infants of Ashington Hospital with that of 5 other hospitals revealed that mean score of 8 dimensions of the neonatal intensive care in Ashington Hospital (59%) was at a moderate level (34). A study by Jaloo (2008) showed that most of the nursing care provided to infants with respiratory distress syndrome in all the studied areas (80%) was at a moderate level (13). In Ehrnberg et al.'s study (2003), results of a retrospective audit of the nursing care provided to heart patients in all areas indicated that the provided care was poor (mean score of 15.9%) (35). Results of Saadati' study (2004) showed that most nursing care in all areas (58.6%) in patients undergoing the coronary surgery in a teaching hospital was moderate (36). In a study by Hassani and Dehghani (1997), the quality of nursing care provided to the patients in intensive care units of public hospitals gained a moderate score (59.26%) (37). In a study by Vanaki and Memaryian (1999), the score of the nurses for the quality of nursing performance in a hospital's surgery ward in all areas of nursing was a moderate level of 33% based on the ranking of this study (excellent for 76-100, good for 51-75, middle for 26-50, and low for 0-25) (38).

Based on the a study by Ghafari and Mohammadi (2006) titled "The Causes of Nurses' Failure to Implement the Discharge Planning in Hospitals Affiliated to Tehran University of Medical Sciences," three groups introduced 5 causes as the major barriers that were classified into two categories, namely, nurses' high workload besides the unfavorable conditions of the workplace and unfamiliarity of nurses, patients, and their family with the discharge planning due to inadequate sharing of information and failure to hold service training classes. Moreover, they determined the structural causes with the highest mean score (2.4) as the major barrier to the failure to implement the discharge planning among the three areas.

According to the results of this study, nurses, head nurses, and supervisors thought that low numbers of nurses was the main cause of the failure to implement the discharge planning by 83.70%. Therefore, insufficient staff was one of the inhibitors of the discharge planning. In this study, the contribution of the above cause from nurses' and head nurses' point of view comprised 83.50% and 95.74%, respectively, while this value comprised 79.16% from the supervisors' point of view. This showed the importance of the issue for those people who were in contact with patients more than others. In this respect, it can be argued that all the samples, including the nurses and management personnel, believed that the major cause of the failure to implement the discharge planning was the inconsistent number of nurses with number of patients. A study also found that the shortage of specialized nurses was one of the nursing profession problems (6). Mamon (1992) conducted a study to examine the effect of discharge planning on providing post-discharge follow-ups and introduced the lack of a codified discharge plan and low numbers of nurses rather than patients as the main causes of the failure to implement the discharge planning (39).

5. CONCLUSION

The results showed that the entire provided care was at a moderate level. Regarding the importance of the neonatal intensive care unit and also the comparison made between results of this study and those of other studies performed in other countries, the provided care was not qualified and there was a need to more attempts for improving the quality of discharge process in Iranian hospitals, especially in neonatal intensive care units.

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Table 1: The statistical indexes of mother' age, the gestational age, and birth weight

	Number	Minimum	Maximum	Mean	Standard deviation
Gestational age at birth	90	25	38	32.57	3
Birth weight (kg)	90	1	4	3.07	1.06
Mother' age	90	19	39	27.94	4.91

Table 2: The statistical indexes of nurses' age, years of service, and experience of working in the neonatal intensive care unit

	Number	Minimum	Maximum	Mean	Standard deviation
Nurse's age	90	23	49	31.04	6.41
Years of service	90	1	28	85.7	6.77
experience of working in the neonatal intensive care unit	90	0.3	16	5.39	4.07

Table 3: The implementation rate of discharge process for different parts of the checklist

	All checklist parts
Number of items done completely	3362
Number of items done incompletely	2520
Number of items that were not done but necessary	3407
Checklist score	50
Implementation rate of discharge process in all parts of the checklist	Moderate

Table 4: The implementation rate of discharge process in general

	First part	Second part	Third part	Fourth part	Fifth part	Sixth part
Number of items done completely	90	572	1163	251	854	432
Number of items done incompletely	0	236	479	519	274	595
Number of items that were not done but necessary	180	208	565	1024	494	936
Checklist score	33	68	64	29	61	37
Implementation rate of discharge process in each part of the checklist	Weak	Moderate	Moderate	Weak	Moderate	Weak