A survey of nurses' awareness of patient safety culture in neonatal intensive care units

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ABSTRACT

Background: Patient safety is considered as the most important quality for healthcare. One of the main factors that play an important role in the promotion of healthcare institutes is patient safety. This study describes the nurses' awareness of patient safety culture in neonatal intensive care units (NICUs).

Materials and Methods: In this descriptive study, 83 nurses working in neonatal intensive care units of hospitals affiliated to Isfahan University of Medical Sciences, Iran, were selected using purposive sampling. Data collection tools consisted of the demographic characteristics questionnaire and the Hospital Survey on Patient Safety Culture. Data were analyzed by using SPSS software.

Results: The dimension that received the highest positive response rate was "expectations and actions of the supervisor/manager in promoting safety culture." The dimension with the lowest percentage of positive responses was "frequency of error reporting." 21.70% of the NICU nurses reported one or two incidents in their work units in the previous 12 months.

Conclusions: In order to create and promote patient safety, appropriate management of resources and a correct understanding of patient safety culture are required. In this way, awareness of dimensions which are not acceptable provides the basic information necessary for improving patient safety.

Key words: Iran, neonatal intensive care unit, nurse, patient safety culture

INTRODUCTION

One of the main requisites of any profession or occupation is the existence of safe space in the workplace. Lack of such conditions will not only hinder affairs, but also have undesirable effects on their outcomes. Therefore, it is necessary to pay much attention to safety and prioritize it over everything. In this regard, behavioral scholars and theorists have presented some views. One of these scholars, Abraham Maslow, in his theory, Hierarchy of Organizational Needs, has considered safety as the basic human need that has a special position.[1]

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The term "safety" is derived from the Latin word "immunitus" meaning social political immunity.[2] However, in different fields, with respect to its application, safety is defined differently; for example, in the field of healthcare, patient safety is defined as prevention of any injuries and damages to patients during the care process.[3] Considering this definition, it can be said that safety is a basic need and an unmistakable right of individuals while receiving health services.[4]

Since patient safety in healthcare is of greatest importance, high-quality and safe services become inevitable and permanent parts of the healthcare institutions and the internal beliefs and norms in an organization.[5] In this regard, staff and service providers, who are considered to be important members of and have the most important role in healthcare organizations, must have appropriate skills and knowledge in order to carry out their roles well.[6]

Safety culture is defined as a product of the individual and group values, attitudes, perceptions, competencies, and patterns of behavior that determine the commitment, style, and performance of a healthcare organization.[5]

Indeed, safety culture reflects individuals' technical and social roles and functions in the case of adverse events. Milligan believes that patient safety culture shows the prioritization level of patient safety from the viewpoints of care providers in their work environment.[7]

The care team's awareness of patient safety culture can have advantages such as reducing the treatment error, reducing the damages due to incorrect care, reducing nosocomial infection, increasing patient satisfaction, increasing patient awareness of the level of accountability, increasing the level of satisfaction,[8] improving patient safety,[9] and enhancing the quality of healthcare services.[10]

In Iran, nurses constitute about 80% of the employers in healthcare settings and are in the first line of caring for patients.[6] Nurses play important roles in establishing patient security and safety.[11] Awareness of the perception of these healthcare providers causes an improvement in patient safety and an increase in the quality of patient healthcare and satisfaction. Moreover, through understanding the status and level of safety culture in healthcare settings, obstacles and inefficiencies can be identified, and then, reformed and rehabilitated, and thus, patient safety can be improved.[12]

Patient safety in neonatal intensive care units (NICUs) is of high importance, since infants are at high risk of encountering errors during their stay in the NICU and are defenseless in comparison to physiologically more mature newborns. In these units, nurses are responsible for providing special, high-quality, and safe care for infants. Thus, it is necessary that knowledge and skills related to safety become part of nurses' functions and daily habits.[13] The assessment of patient safety culture is of critical importance because the culture of an organization and the attitudes of teams and various groups are received in order to take into consideration their effects on patient safety outcomes. The results of these evaluations are used for supervising and controlling the desired changes in the future. Therefore, in order to comprehend the existing culture and implement reformation and improvements toward the desired objectives, it is necessary to assess the current safety culture in an organization or a department. No researches were found on patient safety culture in NICUs by researchers. Thus, with regard to the importance of the subject and the lack of research in this field in the country, the present research was carried out with the purpose of studying the status of patient safety culture in three hospitals affiliated to Isfahan University of Medical Sciences, Iran, in the year 2013.

MATERIALS AND METHODS

This study is a descriptive research. The research setting was formed of educational hospitals affiliated to Isfahan University of Medical Sciences located in Isfahan, including Alzahra, Amin, and Shahid Beheshti hospitals, which have level one NICUs. In the present study, purposive sampling method was used. Research ethics approval was obtained from Shahid Beheshti Medical Sciences University Research Ethics Board in Tehran. All qualified nurses working in NICUs of the hospitals affiliated to Isfahan University of Medical Sciences were selected for sampling. The total number of nurses working in these units was 111 people. Inclusion criteria in this study included having at least 1 year experience as a nurse in NICUs affiliated to the Isfahan University of Medical Sciences (Alzahra, Amin, and Shahid Beheshti hospitals), having a bachelor's or master's degree in nursing education, and willing to participate in the study. During sampling and distribution of questionnaires, only 83 nurses were found eligible to participate in the study. Data collection lasted from February 2012 until March 2013. Data collection tools consisted of demographic characteristic questionnaire and Hospital Survey on Patient Safety Culture. The demographic characteristic questionnaire included information on age, marriage, education, clinical experience, shift of work, and nursing position. The Hospital Survey on Patient Safety Culture was designed by the Agency for Healthcare Research and Quality in 2004 and has been applied many times for the assessment of viewpoints of hospital healthcare providers about patient safety culture.[14] This instrument is reliable and valid, and has been designed for the assessment of patient safety culture using various texts and factor analysis. The reliability and validity of this instrument was assessed for the first time by Mogarri in Tehran University of Medical Sciences in 2009. The reliability of this instrument was assessed through confirmatory factor analysis and its validity through internal and interdimensional correlation methods. Cronbach's α and reliability of the repeatability aspect of the questionnaire were assessed using test–retest method ($r = 0.80$). Interdimensional correlation coefficient was 0.57–0.80 and Cronbach's α coefficient was equal to 0.82. The questionnaire contains 42 items that assess the 12 dimensions of patient safety.[15] In this research, face and content validity were examined. For this purpose, the questionnaire was delivered to 11 faculty members and professors of Tarbiat Modares University, University of Tehran, Shahid Beheshti University, and Shahed University. After collecting their viewpoints, necessary changes were

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made and no phrases or words were omitted. The content validity indicator of the questionnaire was 0.75. The reliability of the questionnaire was examined by Cronbach's α internal consistency. In order to calculate Cronbach's α, the questionnaire was given to 20 nurses. The Cronbach's α of this questionnaire was 0.88. An introduction letter and written permission were obtained for the research from the deputy of research of the International Branch of Shahid Beheshti University of Medical Sciences. In order to refer to Alzahra, Amin, and Shahid Beheshti hospitals, written permission letters were obtained from the Isfahan University of Medical Sciences. Data were analyzed using SPSS for Windows (version 20; IBM SPSS Statistics, Chicago, IL, USA) and descriptive statistics.

RESULTS

The study subjects consisted of 29 single (34.9%) and 54 married people (65.1%). Among them, 81 individuals (97.6%) had bachelor's degrees and 58 (69.9%) served in rotation shifts. Most of the nurses were 28 years of age. Their average work experience was 7.95 years. Their lowest and highest duration of work experience were 1 and 19 years, respectively. In terms of determining the perception of patient safety culture, the findings showed that the mean score of positive response of nurses to the 12 dimensions of patient safety culture was 87.3%. Moreover, the mean percentage of positive responses to the dimensions of patient safety culture ranged from 61.7 to 82.8%. The dimension that received the highest positive response rate was the "expectations and actions of the supervisor/

manager in promoting safety" dimension (82.8%) and the dimension with the lowest percentage of positive responses was the "frequency of error reporting" dimension (61.07%) [Table 1].

The dimensions of "expectations and actions of the supervisor/manager in promoting safety" and "teamwork within units" with the highest positive response percentage obtained the highest score, and the "frequency of error reporting" and the "hospital handoffs and transitions" dimensions obtained the lowest positive response percentage and the lowest score. Based on *t*-test results, the nurses' awareness of "expectations and actions of the supervisor/manager in promoting safety," "teamwork across hospital units," and "overall perceptions of safety" dimensions was high and of "teamwork within units," "communication openness," "hospital handoffs and transitions," and "frequency of error reporting" dimensions was low. The findings also showed that 62.7% of nurses presented patient safety at an acceptable level [Table 2]. Findings on NICU nurses show that 21.7% reported one or two errors and incidents in the past 12 months, 20.5% reported 6–10 incidents, and 8.4% reported 3–5 incidents in their work units [Table 3].

DISCUSSION

In this research, the dimension of "expectations and actions of the supervisor/manager in promoting safety culture" had the highest positive response rate. But the dimension of "frequency of error reporting" had the lowest

Table 1: Average positive response rate for the HSOPSC results in the hospital study

HSOPSC dimension	Minimum	Maximum	Mean	Positive response (%)
Expectations and actions of supervisor/manager in promoting safety	5	15	12.43	82.80
Organizational learning and continuous improvement	5	15	11.66	77.70
Teamwork within units	9	20	16.34	81.70
Communication openness	3	12	8.10	67.50
Feedback and communication about error	3	15	10.66	71.06
Nonpunitive response to error	3	12	9.54	79.50
Staffing	8	20	12.80	64.00
Hospital management support for patient safety	6	13	9.87	75.90
Teamwork across hospital units	6	17	12.17	71.58
Hospital handoffs and transitions	4	16	9.88	61.75
Frequency of error reporting	3	14	8.55	61.07
Overall perceptions of safety	6	18	12.63	70.16
Total				87.30

HSOPSC: Hospital Survey on Patient Safety Culture

Table 2: Patient safety grade in the hospital study (%)

Variable	Very poor	Poor	Acceptable	Very good	Excellent	No response
Patient safety grade	1.20%	15.70%	62.70%	3.60%	0%	16.90%

Table 3: Number of events reported in the past 12 months in the hospital study (%)						
Variable	No event	1-2 events	3-5 events	6-10 events	11-20 events	21 events or more	No answer
Number of events reported in the past 12 months	3.60%	21.70%	8.40%	20.50%	2.40%	0%	43.40%

percentage of positive responses. In a research performed in France by Scherer and Fitzpatrick entitled "Perceptions of patient safety culture among physicians and RNs in the perioperative area," the "teamwork within units" dimension obtained the highest response rate (94%) and "hospital handoffs and transitions" dimension obtained the lowest response rate (34%).[16] In another survey performed by Bodur and Filiz on patient safety culture in primary healthcare services in Turkey, the total score of safety culture was 46%, and "teamwork within units" dimension obtained the highest score (76%) and the "frequency of error reporting" dimension obtained the lowest score (12%).[17] These findings are in accordance with the present research. The study by Chen and Li on patient safety culture in Taiwan showed that the mean positive response of 12 patient safety culture dimensions was 64%, and the "teamwork within units" dimension obtained the highest response rate (94%) and the "staffing" dimension obtained the lowest response rate (39%).[18] In the study by Nie *et al.* on patient safety culture among nurses and physicians in 32 hospitals in China, the mean positive response of 12 patient safety culture dimensions was 77%, and the "organizational learning and continuous improvement" dimension obtained the highest response rate (88%) and the "staffing" dimension obtained the lowest response rate (45%).[19]

In the survey by Ebadi fard azar *et al.* conducted in selected training hospitals affiliated to Tehran University of Medical Sciences, Iran, the "teamwork across hospital units" dimension obtained the highest response rate (67%) and the "no punitive response to error" dimension obtained the lowest response rate (51%).[20] In the survey by Amiresmaili *et al.* on training hospitals affiliated to Iran University of Medical Sciences, Iran, the "teamwork within units" dimension obtained the highest response rate (71.4%) and the "no punitive response to error" dimension obtained the lowest response rate (22.8%).[21] The survey by Bahrami *et al.* on patient safety culture challenges in Yazd, Iran found that total safety culture score was from low to medium, and the "organizational learning and continuous improvement" dimension obtained the highest response rate (71.86%) and the "staffing" dimension obtained the lowest response rate (19.45%).[22]

The differences between findings of the present study and previous studies may be due to geographical, social, and cultural differences. The nurses' way of expressing ideas and viewpoints and time were the limitations of the study.

Teamwork and organizational training and adherence to rules and management hierarchy have clearly led to safety promotion. Furthermore, learning how to deal with medical errors and discovering the chain loops that lead to error have resulted in promotion of interorganizational supervision and enhancement of patient safety from bottom to top in the system. Encouraging the participation and active collaboration of nurses in maintaining patient safety has led to enhancing the level of medical services.[23] All these cases indicate the implementation of the clinical services program in medical and healthcare settings.

The findings of this research also showed that 62.7% of nurses presented patient safety at an acceptable level. These results are consistent with those of the studies by Castle and Sonon,[24] Bodur and Filiz,[17] Bahrami *et al.*,[22] and Ebadi fard azar *et al.*[20] They reported 39%, 49%, 51.1%, and 60% acceptable level of patient safety, respectively. In addition, Scherer and Fitzpatrick reported a high level of patient safety (59%).[16] Erler *et al.*[25] and Nie *et al.*[19] have reported the status of patient safety to be at a high level (54% and 56%, respectively).

Findings on NICU nurses show that 21.7% reported one or two errors and incidents in the past 12 months, 20.5% reported 6–10 incidents, and 8.4% reported 3–5 incidents in their work units. Nevertheless, in the studies by Bodur and Filiz[17] and Bahrami *et al.*,[22] no incidents were reported in the past 12 months (90% and 71.1%, respectively). In the studies by Castle and Sonon,[24] Norany *et al.*,[14] and Ebadi Fard Azar *et al.*,[20] 32%, 44%, and 30%, respectively, had reported one to two incidents in the past 12 months. Participation in reporting errors can be indicative of personnel's tendency to report many occurrences. Here, one reason could be the existing patient safety culture in the hospitals and the lack of fear of the consequences of reporting errors.

Awareness is the process of selecting, organizing, and interpreting sensory data that help people define the world around them and conduct their behaviors. In other words, awareness is the process of receiving and interpreting environmental stimuli. With regard to this definition, it can be concluded that there is a relationship between awareness of personnel and safety culture. This means that the higher the safety culture is in a hospital, the higher the personnel's awareness of safety culture.

When leadership and management are committed to safety culture, the whole organization will comply with their requests, and as a result, the exposing of unwanted events and finding their cause will become an organizational process. Consequently, with increase in hospital managerial support of patient safety, the frequency of error reporting and overall awareness of the personnel on safety will increase; this, in turn, will enhance the quality of health services and result in positive feedbacks.

Generally, it can be said that the assessment of the patient safety culture in hospitals can have a multilateral role. On the one hand, it can illuminate the existing state of safety culture and its degree of strength and weakness for managers. On the other hand, it has the ability to improve patient safety through increasing the awareness of staff about patient safety. Finally, after implementation of the necessary reforms to improve patient safety, it can be used as an assessment tool for these reforms.

CONCLUSION

According to the findings, it can be concluded that in order to correctly comprehend patient safety, promote safe care, and increase the quality of services, appropriate management of resources is required. The findings of the present study can also be used as the basis for other researches on factors related to patient safety culture. The findings can also be effective in increasing nurses' awareness of patient safety culture and in bringing about reforms by the Ministry of Healthcare and Medical Education, Isfahan University of Medical Sciences, and other resources. This research study was limited by several factors including the self-reported questionnaires and the use of a small sample of NICU nurses. To date, few studies have been conducted about patient safety culture in Iran.

ACKNOWLEDGMENTS

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