Original Article

J Babol Univ Med Sci
Vol 18, Issu 4; Apr 2016. P:35-40

Experiences and Clinical Decision-making of Operating Room Nurses Based on Benner's Theory

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J Babol Univ Med Sci; 18(4); Apr 2016; PP: 35-40
Received: Nov 26th 2015, Revised: Jan 6th 2016, Accepted: Mar 2th 2016/

ABSTRACT

BACKGROUND AND OBJECTIVE: Clinical decision-making is fundamental for professional nurses, which establishes professional identity. Given the importance of clinical decision-making for perioperative nurses, this study aimed to investigate nurses' experience and their clinical decision-making skill in operating theatre based on Benner's novice to expert model.

METHODS: This cross-sectional study was performed in 186 perioperative nurses working in university hospitals in Tabriz, Iran, 2014. The data were collected using a demographic form and the Clinical Decision Making in Nursing Scale (CDMNS) (Jenkins, 1985), and then were analyzed. This tool includes 40 items and four sub-scales of 1) search for alternatives or options, 2) canvassing of objectives and values, 3) evaluation and reevaluation of consequences, and 4) search for information and unbiased assimilation of new information. The highest and lowest possible scores are 40 and 200, with higher scores showing higher clinical decision-making skill.

FINDINGS: Mean of clinical decision-making total score was 102.3±15.3, with the highest mean (35.3±6.2) belonging to the second sub-scale (canvassing of objectives and values). There was a significant direct correlation between clinical decision-making and age ($r=0.67$, $p<0.004$) and working experience in operating room ($r=0.77$, $p=0.7$). However, there was no correlation between clinical decision-making and working experience in other departments ($r=0$, $p=0.7$).

CONCLUSION: Our results demonstrated that as clinical experience of perioperative nurses increases, their decision-making skill improves. Thus, Benner's novice to expert model is confirmed.

KEY WORDS: *Nurse, Decision-making, Clinical experience, Operating room, Benner's Theory*.

Please cite this article as follows:

Arzani A, Lotfi M, Abedi AR. Experiences and Clinical Decision-making of Operating Room Nurses Based on Benner's Theory. J Babol Univ Med Sci. 2016;18(4):35-40.

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[DOR: 20.1001.1.15614107.1395.18.4.5.5]
[DOI: 10.22088/jbums.18.4.35]

Introduction

Operating room is a complicated place where the patient, staff, and technology are present to obtain the desired outcome (1). Clinical decision-making skill is the most effective factor in this place (2). Clinical decision-making is fundamental in the nursing profession and it can be defined as the analysis of the data, making decisions, and executing them effectively (3). Making the right decision can reduce costs, facilitate proper use of human resources, and improve quality of care (4), on the other hand, it can establish professional identity for nurses (5) and differentiate professional nurses from non-professional health care personnel (2).

In one report, operating room was considered as a high-risk environment for patients (6). Some of the postoperative problems may occur due to nurses' inexperience, and these problems, although rare, can lead to patient death (7). Because of the distinct environment of operating theatre, nurses need to make prompt decisions. For instance, during surgery, circulatory nurses must make quick decisions to prevent the risk of skin damage and do their best for its rapid restoration (1).

Despite the importance of clinical decision-making in operating theatre, it is often neglected due to the acute situations in which the decisions should be made, not recording the performance of perioperative nurses, the broad range of their responsibilities, and uncertain nature of outcomes of care for patients (8). The role of novice to expert nurses and their decision-making skills are not fully understood yet, and the ways in which perioperative nurses are effective in caring for patients are not clear (9); thus, it is hard to provide on-the-job training for these nurses. These trainings could improve clinical decision-making in perioperative nurses. In this regard, Patricia Benner defined a concept based on which expert nurses develop skills and gain an understanding regarding patient care over time (10).

In her studies, Benner provided a descriptive explanation about the clinical nursing activities in which the concepts of professional activities of novice, qualified, professional, and expert nurses are noted (11). When novice, nurses do not have any clinical background about the situation they are in; this level usually represents students. In the novice level, the person can have an acceptable performance, which is compatible with the situation, with the help of his/her trainer. In the qualified level, the person is qualified by learning from real scientific situations and following professionals of the field. The characteristics of this stage are being considerably vigilant and knowing the importance of aspects of the present or future situations. The qualified stage is the most pivotal point in clinical learning, as the learner must distinguish models and identify the situations requiring attention and those that can be overlooked.

In the professional level, nurses regard the situation as a whole and show new capabilities for recognizing variations in the situation. This is the transition level to the expert level. In the expert level, nurses are capable of understanding the situation inherently, so they are able to detect the problematic areas promptly and take different solutions into consideration; nurses show this ability based on their clinical experiences (12-14). As one of the professional characteristics of operating room nurses are assisting surgeons in their specialized surgical procedures, understanding the level of operating room nurses' decision-making skills based on this theory, is very importance and it allows operating room managers to better schedule these nurses as circulatory& scrub nurses during surgery. This theory enables nurses to cooperate with surgical team based on their decision-making skills, which can in turn, enhance the quality of intraoperative and postoperative nursing. Benner also pointed out that putting knowledge into practice can improve by clinical learning (11).

Findings of the studies on the nurses in different hospital departments in Iran showed that some factors such as clinical efficacy, self-confidence, organizational culture, availability of a support structure, and nursing education are effective in decision-making skill (5).

Given the paucity of studies in Iran on assessing perioperative nurses' clinical decision-making skills and their experiences, this study was conducted to examine the relationship between perioperative nurses' clinical experiences and their decision-making skill using Benner's model.

Methods

This cross-sectional study was conducted in 2014 on 186 perioperative nurses and surgical technicians working in university hospitals in Tabriz, Iran. Data were collected using a demographic form and the Clinical Decision Making in Nursing Scale (CDMNS) (Jenkins, 1985) (15). To this end, only the word

[DOR: 20.1001.1.15614107.1395.18.4.5.5]
[DOI: 10.22088/jbums.18.4.35]

"operating room" was added to some items for making the scale more compatible with the study setting. This scale is rated using a five-point Likert type scale including "always", "usually", "sometimes", "hardly ever", and "never". Perioperative nurses must choose one of the points based on their understanding of the situation in operating room in which they should make clinical decisions.

This instrument assesses four sub-scales of clinical decision-making includeing: 1) search for alternatives or options, 2) canvassing of objectives and values, 3) evaluation and reevaluation of consequences, and 4) search for information and unbiased assimilation of new information. The minimum and maximum possible scores are 40 and 200. According to Jerkins, higher scores indicate higher level of clinical decision-making. To prevent response bias, responses to some items were inversely designed (15).

To evaluate the content validity of the questionnaire, it was given to 10 faculty members of Tabriz University of Medical Science, Tabriz, Iran. They included six MA graduates of medical-surgical nursing, two PhD candidates of nursing, and two PhD graduates of educational sciences. Some modifications were made after receiving feedback from them. Cronbach's alpha coefficient was used to assess reliability of the scale (α=0.82).

The inclusion criterion comprised of being a circulatory or scrub nurse or technician and voluntarily participating in the study. If the nurses were not willing to participate in the study at any stage of the study, they could resign. The questionnaires were distributed among the participants after obtaining informed written consent from all of the participants and assuring them of confidentiality of the data. To analyze the data, descriptive statistics were used to define clinical decision-making scores, and Chi-square and Pearson product-moment correlation coefficient tests were performed to examine the relationship between demographic characteristics and clinical decision-making scores and nurses' clinical experiences and $p<0.05$ was considered statistically significant.

Results

In this study, 29 (15.6%), 14 (7.5%), and 143 (76.9%) out of 186 nurses were working in operating rooms specialized for burn injuries, cardiac surgery, and general surgery, respectively. Most nurses (52.6%) had experience working in other departments, as well.

Table 1 demonstrates demographic information of the participants. Our results revealed that most of the nurses perceived their roles differently at various stages of surgical procedure, that is, 52.6% saw their role of low importance for preoperative care, 44.7% identified it of high importance for intraoperative care, and 65.8% perceived it of low significance for post-operative care. The mean scores obtained for the sub-scales of search for alternatives and options of care, canvassing of objectives and values of patients, evaluation and reevaluation of consequences of care, and search for information and unbiased assimilation of new information were 26.9±4.3, 35.3±6.2, 23.2±5.3, and 16.7±2.6, respectively (table 2).

Table 1. Frequency distribution and demographic information of nurses

Variables		Absolute frequency	Relative frequency
Gender	Male	59	32
	Female	127	68
Educational level		73	39.4
	BA	103	55.3
	MA	10	5.3
Marital status	Married	142	76.3
	Single	44	23.7
		Mean±SD	**Min-Max**
Age		35±5.5	26-48
Clinical experience (years)		11.7±5.1	3-28
Operating room work experience (years)		9.4±4.3	1-18

Table 2. The scores of different decision-making sub-scales for the nurses

The sub-scales	Scores range (min-max)	Mean±SD
Search for alternatives or options of care	11-55	26.9±4.3
Canvassing of objectives and values of patients	14-70	35.3±6.2
Evaluation and reevaluation of consequences of care	10-50	23.2±5.3
Search for information and unbiased assimilation of new information	5-25	16.7±2.6

The total mean score of clinical decision-making was 102.3±15.3 with the highest and lowest scores of

[DOR: 20.1001.1.15614107.1395.18.4.5.5]
[DOI: 10.22088/jbums.18.4.35]

146 and 79, respectively. No significant relationship was observed between decision-making and marital status (p=0.3), educational level (p=0.4), taking decision-making seriously (p=0.4), and preoperative decision-making (p=0.2), intraoperative decision-making (p=0.4), and post-operative decision-making (p=0.3). There was, however, a significant direct correlation between decision-making and age (p=0.04, r=0.67) and working experience in operating room (r=0.77, p=0.02), but the relationship between decision-making and clinical experience was not significant (p=0.7).

Discussion

Our results showed that there is a significant relationship between perioperative nurses' clinical experience and their decision-making in operating room, whereas we found no relationship between decision-making and clinical experience in other departments. In her novice to expert model, Benner stated: "decision-making skill makes interpretation of clinical situations possible and current knowledge about clinical skills is fundamental for the development of clinical nursing.

Therefore, problem solving skills of an expert nurse are different from those of a novice one and this difference is due to experience" and having experience in other departments cannot necessarily be effective in making clinical decisions in new situations (16, 17). According to our results, having clinical experience in other departments does not have a significant relationship with clinical decision-making in operating room nurses.

A study by Smith also showed that new graduate nurses had lower clinical decision-making scores compared to those with at least two years of working experience, and there was a significant relationship between age and decision-making. Smith also stated that age and working experience play an important role in assessing level of clinical decision-making skill because their educational background before university may affect their problem solving and critical thinking skills. Accordingly, adults who start studying again at their 30s or 40s and enter nursing profession may have higher thinking and reasoning skills due to their experience and maturity (18). Other findings of that study revealed that there is no significant relationship between gender and total decision-making score. Results of a study by Scott et al. also showed that gender does not have a significant relationship with clinical decision-making (19).

In a study by Levar, however, most reported contribution was from female nurses; thus, gender was an effective factor in the level of contributing with decision-making. He stated that knowing different methods of decision-making is beneficial for maintaining human resources. Accordingly, in recent years, it was observed that women show more commitment and creativity in their job. Therefore, if women are given more opportunities and credit at the time of decision-making, they can perform their managerial post, which is nursing, more effectively (20). A study by Hankock et al. demonstrated that there is a significant relationship between gender and decision-making. In that study, women contributed more to decision-making (21). Findings of the present study exhibited no significant relationship between nurses' educational level and their level of decision-making skill. Predko also in his study showed that there is an almost strong relationship between the level of clinical decision-making skill and basic and clinical knowledge (22).

Results of our study regarding clinical decision-making demonstrated that the highest scores were related to canvassing of objectives and values and the lowest scores were related to searching for information and unbiased assimilation of new information. On the other hand, in another study performed by Ramazanbadr et al., the highest scores obtained from senior nursing students was belonged to the search for alternatives or options sub-scale and the lowest scores were pertinent to canvassing of objectives and values (23). As our results are based on self-reports of nurses and the limited number of behaviors evaluated in the questionnaire, it might not reflect nurses' clinical decision-making skill in different situations, which is considered one of the limitations of our study along with limited sample size.

The responses to the questions were also based on individuals' understanding and not based on real practice in clinical situations, which can affect the accuracy of the responses. Since this study was conducted to examine the relationship between clinical experience and decision-making in operating room, to make a better interpretation of the results, investigating how differently students and operating room staff make decisions and conducting a qualitative study to examine how perioperative nurses make decisions are recommended.

[DOR: 20.1001.1.15614107.1395.18.4.5.5]
[DOI: 10.22088/jbums.18.4.35]

Acknowledgments

We would like to thank operating room nurses who cooperated with this study. We also wish to express our gratitude to Dr. Ahmad Aghazade, Assistant Professor of Biostatistics Department of Tabriz University of Medical Sciences for providing statistical consultation.

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[DOI: 10.22088/jbums.18.4.35]

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[DOR: 20.1001.1.15614107.1395.18.4.5.5]
[DOI: 10.22088/jbums.18.4.35]