



# Awareness Level of Operating Room Nurses of Their Professional Tasks

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DOI: 10.29252/anm.27943

Submitted: 13-06-2019

Accepted: 27-11-2019

Published: 15-01-2020

## Keywords:

Awareness  
Operating Room Nursing  
Professional Liability

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## How to cite:

Ebrahimi A, Kamali N, Gholam Veisi B, Abbas Zadeh F, Rahimi S, Sadeghi M. Awareness Level of Operating Room Nurses of Their Professional Tasks. *Adv Nurs Midwifery*. 2020;29(1):30-35. doi: 10.29252/anm.27943

## Abstract

**Introduction:** The awareness of the duties and responsibilities of operating rooms nurses is considered as a basis for systems monitoring and quality evaluation. Operating room nurses are supposed to be aware of their professional standards and achieve their functions following professional standards.

**Methods:** This cross-sectional study was carried out based on the census and sampling with 143 operating room nurses working in nine training hospitals of Iran University of Medical Sciences. The research instrument was a researcher-made questionnaire, and the reliability was assessed through Cronbach's alpha. Also, both face and content validity of the questionnaire have been checked by faculty members. Data were analyzed by SPSS version 19 with descriptive statistics, Chi-square test, and Pearson's correlation coefficient.

**Results:** In terms of preoperative responsibilities, 25.7%, 35.9%, and 38.3% of operating room nurses experienced the awareness levels of high, moderate, and weak, respectively. The awareness levels for 20.4%, 34.7%, and 44.9% of operating room nurses were evaluated as high, moderate, and weak, respectively. They were considering the post-operative responsibilities of operating room nurses, 32.3%, 32.3%, and 35.3% of operating room nurses who experienced the awareness levels of high, moderate, and weak, respectively.

**Conclusions:** The results indicated that a vast majority of operating room nurses experienced a high level of awareness with respect to their responsibilities before, during, and after the operation. Nurses' awareness of their mission, and management and official plans for promoting deficiencies in this regard could help promote health. Contextualized education on improving the quality of nursing services should be considered as a part of the training for OR nurses and suggested to investigate the awareness level of nurses and other treatment staff about the standards of their responsibilities in diverse sectors to perform suitable planning of tasks.

## INTRODUCTION

The operating room is the unit of the hospital environment where anesthetic-surgical, diagnostic, and therapeutic procedures elective and emergency are performed [1]. This presents a peculiar dynamics of health care due to the attendance to a variety of situations and the accomplishment of invasive

interventions requires the Professional Tasks Awareness [2]. Also, work in the operating room is complex and interdisciplinary practices, with a dependence on individual performance [3]. The operating room is a complex work in the healthcare system due to the high level of technology, therapeutic principles, and patient-

related issues, which must have its own unique rules and regulations [4]. The legislation and professional standards of operating room nurses represent their responsibilities and are considered as a basis for monitoring systems and quality evaluation [5]. It is noticeable that operating room nurses are supposed to be aware of their professional standards and perform their tasks by available standards [3, 6]. If disregard, lack of skill, negligence, and unawareness of the assigned tasks in healthcare procedures inflict any harm to the patients, it should be compensated, and there is a possibility of a criminal conviction as well as a pecuniary penalty [7]. One should never forget that nursing errors, particularly operating room nurses, could be harmful to their professional identity [8], as well as being personally problematic for them and leading to the degradation of their professional importance [9]. In recent years, the figures show an increase in complaints from members of the healthcare team, indicating the need to pay more attention to the healthcare and operating room staff, as well as providing therapeutic services preventing the increment of such cases [7]. Dunjoma *et al.* (2016) reported that among the overall cases filed in judicial authorities, there were 22 files against nurses, in 77% of which the nurses were found to be accountable [9]. In the operating room, nurses play a key role in ensuring that best care practices provide patient Based on Professional Tasks [3, 10]. Therefore, the awareness and accurate performance of operating rooms nurses in compliance with their professional standards and legislation may lead to an appropriate approach to the assigned duties and improve the treatment procedure. On the other hand, it protects the operating rooms' nurses against condemnation by patients' complaints. There is a dearth of empirical data regarding nurses' awareness and the extent of the practice of Professional Tasks. It is in light that the investigators were motivated to conduct this investigation.

## METHODS

### Ethical Statement

Ethical issues were considered throughout the research process according to ethical principles and scientific guidelines. Informed consent was obtained from the informants, confidentiality regarding the data material was guaranteed, and quotations were anonymized.

### Study Design

This study is a cross-sectional study that was conducted in operating rooms of hospitals of Iran's educational and medical centers during 2016-2017 to assess the awareness of operating room nurses from their tasks relevant to their profession. In this research, the statistical population constituted all operating room

nurses employed in hospitals affiliated to Iran University of Medical Sciences (IUMS). The sample size was estimated to be 164 operating room nurses who were selected by the census. At first, the researcher visited research units, obtained the informed consent of research samples, and then distributed the questionnaires. Considering ethical research guidelines, the participants had absolute freedom to leave the research. In the end, 143 questionnaires were returned.

### Materials and/or Subjects

The useful tools in this study were a self-designed questionnaire including two parts: demographic data consisting of six questions, including age, gender, marital status, and work experience completed by operating room nurses and a questionnaire for measuring the awareness of operating rooms nurses of their tasks, including 21 questions in three areas of preoperative (questions 1-7), during operation (questions 8-14), and post-operative (question 15-21) tasks.

### Task Awareness of operating rooms nurses Questionnaire:

In this research, the questionnaire items were extracted by reviewing the authoritative, academic, and professors' literature. There were three columns in front of each question of the questionnaire specifying the participants' attitudes toward the research. The answers to each of the questions were evaluated as follows: correct, incorrect, and I do not know. In the case of favorable response, the scores assigned to correct, incorrect, and I do not know answers were 2, 0, and 1, and in the case of unfavorable ones, the assigned scores for the preceding choices were 0, 2, and 1, respectively. Respondents to the questions related to the description of operative tasks were placed in three groups of good (score  $\geq 28$ ), moderate (score 24-28), and weak (0-24).

### Statistical Analysis

In order to evaluate the reliability of the questionnaire, a test-retest was used, and to assess the internal correlation, Cronbach's alpha for the questionnaire showed R-value equal to 0.8. Besides, Face validity was assessed first, as a change in the statements and items of a questionnaire can lead to a change in its incremental validity.13 for qualitative evaluation of face validity, ten operating room nurses and doctors were interviewed face to face and the difficulty level, level of relevance and ambiguity of the items were discussed. After the unsatisfactory items had been revised, the quantitative method of item impact testing was used to determine the significance of each item so that the irrelevant items could be identified and eliminated. The data of questionnaires were analyzed after collection and insertion into SPSS software version 19 (IBM Corp.,

Armonk, NY, USA). Kolmogorov Smirnov test (k-s) was used to check the distribution of variables. The results showed that all variables had normal distribution based on independent t-test and chi-square test. The results were evaluated at a significance level of  $< 0.05$  as well.

## RESULTS

The results in Table 1 indicate that men and women constituted 17.5 and 82.5 percent of research

participants, respectively. The highest frequency (54.5%) appertained to the married, 42.7% to the single, and 2.8% to the divorced. Moreover, there was no significant relationship between the awareness level of operating rooms nurses and their gender ( $P = 0.062$ ). However, there was a significant relationship between the awareness level of operating rooms nurses and their marital status ( $P = 0.0001$ ).

**Table 1.** Distribution of (qualitative) demographic variables of operating room nurses

Variable	Frequency	Percentage	P-Value*
<b>Gender</b>			0.672
Male	25	17.5	
Female	118	82.5	
<b>Marital status</b>			0.0001
Single	61	42.7	
Married	78	54.5	
Divorced	4	2.8	

\*P-value: Chi-squared test

**Table 2.** Distribution of (quantitative) demographic variables of the operating room nurses

Variable	Frequency	Mean $\pm$ Standard Deviation	P-Value*
<b>Age</b>	143	28.90 $\pm$ 5.76	0.0001
<b>Work experience</b>	143	5.76 $\pm$ 5.38	0.0001

\*P-value: Pearson Correlation Coefficient

**Table 3.** The external frequency distribution of operating room nurses awareness from their tasks

	Good (%)	Moderate (%)	Weak (%)
<b>Pre-operative</b>	43 (25.7)	60 (35.9)	64 (38.3)
<b>During the operation</b>	34 (20.4)	58 (34.7)	75 (44.9)
<b>Post-operative</b>	54 (32.3)	54 (32.3)	59 (35.3)

**Table 4.** Frequency distribution of the response type to the awareness questions about tasks descriptions of the operating room nurses

Question	Awareness Questions about Tasks Description	Frequency		
		Correct	Incorrect	I Do Not Know
1	Before the operation, patient training by the operating room nurses reduces the imitation mechanism to cope with the surgical anxiety.	94 (65.7)	37 (25.9)	12 (8.4)
2	Nobody is allowed to talk to the patients during their transfer to the operating room in order to reduce their anxiety.	95 (66.4)	26 (18.2)	22 (15.4)
3	The chief goal of the operating room nurses at the preoperative meeting is to reduce and eliminate the patients' stress and fear.	110 (76.9)	24 (16.8)	9 (6.3)
4	Until the arrival of the implantation set to the operating room, the patient can be anesthetized and get ready for surgery.	67 (46.9)	64 (44.8)	12 (8.4)
5	At the time of taking the patients in to the operating room for vasectomy, tuberculosis and hysterectomy surgeries, the consent form existence of the patient's spouse is mandatory.	131 (91.6)	6 (4.2)	6 (4.2)
6	In the investigation before the patient's transfer to the operating room, the x-mark is used to indicate the surgical position.	45 (31.5)	81 (56.6)	17 (11.9)
7	Before the patient is transferred to the surgical site, the operating room nurses must identify the patient clearly using at least three sources of identification	97 (67.8)	24 (16.8)	22 (15.4)
8	In the case of the requirement for cardiopulmonary resuscitation during the surgical procedure, the scrub nurse responsibility is to assist to the patient venipuncture and monitoring.	82 (57.3)	24 (16.8)	37 (25.9)
9	The common task of the scrub and the circulator during the operation is the management of the operating room enter and exit.	114 (79.7)	22 (15.4)	7 (4.9)
10	In the surgeries using drugs in the sterile field, the scrub is supposed to use sterile marker for writing the drug features in to prevent the drug mistakes.	101 (70.6)	26 (18.2)	16 (11.2)
11	The investigation of the color change of the 4th grade test in the surgical set represents the completion of the sterilization cycle.	80 (55.9)	49 (34.3)	14 (9.8)
12	Determination of the fluid volume inside the patient's chest tube at the end of surgery should be marked and noted in the patient's file.	58 (40.6)	60 (42)	25 (17.5)
13	The operating room nurses should turn off the diaper system, after removing the diathermic plate from the patient.	66 (46.2)	61 (42.7)	16 (11.2)
14	The counting of gases by scrub and circulatory starts by counting the gases in the non-sterile area and ends by counting the gases in the sterile area.	95 (66.4)	27 (18.9)	21 (14.7)
15	Aldrete criteria can be used to discharge the patients from recovery.	56 (39.1)	71 (49.7)	16 (11.2)
16	In the patients' initial entrance to the recovery room, the examination of their cardiac and respiratory state is performed every 15-30 minutes.	64 (44.8)	52 (36.4)	27 (18.9)
17	The scrub should record the bandage type performed at the end of the surgical procedure in the patient's file	97 (67.8)	31 (21.7)	15 (10.5)
18	In biopsies suspected to be masses, the formalin liquid should be used to fix the specimen.	77 (53.8)	25 (17.5)	41 (28.7)
19	The purpose of the patients' post-anesthetic care in recovery is to help the patient to return as quickly as possible to the respiratory state	96 (67.1)	32 (22.4)	15 (10.5)
20	In the collection of the biopsy specimens, the patient's id label should not be affixed to the door of the biopsy container.	67 (46.9)	62 (43.4)	14 (9.8)
21	In order to control the post-operative pain, prescription of analgesics is done in the form of PRN.	26 (18.2)	67 (46.9)	50 (35)

Data in table are presented as No (%).

The results of Table 2 indicated that the average age and work experience of operating room nurses were

76.5 $\pm$ 90.28 and 38.5 $\pm$ 76.5 years, respectively. Likewise, there was a significant relationship between the

awareness level of operating room nurses with their age and work history variables ( $P = 0.0001$ ). Therefore, the increase in age and work history has been effective in promoting the awareness and awareness of operating room nurses. The results of Table 3 showed that in terms of preoperative responsibilities, 25.7, 35.9, and 38.3 percent of the operating room, nurses experienced awareness levels of high, moderate, and weak, respectively. In terms of duties during the operation, the awareness levels for 20.4, 34.7, and 44.9 percent of operating room nurses were evaluated as high, moderate, and weak, respectively. 32.3 percent experienced high as well as moderate, and 35.3 percent experienced weak levels in their awareness level, considering the post-operative tasks of operating room nurses.

Table 4 represents the frequency distribution of responses to awareness questions related to the task description of operating room nurses before the start of the procedure until the end of surgery. The highest awareness level in the field of preoperative tasks (91.6%) was related to Question 5, indicating the operating room nurses' awareness level to obtain the consent of the patient's spouse for a vasectomy, tuberculosis, and hysterectomy surgeries. Likewise, the lowest awareness level (15.4%) was related to Question 2, which indicates the awareness level of operating room nurses for decreasing the patients' anxiety during their transfer to the operating room. In the field of tasks during the operation, the highest awareness level (79.7%) was related to Question 9, representing the awareness level of operating room nurses' from the management of individuals' entry and exit to the operating room. Moreover, the lowest awareness level (9.8%) was related to Question 11, which indicates the awareness level of operating room nurses of the sterilization of surgical sets through special indicators. In the case of post-operative tasks, the highest awareness level (67.8%) was associated with Question 17, indicating the nurses' awareness of registering performed tasks in patient's file (such as bandage type recording after the operation) and the lowest awareness level (10.5 %) was linked to Question 19, representing the operating room nurses' awareness level of how to care for patients in recovery.

## DISCUSSION

Although the awareness of operating room nurses from different domains in job description was not the same in this study, their awareness was moderate to high in the majority of domains. The number of women was more than men in this study as the women and men constituted 82.5 and 17.5 percent of the study population, respectively, as well as Adeleke et al. study in which 70 percent of the operating room nurses were females [11]. There was no significant relationship between the two sexes in terms of awareness.

In this study, the highest frequency was related to the married (54.5%), followed by singles (42.7%) and divorced (2.8%). There was a significant difference between the marital status of operating room nurses and their awareness level ( $P=0.0001$ ), which means the married nurses experienced a higher awareness level of their task descriptions than the single and divorced ones., There was a significant correlation between the awareness level of operating room nurses in terms of age and working years. Therefore, the increase in age and work experience has been a significant improvement in nurses' awareness and knowledge.

In research by Rashidi and colleagues, it was concluded that the age and working years in the nursing profession affect nurses' knowledge of their task descriptions. Therefore, experienced nurses can give higher quality health care services due to a better knowledge level of their duties and standards as well as being in contact with the patients [12]. A study also shows that increasing the age of nurses plays a vital role in their clinical competency maintenance and that experienced nurses play an essential role in increasing the satisfaction of patients with the provided care services [13]. Under the desirable circumstances, the operating room nurses must be thoroughly familiar with the standards of their tasks description even before they receive appropriate professional evaluation and feedback due to the observation level of standards during their work. In this case, from the very beginning, they will be able to provide high-quality services based on the standards [14]. Typically, the awareness goals of preoperative tasks include patient anxiety control, provision of required tools for starting the operation, review of the operation consent form, specifying surgical position, complete identification of the patient, and so on [15, 16].

The results of research in the field of preoperative tasks showed that 25.7% of operating room nurses had good awareness. In comparison, 35.9% and 38.3% of them experienced moderate and low awareness levels, respectively, indicating that the awareness level of operating room nurses in this area varies from medium to high. However, in a study by Aliya et al. (2014), 97.3% of nurses were aware of patients' preoperative tasks [8]. The highest level of awareness in this area (91.6%) was related to Question 5, indicating a high awareness level of operating room nurses to receive the pre-operation consent form, and the lowest level of awareness (15.4%) was related to Question 2, representing the awareness level of operating room nurses to control the patient anxiety during transfer to the operating room. According to the results, the operating room nurses need to be very conscious in this regard since stress and anxiety have a Destructive effect on all stages of patient operation [17, 18]. The task awareness goals during the operation include the awareness of division of surgical



team tasks to perform cardiopulmonary resuscitation, the management of entrance and exit of patients in the operating room, preventing drug errors, checking the sterility of the tools and devices, determining the volume of body fluids, measurement of gases and equipment, etc. Awareness of participants in the field of duties during the operation showed that 20.4%, 34.7%, and 44.9% experienced good, moderate, and poor experience. The highest level of awareness (79.7%) in this area was related to Question 9, indicating the awareness of operating room nurses from entry and exit management to the operating room, and the lowest level of awareness (9.8%) was related to Question 11, representing the awareness of operating room nurses about how to examine sterile instruments during surgery, which requires more training in the field of sterility since maintaining sterilization in the surgical environment is a main indicator of operating room nurses [19, 20]. In our searches, it seems that no similar study has been conducted to assess the awareness level of operational tasks among operation room nurses. Awareness goals of post-operative tasks include awareness of the requirements for patient's discharge from the recovery, how to check the vital signs of patients in recovery, the type of bandage and its recording in patients' records, principles of keeping the samples taken from the body and how to register the samples, pain control in recovery patients, and so on. Awareness of the participants in post-operative tasks showed that 32.3% of operating room nurses had a good awareness, 32.3% had moderate awareness, and 35.3% had poor awareness. The highest awareness level (67.8%) in this area was related to Question 17, which inquired operating room nurses about the registration of essential cases in patient's case such as the type of bandages done, and the lowest level of awareness (10.5%) was related to Question 19 which evaluated the technician's technology awareness of how to care for patients after anesthesia. Due to the fact that the responsibilities of operating room nurses in Iran are usually defined merely in the surgery room and the operating room nurses are not typically employed by operating room staff in the recovery room, it seems justifiable for the operating room nurses to experience high and low awareness levels of their task descriptions during and after the operation, respectively.

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## CONCLUSIONS

The results of the present study showed that the operating room technicians' level of awareness from the description of their tasks before, during, and after the operation was in the range of medium to high. The awareness level of task descriptions is influenced by several factors including age, years of experience, marital status, and so on. Therefore, accurate recognition of such factors that affect the awareness level of operating room nurses is essential for accurate planning and eliminating the problems reducing awareness in order to achieve the goal of improving the quality of care provision. Nurses' awareness of their mission, and management and official plans for promoting deficiencies in this regard could help promote health. Contextualized education on improving the quality of nursing services should be considered part of the training for OR nurses. Since this research is conducted merely in the operating room on operating room nurses and the number of samples is limited, it is suggested to investigate the awareness level of operating room nurses and other therapy staff about the standards of their responsibilities in diverse sectors to perform suitable planning of tasks.

## ACKNOWLEDGEMENT

The authors would like to thank the Iran University of Medical Sciences, Tehran, Iran.

## Authors' Contribution

Conceptualization: AE, MS. Data curation: MS. Formal analysis: MS. Funding acquisition: Iran University of Medical Sciences. Methodology: AE, MS. Project administration: AE. Visualization: AE. Writing—original draft: AE, MS, NK. Writing—review & editing: AE, MS, NK.

## Conflict of Interest

This study was published on IR: IUMS.REC.1395.9411101005 by the ethics committee of the Iran University of Medical of Sciences.

## Funding

This study was supported by the Iran University of Medical Sciences (grant no., IR.IUMS.REC.1395.9411101005).

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