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Knowledge, Attitude and Practice of Intensive Care Units Nurses about Prevention and Control of Nosocomial Infections

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Abstract

Aims: Nosocomial infections are one of the important difficulties of medicine that cause infectious diseases, prolongation of hospitalization, financial and spiritual costs, and finally, mortalities. Nurses have an important role in preventing infections. Having appropriate knowledge is essential for proper performance also is the requirement of the right attitude. This study aimed to evaluate nurses' knowledge, attitude, and practice regarding preventing nosocomial infections in intensive care units.

Instrument & Methods: This descriptive cross-sectional study was conducted on nurses of the intensive care unit of Alzahra Hospital in Isfahan in 2018. Seventy-seven nurses with at least six months of work experience were selected by the viable sampling method. The data was collected by a four-part questionnaire including demographic characteristics, knowledge, attitude, and practice. Data were analyzed by SPSS 21 software using the Pearson correlation coefficient.

Findings: 71.4% of the nursing staff had average knowledge, 58.4% had moderate attitudes toward preventing nosocomial infections, and 54.4% had an intermediate level of practice. There was no significant correlation between knowledge and attitude; there was no correlation between attitude and practice, but there was a significant relationship between knowledge and practice ($p<0.05$).

Conclusion: Because most ICU nurses have moderate knowledge, attitude, and practice toward preventing nosocomial infections, reeducation seems to be necessary.

Keywords

Knowledge [https://www.ncbi.nlm.nih.gov/mesh/68019359];
Attitude [https://www.ncbi.nlm.nih.gov/mesh/68001290];
Practice [https://www.ncbi.nlm.nih.gov/mesh/68020443];
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Introduction

Nosocomial infections have always been an important problem in the healthcare system that causes one-third of mortalities in hospitals[1], even after the invention of different kinds of antiseptics[2]. They threaten both persons and the community[3].

Hospital infections are infections that are not present during admission[4], are not in their incubation period[5], and is acquired at least 48-72 hours after hospitalization, or three days after leaving the hospital, or 30 days after surgery or one year after implant[6].

Although the incidence rate of nosocomial infections varies in different countries, almost seven from developed countries to ten from developing countries out of each 100 patients admitted to hospitals gain at least one kind of nosocomial infection[7].

They have important consequences on patients, their families, and the community, such as increased morbidity, mortality, and length of hospitalization[8, 9]. Patients who suffer from these infections generally spend 3-5 days more at the hospital[10]. Researches in England revealed that patients who suffered from nosocomial infections had spent 2.5 times more than others at the hospital, and the costs have been three times more[11]. More than 20% of nosocomial infections occur in intensive care units, and the mortality rate due to the infections is 10-80% at these units[12, 13]. Despite generally, just 5% of hospital patients have been admitted to ICU[14].

It's impossible to omit these infections, but proper performance can decrease them [15]. The use of standard precautions is the key to minimize the occurrence the nosocomial infections. Hence, it is necessary for all nurses to follow guidelines because they have more exposure to patients. Nurses` knowledge and practice greatly impact the control and prevention of nosocomial infections[16].

So definitely the most effective, not expensive way to control the hospital infections every time and place is preventing that educated and aware nurses have to detect the source of infection and determine the ways to control them and use them during their care[17].

This study aimed to evaluate ICU nurses' knowledge, attitude, and practice regarding preventing nosocomial infections in intensive care units.

Instrument and Methods

This descriptive cross-sectional study was conducted on nurses of the intensive care unit of Alzahra Hospital in Isfahan in 2018. The sample number was calculated as 60 by the Cochran formula. To compensate for the loss, 77 nurses with at least six months of work experience were selected by the viable sampling method.

The data was collected by a four-part questionnaire including demographic characteristics (age, gender, total work experience, ICU work experience, educational certificate, work shift, and experience of participating in reeducating classes), knowledge, attitude, and practice.

The knowledge part had ten fourth-choice questions, to which one score was given for correct answers and 0 scores for incorrect ones. The attitude part had 12 questions with “agree” (1 point) and “disagree” (0 points) answers. The practice part had eight items (cleaning hands, method of cleaning, method of sterilization, wound dressing, injections, suctioning, using a mask, and wearing gown) in a five-degree Likert scale with “never” (0 points), “rarely” (1 point), “sometimes” (2 points), “often” (3 points), and “always” (4 points). After summing up, based on 25th and 75th percentile, the obtained scores were classified into three levels of weak (lower than 25th percentile), intermediate (between 25th and 75th percentile), and good (upper than 75th percentile). The validity of the tool was confirmed by 10 experts. The reliability was calculated as 0.87 by the alpha Cronbach method.

After obtaining the needed permissions and registering the research in the ethical committee of Isfahan University (Ethical Code: IR.MUI.REC.1396.3.747), the researcher attended the hospital and started to select the samples. The achieved nurses of the ICU wards were selected randomly, and the research purpose was explained to them. The verbal consent was obtained, and the forms were distributed without the name.

Data were analyzed by SPSS 21 software using the Pearson correlation coefficient (to analyze the correlation of knowledge, attitude, and practice) and the ANOVA test (to analyze the relationship between the demographic features and knowledge, attitude, and practice).

Findings

The mean age of the participants was 34.8±7.2 years, and 66 of them (85.7%) were females. The mean of total work experience was 10.9±5.9 years, and the mean of work experience in ICUs was 6.3±4.5 years (Table 1).

Table 1) Demographic information of participants

Parameter	Number	Percentage
Education		
Paramedic	4	5.2
Bachelor	65	84.4
Master	8	10.4
Job		
Paramedic	5	6.5
Nurse	72	93.5
Working Time		
Morning	8	10.4
Afternoon	3	3.9
Circulatory	66	85.7
Participating in Classes		
Yes	43	55.8
No	34	44.2

The participants' mean score was 6.78±1.29 on the knowledge, 9.35±1.30 on the attitude, and 236.79±15.89 on the practice (Table 2). Just the knowledge of nurses was significantly correlated with their practice (r=0.82; p=0.039).

Table 2) The score of each item of knowledge, attitude, and practice parts

Item	Mean Score
Knowledge	6.78±1.29
1. Definition of nosocomial infection	0.80±0.40
2. Most common nosocomial infection	0.32±0.46
3. Most important way of nosocomial infection prevention	0.88±0.32
4. Time of glove exchange	0.95±0.22
5. Necessity of washing hands before injection	0.71±0.45
6. Principles of suctioning	0.92±0.27
7. Time of ventilator set exchange	0.34±0.47
8. Time of IV line exchange	0.43±0.49
9. Indications of wearing a mask	0.51±0.50
10. Knowledge about disinfecting the hands	0.92±0.27
Attitude	9.35±1.30
1. I do not have to wash my hands if I used gloves.	0.88±0.32
2. Policies and procedures on infection control should be adhered to at all times	0.95±0.22
3. I should attend in-service training/workshops related to infection prevention and control regularly.	0.89±0.30
4. The workload affects my ability to apply infection prevention guidelines	0.24±0.42
5. I am aware that patients expect me to wash hands before touching them and after touching them.	0.97±0.16
6. I feel that infection control policies and guidelines are enough in the hospital	0.62±0.48
7. It is not my responsibility to comply with hospital-acquired infection guidelines.	0.78±0.41
8. Infection prevention guidelines are important to this hospital.	0.84±0.36
9. I have enough time to comply with infection prevention guidelines	0.59±0.49
10. I believe that following the prevention guidelines will reduce rates of hospital-acquired infection.	0.95±0.22
11. I should follow the procedure guidelines of the unit.	0.95±0.22
12. I feel that needles should be recapped after use and before disposal	0.67±0.47
Practice	236.79±15.89
1. Cleaning hand (4 questions)	38.92±7.29
2. Method of cleaning (4 questions)	14.11±1.80
3. Method of sterilization (3 questions)	10.66±1.58
4. Wound dressing (10 questions)	37.97±2.03
5. Injection (14 questions)	50.12±4.24
6. Suctioning (12 questions)	44.46±2.73
7. Using mask (6 questions)	22.81±1.77
8. Wearing gown (5 questions)	17.70±2.53

Most of the nurses had an intermediate level of knowledge (71.4%), attitude (58.4%), and practice (54.5%).

There were significant relationships between gender and knowledge (p=0.004), work experience in ICU and attitude (p=0.049), gender and practice (p=0.004), work experience in ICU and practice (p=0.005), working time and practice (p<0.05), and participating in reeducating classes and practice (p=0.053).

Discussion

This study aimed to calculate the knowledge, attitude, and practice of ICUs' nurses regarding preventing nosocomial infections. Most nurses of Intensive care units of Alzahra hospital in Isfahan city had moderate knowledge about healthcare infections control. It was the same as the study of Chan *et al.*[18], Jokar and Taheri[19], and Angelillo *et al.*[20] that found the knowledge of nurses regarding nosocomial infections in the average range. Nurses' knowledge depends on demographic characteristics, education, presenting in reeducating courses, and their motivation.

In our study, knowledge had correlated gender that was the same to similar study[21]. Assessment of attitude showed that most of the participants have moderate attitudes. In Angelillo *et al.*[20] and Staine *et al.*[22], the highest percent of healthcare staff had a negative attitude, so different places don't affect attitudes.

The present study showed that preventing practice is moderate, correlated with Toolabi *e,t al.*[23] and Alah BakAllahan *et al.*, which approximately all nurses had reasonable practice[24]; but wasn't the same as Karimian and Rostaminejad[25] and Staine *et al.* that most staffs had high practice[22]. This difference can be because of factors such as deficit of facilities and busy staff.

In our st,udy the nurses who had participated in re-educating classes had better practice. In a study about the effect of training on knowledge and attitude and practice of healthcare staff, Suchitra resulted in a positive effect on promoting knowledge, attitude, and practice[26]. Also, educational courses have been effective on the knowledge and practice of nurses in England[27].

Education and increasing knowledge are the most effective ways to reduce nosocomial infections, and besides using proper sterilization, the number of infections can decrease[28].

The result of the f present study was similar to the Najafi[29] study that found there is a significant relationship between knowledge and practice but was not correlated with the studies of Ghadamgahi *et al.*[21], Parmeggiani *et al.*[30] who were found there is not a significant difference.

Also, a study in Jamaica showed that 85% of nurses don't perform the right techniques[31]. This difference can be because of nurses' workload and lower facilities.

Conclusion

Most ICU nurses have moderate knowledge and awareness about hospital infection, ns. As a result, which is a positive relationship between knowledge and practice, it indicates that practice can also be improved with improved knowledge. A positive attitude can be created among nurses, so it is suggested to provide re-educating classes to increase personnel awareness.

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