

Evaluation of nursing students' performance in controlling Healthcare-Associated Infections in Masjed-Soleyman in 2018

Abstract

Background & Aim:

Given that Healthcare-Associated Infections (HAI) increase the duration of hospitalization, increase the duration of disability and even death and given the fact that nursing students attend their clinical Nursing practice; the skills gained during this period will determine the performance of this nursing role in controlling future infectious diseases in the future. Therefore, the present study was conducted to determine the performance of nursing students in controlling HAI in Masjed-Soleyman in 2018.

Materials & Methods: In this descriptive study, stratified sampling was done in nursing students of Islamic Azad University and Masjed-Soleyman health-care Higher Education Complex in 2018. Data were collected using standard questionnaire of students' performance regarding infection control as self-declaration. Data analysis with spss-20 software using T-test, ANOVA and Pearson correlation coefficient was used.

Results: In this study, 145 students with an average age of 23.38 ± 14.47 years were enrolled. Of these, 66.9% were girls and the rest were boys, 89.0% were single and the rest were married. The mean score of these subjects was 44.02 ± 11.6 which indicates good performance about hospital infections. Girls, students of Azad University and those who participated in workshops or classrooms beforehand, had significantly higher performance than others ($p < 0.05$) but there was not a significant relationship between mean performance and marital scores, place of residence, and academic year ($p > 0.05$).

Conclusion: The results showed that the control of infection in these people is good at the level and reveals the effect of the classroom and the training courses held. It is suggested that educational programs be used to engage students in advanced infection control processes and merely get out from workshop and education.

Keywords: Performance, Infection Control, Hospital, Students, Nursing

Introduction:

HAI are one of the most important infectious diseases that originate from health centers, in fact, infections that occur between 48-72 hours after hospitalization are called hospital infections (1). Which is not present at the time of admission and does not have an Incubation period, but the manifestations of the disease may occur during hospitalization or after discharging the patient. According to the World Health Organization, 1.7 million hospitalizations occur each year that one out of every 20 people

suffer from a hospital infection that causes an annual death of 99,000 people and imposes about 32.26 million on the community, these infections in Iran have been reported at least 1.9% to 25% (1).

Several studies have shown that these infections can increase the mortality rate of hospitalized patients by up to 2 times. In the United States, about 2 million people every year suffer from a hospital infection, which costs about \$ 5.4 million per year and is the 11th cause of death in the United States (2). It causes almost 80,000 deaths a year, so that in this country, 247 people die from HAI each day. And of every 136 patients hospitalized, one person is severely ill due to a hospital infection, in the developing world, however, there are about 4.2 million hospital-acquired infections per year and the eleventh cause of mortality and death is the cause of hospital deaths (1). This is due to the limited resources available to health and the low number of hospital staff who have been in the process of controlling hospital infections, because health personnel play an important role in the spread of infection and are a key member of the management and control of HAI(2). The highest density of infections in the **ICU (Intensive care unit)** ward, followed by neurology, internal and orthopedic surgeries (3-4). 25% of all HAI have been reported through respiration and blood (5). These infections are not limited to specific individuals, but can be created in all hospitalized patients (6). **And** even in the most equipped hospitals in the advanced countries. These infections can lead to permanent complications, an increase in the length of hospitalization, an increase in the cost of treatment, the discontent of the patient and his companions, and even death (1). These infections are considered to be major health hazards in hospitals throughout the world and despite the many improvements that have been made in controlling and preventing hospital infection, still, this major problem remains a major concomitant drug treatment problem, resulting in dramatically increased mortality and increased health care costs (7). Among nosocomial infections, respiratory infections, which are common circulatory most common are urinary tract infection (3). Patients with nosocomial infections have a high degree of dysfunction, long-term residence in the special department and mortality (2) than other hospitalized patients. Studies in the field of dental care, attitudes and practices of staff in controlling infectious diseases have reported different outcomes. The results of the study carried out in Imam Hossein Hospital of Tehran indicated limited knowledge and inadequate performance of managers and authorities in the field of management of HAI and hand sanitation. Allah Bakhshian et al. (2010) also evaluates the knowledge, attitude and practice of nurses in the educational and medical centers of Tabriz regarding the control of hospital infections, stated that the

majority of nurses had moderate awareness and performance in controlling HAI(1). Various factors are involved in the development of hospital infections, the most important of which are: Individual characteristics, organizational factors, age (more common in elderly and newborns), **Surgery**, immune system problems, use of immunosuppressant drugs, chronic diseases such as diabetes, cirrhosis, renal failure, cancers, the use of broad-spectrum antibiotics as well as some therapeutic interventions such as intubation, vein, endoscopy (3), **incorrect** use of suction catheter. Refuse health care personnel to wash hands and the lack of use of sterile fans in performing procedural therapies Etc., also play an important role in the prevalence of nosocomial infections (1). The most important pathogenic factor is the development of a hospital infection of microorganisms in the patient's body that the patient is contacted by a patient in hospital or by a health care worker (3). Prevention of HAI is an issue that requires attention to the performance of students and nursing staff. In fact, among the methods for controlling the infection of the hospital are improving the performance of students and nursing staff. Because a nurse, as a member of the health care team, has taken measures such as proper skin disinfection, use gloves Mask, timely replacement of infusion sets, proper separation of patients, application of standard precautionary principles, compliance with hand sanitization, spontaneous contact with needle tip, avoiding confronting discharge and applying preventive measures has a unique role in controlling and preventing HAI(8).Considering the different results of studies and the complications of HAI and the excess costs imposed on health systems, obviously, nursing students play a key role in improving the health of the community as part of the human resources of the health system. **The performance of nursing students in the field of health plays an important role in providing the health of the people and control of HAI (1).** Nurses and nursing students who have acquired skills in this period will determine their future performance. Knowledgeable and proper scientific information on the types of HAI and their prevention so that they can have a profound function in controlling and preventing these infections, therefore, this study aimed to determine the performance of nursing students in controlling hospital infections.

Materials and Methods:

This cross-sectional descriptive-analytical study was conducted in 2018 in Masjed-Soleyman. The research community included 145 nursing students from the Semester two to eight of Islamic Azad University and Masjed-Soleyman health-care Higher Education complex. **The sampling was done**

stratified sampling. After obtaining the required permissions, the Deputy Assistant Professor of Islamic Azad University and Masjed-Soleiman health-care Higher Education complex and justify the participants to focus on the objectives of the question of the confidentiality of the responses. Then the questionnaires were distributed among the students without a name and surname.

One of the criteria for entering the study was a willingness to participate in the study and a nursing student in the semester two to eight who entered the hospital. In order to observe ethical considerations, the entry of individuals into the study and filling in forms of the questionnaire was completely voluntary and only if desired.

Data collection tool was a questionnaire consisting of three parts: written informed consent, the demographic information of the sample was related to the students' performance regarding the control of **nosocomial infections.**

The number of questions in the questionnaire was 58 questions in three options (I do = 1, I do not do = 0 and I have no idea = 0). Minimum score was 0 and maximum was 58.

The questionnaire included questions about standard precautions, injections, environmental health, hand washing, use of personal protective equipment, isolation, and ward health conditions in hospitals. Validity of the questionnaire was evaluated in terms of face and content validity, so that the questionnaire was prepared according to the sources and books in this regard. The reliability of this questionnaire was obtained by using a Cronbach's alpha test. Data analysis was performed using SPSS20 software, independent t-test, ANOVA and Pearson correlation coefficient.

Results:

In this study 145 students with mean age of **23.38 ± 14.47** years were enrolled. Of these, 66.9% and the rest of the boys, 89.0% were unmarried and the rest were married. Also, 71.1% of the Azad University and the rest were from Health. And 41.4% in the second, 29% in the first year, 29% in the third year and 0.7% in the fourth year.

50.3% reside in the dormitory and the rest was unskilled and the majority of them (50.3%) had a total Grade point average (GPA) of 16 to 18. Of these, 91% of the subjects received infection control training during the course of study.

The mean score of these subjects was 44.11 ± 02.6 , which indicates good performance of hospital infections. 4.1% had poor performance, 26.2% had an average performance and 69.7% had good performance.

Girls, Azad university students and those who participated in a workshop or classroom beforehand, had a significantly higher performance than the others ($p < 0.05$) (Figure 1). However, there was not a significant relationship between mean performance and marital scores, place of residence, and academic year ($p < 0.05$). There was a direct and non-significant correlation between age and performance scores ($p = 0.91$) ($r = 0.009$).

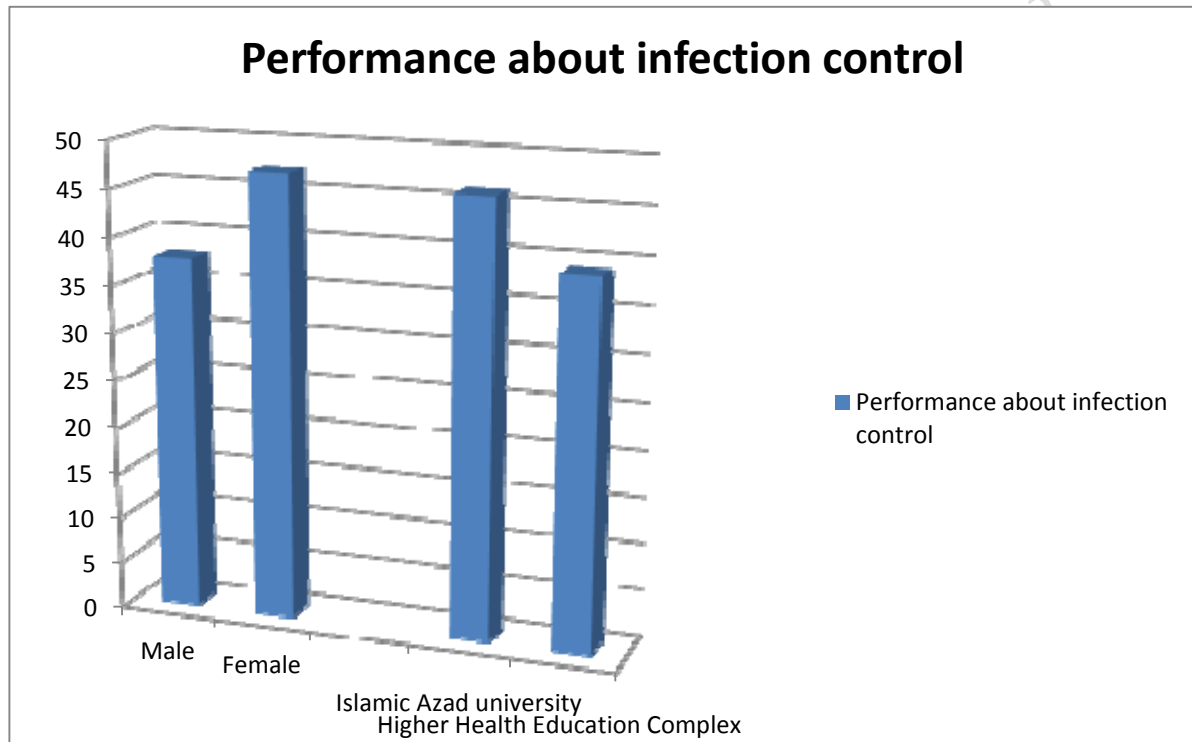


Figure 1. Mean scores of performance of nursing students about controlling HAI in Masjed-Soleyman by gender and type of university

Discussion and conclusion:

The aim of this study was to determine the performance of nursing students regarding the control of **nosocomial infections** in Islamic Azad University and Masjed-Soleyman health-care Higher Education complex in 2018. In this study, 69.9% were female and the rest were boys. The reason for the high number of girls is random sampling and the higher proportion of girls to boys in this field. From these 71% were from the Azad University and the rest were from the Higher Education Complex.

The average performance score of these individuals was $44/52 \pm 11/6$, which indicates good performance in controlling the infection of the hospital. In

this study, 4.1% had poor performance and 26.2% had a moderate performance and 69.7% had a good performance, while the results of the study showed that 13.9% of nurses had good performance, which indicates that nurses had lower performance. Students have control over the infection, which could be due to the presence of the professor in the student's internship and the availability of student information as well as information obtained from internal medical and surgical books (2).

In the study of ghadamgahi and colleagues (2011) in assessing the knowledge, attitude and practice of nursing students about controlling hospital infections, most nursing students did not have a good control over the control of HAI (9). AllaBakhshian and colleagues also found that %99.1 have a moderate performance (10), in a study by Barrett and Randel (2008), several strategies have been introduced to prevent hospital infections, which is the most comfortable, most effective and cost-effective way of hygiene, so as to be a global priority for reducing hospital infection. (5) The Anita bag study in 2018 states that none of the nursing masters students are highly knowledgeable about controlling infectious diseases, only 89.9% have a very good knowledge, and 6.25% have good knowledge and 63.3% of them Nursing students have a moderate awareness about controlling hospital infections, Therefore, in order to improve performance, the knowledge of these students should be improved first, because without sufficient knowledge, students cannot have proper control over the management of hospital infections. For this purpose, the College of Nursing College should introduce IPC models to nursing students at hospitals first time. And before entering the department, the recipients of infection control should be given over to the students, and training programs and symposiums or training workshops should be held regularly. (11)

In a study conducted in Taiwan, shows that awareness of standards and precautions on controlling HAI among nursing students is at a low level.

And their ability to use these precautionary measures is low (12).

And in another study from Paudyal and simkhoda, which was conducted in 2008 to assess the awareness, attitude and method of infection control among Nepalese health workers, it was found that 16% and 14.3% of respondents achieved performance score and knowledge and attitude (13).

Comparison of the present study with the study on the knowledge, attitude and practice of nursing students regarding the control of HAI in the western Nepal region, The results of these two studies are very close to each other and nursing students have a good performance in controlling HAI (14), but comparing the results of this study with a study done by nurses in the emergency department, Suggests that nurses have lower performance than

students, which can be due to workshops and the provision of new materials to students (15). Azad university students and those who previously participated in classrooms or workshops had a higher performance than others. There was no significant relationship between mean performance scores with marital status, location, grade, and academic year. According to the above results, the results showed that the infection control in these people was very good and reveals the impact of the classes and workshops held. However, despite the standardization of the questionnaire, it seems that in other studies, objective checklist can also be used. It also seems that the reason for the significant difference in the performance scores of the students of the Azad and governmental universities is due to the history of several decades of free university in teaching students in this city. Also, the newly established and low population of Higher Education Institutions students can be due to its causes. It is suggested that training programs be used to engage students in the infection control process, and merely get out from workshop and education. The limitation of this study was to study nursing students in a city. Therefore, more studies are recommended in other cities with more sample size.

Consent Disclaimer:

As per international standard, participant's written consent has been collected and preserved by the author(s).

References:

1. Yousefi A, Kavosi Z, sadeghi A, barhaghtalab R. knowledg, attitude and practice nurs in affiliated hospital of shiraz university of medical sciences about infection control. J urmia nurs midwifery fac. 2017.15 (9).667-679. [inpersian]
2. Jokar F, tarami Z. nursing student and staff knowledg about nosocomial infection. iranian jornal of infectious diseases abd tropical medicine 2007.12 (37).83-86. [inpersian]
3. Sohrabi Mb, khosravi A, zolfaghari P. Jsaraphia. evaluation of nosicomial infections imam hossein hospital of shahrood. journal of birgand univercity medical science .2009.16 (3).33-39.
4. Ghiasvandian s. nosocomial infection in the intensive care units. hayat. 2002.8 (1).27-34.
5. Azizi F, janghorbani M, hatami H. (eds). Epidemiology and control of common disorder in iran. 2 ed. thran. khosravi press. 2004. [Inpersian]
6. Agarwal M, Shiao S, Larson EL. Repeat gram-negative hospital-acquired infections and antibiotic susceptibility: A systematic review. Journal of infection and public health. 2018 Jul 1;11(4):455-62.

7. Bradley CR, Ayliffe GA. Hospital infections in Birmingham, England, in the nineteenth and twentieth centuries. *Journal of Hospital Infection*. 2018 Sep 1;100(1):9-12.
8. Jarrell AS, Kruer RM, Berescu LD, Pronovost PJ, Trivedi JB. Factors associated with in-hospital mortality among critically ill surgical patients with multidrug-resistant Gram-negative infections. *Journal of critical care*. 2018 Feb 1; 43:321-6.
9. Ghadamgahi F, et al, knowledg, attitud and self-efficacy nursing staff in hospital infection .*jurnal mlii med*. 2011. 13 (3).167-172.
10. AllaBakhshian A, et al. knowkedg , attitud and practice ICU nursing about nosocomial infection control in teaching hospital of tabriz. *iran jurnal of nursing*. 2010. 23 (64).16-28.
11. Anita B. study to assess knowledg regarding nosocomial infection and its prevention among B.sc. nursing student in a selected nursing colleg under west bengal university of health sciency. M.sc. nursing (obsterical and gyaocologycal nursing) clin8cal instructor. Govt. collg of nursing , burderwan medical collge .2018. 6 (5).7934-7944.
12. Chia, jung wu, Glenn E Gardner and ann Mchang. Taiwan nursing students knowledg, aplication and confidence whit standard and percaution in infection control. *jurnal of clinical nursing*. 2008. 18. 1105-1112
13. Puadyal P, Psimkhoda and jbrus . infectiin control knowledg, attitude and practice among nepalese health care worker. *amrican jurnal of infection control*. 2008. 36 (8).595-597
14. Ishwari sharma puadel , vivek gosh, purushottam Adhikari. knowledg , attitud and practice of nursing student on hospital aquaired infection in western regun of nepal. *jurnal of colleg of medical sciences*. 2016. 12 (3).103-107.
15. Kalantarzadeh M, mohamadnejad E, Ehsani Rand Tamizi Knowledge and Practice of Nurses About the Control and Prevention of Nosocomial Infections in Emergency Department. *Z. clinical infection diseases*. 2014. 9 (4).e18278.