Original Article

Knowledge and Attitude of Nurses towards the Principles and Criteria of Isolation of Infected Patients in Valiasr Educational and Treatment Center of Zanjan Province

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Abstract

Introduction: Nosocomial infections have always been one of the main concerns of the healthcare system of any society, and nurses as frontline health care providers have a significant role in reducing the prevalence and occurrence of nosocomial infections. The purpose of this study is to determine the knowledge and attitude of nurses towards the principles and criteria of isolation of infectious patients in Valiasr educational and treatment center of Zanjan province.

Material and Methods: This cross-sectional study was conducted on 186 nurses working in different departments of Waliasr Medical Training Center in Zanjan, Iran. The study was conducted in the form of a questionnaire among the nurses of the above-mentioned medical training center in all three work shifts using a convenient sampling method. Data analysis was done using SPSS software and statistical test (Chi-Square).

Results: 186 nurses with an average age of 31.6 years participated in this plan. The results of the study demonstrated that 14% of the participants had a low knowledge level, followed by an average knowledge level (55.9%), and a good knowledge level (30.1%). In terms of attitude, 33.3 % of the participants had a poor attitude, followed by an average attitude (52.2%), and a good attitude (14.5%).

Conclusion: Considering the average level of knowledge and attitude of most of the studied people towards the principles and criteria of isolation of infected patients, the level of knowledge and attitude of the treatment staff can be increased by developing comprehensive educational programs and providing sufficient and standard facilities.

Keywords: Knowledge, Attitude, Isolation, Infectious Disease, Nurse, Zanjan Province.

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INTRODUCTION

Infectious diseases and especially hospital infections have always been one of the main concerns of the healthcare system of any society and impose a heavy burden on many societies. In order to reduce this burden, an integrated approach combining health promotion and developing a care plan for the prevention and treatment of diseases is necessary, and success in this requires the participation of all members of the treatment staff and patients (1, 2). Hospital infections, which affect a significant number of patients around the world, are a very important issue both in terms of human lives and economic losses. This issue has different dimensions in terms of age groups, hospital departments and the type of hospital and its scope of activity. Most importantly, despite its depth and breadth, this problem can be prevented and controlled with proper planning and proper hospital management (3).

The control of hospital infections is now a global priority and many factors contribute to the spread of these infections. The expansion of hospitals, emerging diseases such as AIDS and Bovine spongiform encephalopathy (BSE), and the risks of transmission of hepatitis B and C and increasing microbial resistance are among these factors. (4, 5). Among the health personnel at risk, doctors, laboratory technicians, nurses and dialysis unit personnel are the main groups. Nurses are in the riskiest group because

they have close contact with patients and are exposed to needle stick injury (NSI) (6).

Skin injuries caused by occupational contacts are the main source of infection with blood-borne pathogens among health personnel. Studies on people who were exposed to hepatitis C virus through contact with a needle head or any other skin injury showed that the average incidence of HCV antibody in each injury is 1.8% (7-0%) (7). Hospital infections are infections that occur after admission to the hospital (48 or 72 hours later) or during a certain period (10 to 30 days after the patient's discharge, 25 to 50% of surgical wound infections appear after the patient's discharge) and, it should not be present at the time of admission, and not even be in its latent period. If a foreign object is implanted in the patient's body after surgery, hospital infection can occur up to a year later. Hospital infections can infect not only patients, but also staff and visitors (8-10). Generally, among the types of hospital infections, *Escherichia coli* is the most common pathogen, followed by *Staphylococcus aureus* (11).

Diagnostic and therapeutic measures are important aspects for hospital infections due to mortality, increase in length of hospitalization of patients and increase in costs of prolonged hospitalization (12). Considering the harmful effects of hospital infections on individuals and society, it is necessary to take measures to control these types of infections. One of the methods that can involve infection control is increasing the knowledge and attitude and improving the performance of nursing personnel (13).

Nurses, as frontline health care providers, play a significant role in reducing the incidence of infectious diseases, especially hospital-acquired infections. Examining the type of attitude and knowledge of the treatment staff in this study provides useful information, so that its evaluation enables us to determine clear standards to deal with infections, to know people's knowledge of the existing standards, and to provide the necessary conditions and facilities for implementation of these standards. With these measures, an effective step can be taken in providing high quality treatment. By planning and taking appropriate measures, control and spread of infectious diseases can be achieved (1). Therefore, this study aimed at determining the knowledge and attitude of nurses towards the principles and criteria of isolation of infectious patients in Valiasr educational center of Zanjan province.

Material and Method

In this cross-sectional study, a researcher-made questionnaire was used, which was completed by the subjects. The questionnaire consists of three main parts: the first part was information related to the demographic characteristics of the nurses, the second part was 20 questions related to the knowledge about isolation and the third part consisted of 20 items related to the attitude towards the principles and criteria of isolation of infected patients. The study population includes nurses working in the inpatient wards of Waliasr Hospital, the total number of nurses working in this center was 220, of which 186 participated in this study. The inclusion criteria were nurses working in Valiasr center who were willing to participate in the study.

Scoring criteria in the knowledge questionnaire: 1 was given to the correct answer and 0 was given to the other answers, and the resulting scores were between 11 and 20. Good knowledge was considered for scores between 18 and 20, average knowledge for scores between 14 and 17, and low knowledge for scores between 11 and 13.

Scoring criteria in the attitude questionnaire: In the attitude questionnaire, if the "completely agree" option was correct, the answer was given a completely agree score of 5, agree score of 4, neutral score of 3, disagree score of 2, and totally disagree score of 1. In the questions where the correct answer was the "completely disagree" option, a score of 5 was given for a completely disagree answer, a score of 4 was given for a disagreeable answer, a score of 3 for no opinion, a score of 2 for an agreeable answer, and a score of 1 for a completely agreeable answer, the resulting scores were between 51 were up to 100, and scores between 91 and 100 were considered good attitudes, scores between 81 and 90 were considered average attitudes, and scores between 51 and 80 were considered poor attitudes.

After the initial design of the questionnaire items, a sample of it was given to at least 5 expert professors, and validity evaluation was done based on the relevant process. Also, in order to evaluate the reliability of the research tool, a sample of the questionnaire was given to 10 people from the studied community, and it was confirmed by calculating Cronbach's alpha values. Cronbach's alpha coefficient was calculated as 0.60 and 0.77 in the knowledge and attitude sections, respectively. In total, Cronbach's alpha coefficient was calculated for all questions of the questionnaire at 0.80. Data analysis was done using SPSS software and chi square test.

Results

Out of 200 questionnaires, 186 questionnaires were completely completed and the results of these questionnaires were analyzed. The average age of the subjects studied was 31.61 ± 6.9 years. 94.6% of the participants were female and 5.4% were male (Table 1). 14% of the nurses were officially employed, 33.3% were temporary-to permanent, 28.5% were contractual, and 24.2% were nurses working in different departments under medical service program.

Table 1: Frequency distribution of the studied variables

Variable		Frequency (percent)
Sex	Male	(5.4) 10
	Female	(94.6) 176
Age	21-29	(43) 80
	30-39	(40.9) 76
	40-50	(16.1) 30
Employment status	Official	(14) 26
	treaty	(33.3) 62
	Contractual	(28.5) 53
	a plan	(24.2) 45
Activity unit	Emergency	(19.4) 36
	internal	(42.5) 79
	neurology	(6.5) 12
	infection	(5.4) 10
	cardiac /CCU	(7.5) 14
	ophthalmology /ENT/surgery	(9.7) 18
	surgery room	(9.1) 17
work history	1-5	(40.9) 76
	6-10	(23.1) 43
	10-15	(22) 41
	16-30	(14) 26

In total, 14% of the participants had a low knowledge level, followed by an average knowledge level (55.9%), and a good knowledge level (30.1%).

According to Table 2, people are in the age group of 21-29 years old. The chi-square test showed that there is a significant relationship between the level of knowledge of nurses regarding the principles and criteria of isolation of infected patients and their age group (P=0.006). The level of knowledge according to the type of employment was divided into good, medium and low level (Table 1). Using chi-square test, there was a significant relationship between the level of knowledge of nurses and their employment status (P=0.013).

Table 2: The relationship between the status of nurses' level of knowledge regarding the principles and criteria of isolation of infected patients with the investigated variables

Variables		**level of knowledge**			P-value
		low (%) number	Moderate (%)Number	good (%) number	
sex	male	(0) 0	(70) 7	(30) 3	0.396
	female	(14.8) 26	(55.1) 97	(30.1) 53	
age	21-29	(17.5) 14	(65) 52	(17.5) 14	0.006
	30-39	(7.9) 6	(53.9) 41	(38.2) 29	
	40-50	(20) 6	(36.7) 11	(43.3) 13	
Employment status	Official	(19.2) 5	(38.5) 10	(42.3) 11	0.013
	treaty	(4.8) 3	(58.1) 36	(37.1) 23	
	Contractual	(13.2) 7	(56.6) 30	(30.2) 16	
	plan	(24.4) 11	(62.2) 28	(30.2) 16	
Activity unit	Emergency	(11.1) 4	(47.2) 17	(41.7) 15	
	internal	(15.2) 12	(59.5) 47	(25.3) 20	
	neurology	(8.3) 1	(75) 9	(16.7) 2	
	infection	(30) 3	(40) 4	(30) 3	
	cardiac /CCU	(0) 0	(21.4) 3	(78.6) 11	
	ophthalmology/ENT/surgery	(16.7) 3	(61.1) 11	(22.2) 4	
	Surgery room	(16.7) 3	(76.5) 13	(5.9) 1	
work history	1-5	(17.1) 13	(64.5) 49	(18.4) 14	0.07
	6-10	(11.6) 5	(55.8) 24	(32.6) 14	
	10-15	(7.3) 3	(51.2) 21	(41.5) 17	
	16-30	(19.2) 5	(38.5) 10	(42.3) 11	

In terms of nurses' attitude towards the principles and criteria of isolation of infected patients, a total of 33.3% of the participants had a poor attitude, followed by an average attitude (52.2%) and a good attitude (14.5%). According to Table 3, among the three defined age groups, all of them had an average attitude level above 50%. Among them, the highest number of good attitude levels (20%) belonged to the age group of 40-50 years and the lowest (7.5%) was among the age group of 21-29 years. No significant relationship was observed between attitude and age groups (p=0.115). Also, 19.2% of people with formal employment status and 6.7% of nurses working under medical service program had a good attitude level, which the chi-square test also showed no significant relationship between the attitude level and the employment status (p=0.145), (Table 3).

Table 3: The relationship between nurses' attitude towards the principles and criteria of isolation of infected patients with the studied variables

Variables		Attitude status			P-value
		weak (%)Number	Moderate (%)Number	good (%)Number	
Sex	Male	(20) 2	(60) 6	(20) 2	0.635
	Female	(31.1) 60	(51.7) 91	(14.2) 25	
Age	21-29	(41.3) 33	(51.2) 41	(7.5) 6	0.115
	30-39	(27.6) 21	(52.6) 40	(19.7) 15	
	40-50	(26.7) 8	(53.3) 16	(20) 6	
Employment status	Official	(26.9) 7	(53.8) 14	(19.2) 5	0.145
	treaty	(27.4) 17	(54.8) 34	(17.7) 11	
	Contractual	(28.2) 15	(56.6) 30	(15.1) 8	
	plan	(51.1) 23	(42.2) 19	(6.7) 3	
Activity unit	emergency	(33.3) 12	(41.7) 15	(25) 9	0.128
	internal	(30.4) 24	(59.5) 47	(10.1) 8	
	neurology	(16.7) 2	(66.7) 8	(16.7) 2	
	infection	(70) 7	(10) 1	(20) 2	
	cardiac /CCU	(42.9) 6	(50) 7	(7.1) 1	
	ophthalmology /ENT/surgery	(27.8) 5	(50) 9	(22.2) 4	
	Surgery room	(35.3) 6	(58.8) 10	(5.9) 1	
work history	1-5	(39.5) 30	(52.6) 40	(7.9) 6	0.414
	6-10	(27.9) 12	(51.2) 22	(20.9) 9	
	10-15	(31.7) 13	(48.8) 20	(19.5) 8	
	16-30	(26.9) 7	(57.7) 15	(15.4) 4	

DISCUSSION

The results of the study showed that a total of 14 percent of the participants had a low level of knowledge, 55.9 percent had an average level of knowledge, and 30.1 percent had a good level of knowledge. In 2009, in a study conducted by Ghadamgahi et al. in Mashhad, 67.9% of nursing personnel had average knowledge (14) and in similar studies conducted by allah Bakhshian et al. in Tabriz, 93.9% of nurses' knowledge was average (15). Abdulahi et al in another study in Gorgan have come to the conclusion that knowledge level of 63.9% of nurses regarding the control of hospital infections was average, which is similar to the present study in terms of the frequency of the majority of average knowledge, but in Abdulahi's study, 5.5 26% of nurses have been declared as poor knowledge, while 9.6% of nurses have been declared as good knowledge, and these findings are different from the results of the present study (16).

Jamshidi et al. have investigated the knowledge of nurses regarding standard precautions and isolation where 4.2% of the studied population were in the good group, followed by the average group (57.6%), the poor group (35.1%) and a very weak group (1.3%), (17). Another study conducted by Angelillo in Italy aimed at investigating the knowledge and attitude of nurses working in the operating room, where most of the people (67.3%) had a good level of knowledge (18). One of the reasons for the difference in the results of the mentioned studies can be due to the non-uniformity of the tools and the scale of measuring knowledge.

Most of the nurses (84.4%) of Waliasr Medical Training Center believed that washing hands is not a substitute for using gloves. This shows the importance of hand washing by nurses, as it is now known that hands are actually the most important way to transmit germs (19). Hand washing plays a very important role in preventing the transmission of infections because pathogens survive on the surface of hands for 30 minutes (20). In the study conducted by Angelillo in Italy, the majority of participants stated that the most important factor in reducing hospital infections is hand washing, where 98.2% and 95.4% of nurses wash their hands before and after surgery (18).

In this research, no significant relationship was found between knowledge, gender, and work experience, but the chi-square test showed that the level of knowledge has a statistically significant relationship with the age groups of the studied subjects, so that the highest level of good knowledge was among the people in the group of 40-50 years and the lowest ratio of good knowledge level was in the age group of 21-29 years. While a study by Zanani et al. also revealed a significant relationship between the knowledge score with age (P = 0.001) and gender (P = 0.0001). In such a way that men and health workers over 40 years of age have the most knowledge. This shows that older age and more experience may be related to more

knowledge (21). Furthermore, the chi-score statistical test showed a significant difference between the level of knowledge and the activity unit, and the nurses who worked in the heart department and CCU had a higher level of knowledge than other participants. However, due to the small amount of samples, it is not possible to make a definitive opinion about the knowledge of nurses and different departments of Waliasr educational and treatment center. Chi-square statistical test demonstrated a significant difference between the level of knowledge and employment status, when the highest level of good knowledge (42.3%) was found among officially employed nurses and the lowest level of good knowledge (13.3%) among nurses with medical service program. This finding can be an indication of the relationship between work history and more work experience with the high level of knowledge of nurses.

In the current study, 33.3% of the participants had a poor attitude, 52.2% had an average attitude, and 14.5% had a good attitude. In Abdulahi's study about the attitude towards infection control, 52.4% of the nurses had a poor attitude, 35.7% of nurses had an average attitude and 11% had a positive attitude (16). A descriptive-cross-sectional study conducted by ghadamgahi et al., reported 90.4% of the samples had a positive attitude (14) and other descriptive study by Bakhshian showed that 94.7% of the cases had a positive attitude about the control of hospital infections (15). In the present study, no significant relationship was found between attitude and gender, age group, employment status, activity unit, and work experience, which, contrary to the findings of our study, in the study of Mansour ghanaei et al., a significant relationship was found between the level of attitude and age (P = 0.002), gender (P = 0.0001), work experience (P = 0.0001) of people, when people over 41 years old and people with work experience over 11 years had a higher attitude score than other groups. Moreover, the older age of people was associated with higher knowledge, which can be a justification for the correct attitude of people. On the other hand, men showed a more positive attitude. Of course, it should be mentioned that the attitude of medical personnel regarding people with hepatitis C may be influenced by the attitude of their colleagues who consult them. In other words, they may have gained knowledge by consulting with them and not in training courses (21).

Conclusion

The majority of the participants had an average level of knowledge and attitude towards the principles and criteria of isolation of infected patients. It seems that this level of knowledge and attitude can be improved by developing comprehensive educational programs in the form of coherent workshops with regular and detailed planning. Also, providing sufficient facilities and health standards and adapting health care environments provided the basis for improving community health and preventing the spread of hospital infections.

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