



# ORIGINAL: Comparison of Knowledge and Attitude among Nurses in Special Wards and Emergency of the Hospital about COVID-19: A Cross-Sectional Study in the North of Iran

Fereshteh Araghian  
Mojarad  
Hamid Salehinia

School of Nursing and Midwifery, Mazandaran University of Medical Sciences, Sari, Iran.

Mohammad Ali Heydari  
Gorji  
Abolfazl Hosseinnataj

Social Determinants of Health Research Center, Birjand University of Medical Sciences, Birjand, Iran.

Fatemeh Talebian

Department of Medical Surgical Nursing, School of Nursing and Midwifery, Mazandaran University of Medical Sciences, Sari, Iran.

Tahereh Yaghoubi

Department of Biostatistics and Epidemiology, School of Health, Mazandaran University of Medical Sciences, Sari, Iran.

Leila Jouybari

Student Research Committee, School of Nursing and Midwifery, Mazandaran University of Medical Sciences, Sari, Iran.

Traditional and Complementary Medicine Research Center, Addiction Institute, Mazandaran University of Medical Sciences, Sari, Iran.

Nursing Research Center, Golestan University of Medical Sciences, Gorgan, Iran.

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### Correspondence:

**Tahereh Yaghoubi**, School of Nursing and Midwifery, Mazandaran University of Medical Sciences, Sari, Iran.

**Email:** tyaghubi@mazums.ac.ir

**ORCID:** 0000-0001-8526-6745

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## ABSTRACT

**Introduction:** There is a lack of studies on the knowledge and attitudes of health care workers towards COVID-19. The aim of this study was to compare the knowledge and attitudes of nurses in emergency departments and special wards of medical training centers in Mazandaran province about COVID-19 in 2020.

**Material and Methods:** The present study is a descriptive cross-sectional study. Which was performed in the emergency and special wards of adult educational and medical centers of Mazandaran province in 2020. Sampling is census that is easily accessible and non-random. Data collection tools included demographic information form and a researcher-made questionnaire related to knowledge and attitude. Data were analyzed by analytical tests using SPSS version 16.

**Results:** The findings of this study showed that the level of nurses' knowledge was  $7.78 \pm 0.85$  and the level of nurses' attitude was  $6.87 \pm 0.90$ . There was no statistically significant difference between knowledge and attitude in emergency and special ward's nurses. There is no significant relationship between education level, age and work experience with knowledge and attitude.

**Conclusion:** According to the findings, the level of knowledge of nurses was insufficient and the level of attitude of nurses was sufficient. Therefore, it is recommended nursing managers should plan to increase the level of awareness of nursing staff. Prepare virtual educational content in the field of treatment, nursing care and complications of COVID-19.

## Introduction

Coronaviruses are RNA viruses that are widely distributed among humans, other mammals, and birds and cause respiratory, intestinal, liver, and neurological

diseases (1, 2). Six species of coronavirus are known to be a human disease (3). Four viruses of - E229, OC43, NL63, and HKU1 - are common and typically show cold symptoms in individuals with immune system defects (4). The other two strains - Acute Respiratory Coronavirus Syndrome (SARS-CoV) and Middle East Respiratory Coronavirus Syndrome (MERS-CoV) - are the main causes of SARS-CoV outbreaks of Acute Respiratory Syndrome in 2002 and 2003 in Guangzhou Province, China (5-7). The MERS-CoV pathogen was responsible for the outbreak of severe respiratory diseases in 2012 in the Middle East (8).

Due to the high prevalence and wide distribution of coronaviruses, the high genetic diversity and recombination of their genomes, and the increase in human-animal activity, new coronaviruses due to periods of cross-infections of various species and sudden events occur periodically in humans (9). In late December of 2019, several local health centers reported several patients with pneumonia who were epidemiologically related to the wholesale market of marine and wet animals in Wuhan, Hubei Province, China (4, 9). As of July 8, 2020, infection with (SARS-CoV-2) has resulted in more than 11 million laboratory-confirmed cases and 530,000 confirmed deaths (10).

The findings show that COVID-19 is mild in 81% of patients and improves at home. In 14% of cases, the person develops severe symptoms, including pneumonia and shortness of breath. In 5% of cases, the patient's condition worsens, which is associated with respiratory failure, infectious shock and failure in other organs of the body. In general, the mortality rate of this virus is 3.4% and the results show that the mortality rate of this virus in the elderly and people with underlying diseases is significantly higher than healthy people (11). Examining the level of knowledge and attitude of health workers, they concluded that their level of knowledge about the use of personal equipment, infection control and isolation measures is poor (12-18).

Poor understanding of the disease among

health care workers can lead to a rapid spread of infections in delayed diagnosis and treatment. More than 100 health workers have lost their lives to COVID-19, a catastrophe for the world and an obstacle to the fight against disease (19). Guidelines for health care workers and online refresher courses have been developed by the World Health Organization, the Centers for Disease Control and various government agencies in different countries to enhance knowledge and prevention strategies (20).

There is a lack of studies on the knowledge and attitudes of health care workers towards COVID-19. However, a study of health care workers, mostly Asian and medical students, found that they did not know enough about COVID-19 but had a positive attitude toward preventing COVID-19 transmission (21).

There is currently no vaccine available for Covid 19 in Iran and the only way to combat it is to prevent this disease. Due to the fact that the prevalence of this virus is very high among the community and the strong spreading potential of this virus, especially in health care centers and the death of several medical colleagues as well as the lack of a study on the attitude and knowledge of staff in Iranian nurses, the aim of the study was to compare the knowledge and attitudes of nurses in emergency departments and special wards of medical training centers in Mazandaran province about the new coronavirus in 2020.

## Methods

This descriptive analytical cross-sectional study was performed in multispecialty hospitals in Sari, Iran, from the 28th April 2020 to the 25th August 2020.

In this study, a researcher-made questionnaire related to knowledge and attitude was used for data collection. The questionnaire consisted of 3 parts that addressed people's knowledge and attitudes about the new coronavirus. The first part included demographic data including age, sex, ward, hospital, education, and participants' knowledge of the new coronavirus. The second

section assessed nurses' knowledge by asking questions about cause, incubation period, symptoms, risk group, consequences, source of transmission, prevention and treatment. The validity of questionnaire content was assessed by two methods measuring the content validity index (CVI) and content validity ratio (CVR) and by consulting the expert group (CVI=0.91 and CVR<0.64). In order to validate the questionnaire, 20 participants were given questions as a pilot to determine the level of acceptance and clarity of questions. The reliability of the questionnaire based on Cronbach's alpha was 85%. The scoring system of questionnaire consisted of: 2 points for each correct answer and 1 point for wrong answer. A total of 12 points of the total knowledge scores were considered sufficient. Participants were divided into two groups according to their level of knowledge: sufficient knowledge (points  $\geq 12$ ), and insufficient knowledge (points  $< 12$ ). The third part of the questionnaire evaluated the nurses' attitudes about the new corona using a set of 8 yes/no questions. Participants were divided into two groups according to their level of attitude: sufficient attitude (points  $\geq 6$ ), and insufficient attitude (points  $< 6$ ).

The questionnaire was completed online and self-reportedly. After the research plan was approved by the research ethics committee of Mazandaran University of Medical Sciences, the researchers prepared an online questionnaire in Google Form. After stating the objectives of the study, participants were asked to complete the questionnaire if satisfied. Then, the link of the questionnaire was sent to nursing departments of emergency departments and intensive care of selected hospitals affiliated to Mazandaran University of Medical Sciences. Sampling was census, which was easily accessible and non-random. Samples included all nurses in the emergency and intensive care units of Mazandaran University of Medical Sciences who were willing to participate in this study. Exclusion criteria included those questionnaires that were not completed by 10% of the main questions.

## Statistical analysis

Data were entered into SPSS v.16. Mean and standard deviation and frequency distribution table were used to describe the data. The normality of the data was measured using the Kolmogorov-Smirnov test. To analyze the data from independent t-test (to compare the average knowledge and attitude by gender and ward) and analysis of variance (to compare the average knowledge and attitude by education) and correlation coefficient (relationship between knowledge and attitude and also Age and history with knowledge and attitude) were used and p-value less than 0.05 was considered as significant.

## Results

Ninety-two nurses participated in this study. The mean age of the subjects was  $36.35 \pm 8.81$  years (range 19 to 60) and most of them were female. The demographic information of nurses is shown in *Table 1*. In terms of work experience, they had an average of  $12.10 \pm 8.33$  years of experience.

**Table 1. Demographic information of samples**

Variable	No	%
Gender	Male	15 16.3
	Female	77 83.7
Ward	Special	43 46.7
	Emergency	49 53.3
Educational degree	Bachelor	74 81.3
	Master	14 15.4
	PhD	3 3.3
Source of information about COVID-19	Cyberspace	46 51.2
	Articles	21 23.3
	Television	21 23.3
	Conferences and Seminars	2 2.2

*Table 2* shows the mean and standard deviation of knowledge and attitude scores based on gender, type of department and education degree of nurses. The mean score of nurses' knowledge was  $7.78 \pm 0.85$ , showing they generally had insufficient knowledge (less than average). The mean score of their attitudes was  $6.87 \pm 0.90$ , which is at a sufficient level (above average). The results of the analysis showed that the average knowledge of women was higher than men, but there was no statistically

significant difference. The mean attitude of men was higher than women, however this difference was not significant. In addition, the average knowledge of nurses working in the intensive care unit was higher than the emergency department, but there was no statistically significant difference. The mean attitude of nurses in the intensive care unit was higher than the emergency department but the difference was not significant. In

terms of education level, PhDs had the highest scores of knowledge and attitude, but the mean scores were not significantly related to the level of education.

**Table 3** examined the relationship between knowledge and attitude scores as well as age and history variables with knowledge and attitude. Analytical results showed that there was no statistically significant relationship between any types of the variables.

**Table 2. Knowledge and attitude based on gender, type of department and education**

Variable	Knowledge		Attitude	
	Mean±SD	P-value	Mean±SD	P-value
Gender	Male	7.78 ± 0.89	7.06 ± 0.96	0.99
	Female	7.80 ± 0.85	6.83 ± 0.89	
Ward	Special	7.80 ± 0.75	7.05 ± 0.78	0.37
	Emergency	7.73 ± 0.93	6.73 ± 0.99	
Educational degree	Bachelor	7.79 ± 0.82	6.93 ± 0.90	0.61
	Master	7.57 ± 1.01	6.69 ± 0.85	
	PhD	8.00 ± 1.00	7.00 ± 1.00	

**Table 3. Relationship between knowledge, attitude and the two variables of age and work experience**

	The correlation coefficient	P-value
Knowledge	Attitude	0.01
	Age	0.01
	Work experience	-0.12
Attitude	Age	0.3
	Work experience	0.3

## Discussion

The aim of this study was to compare the knowledge and attitudes of nurses in emergency departments and special wards of training centers in Mazandaran province about the coronavirus in 2020.

Findings of this study showed that the mean of nurses' knowledge was 7.78 ± 0.85 (insufficient knowledge) and the mean of nurses' attitude was 6.87 ± 0.90 (sufficient attitude). Findings of the study indicated insufficient knowledge of nurses that is not consistent with other studies (22-24). Nurses' knowledge about the prevalence of COVID-19 directly affects the outcomes, prevention and control of Covid-19 infection (25). Therefore, since the sampling of this study was performed at the beginning of the Covid-19

epidemic, sufficient training had not yet been provided to staff on a regular basis.

In this study, 51% of nurses obtained their information through cyberspace, about 2.2% of nurses through conferences, 23.3% through articles, and 23.3% through radio and television. In another study, most health care providers obtained their information through media such as radio and television (26, 27). However, it is consistent with a study by Abdul Ghadir that most nurses had acquired their knowledge by the Internet (24). Abdul Ghadir was quoted by the New York Times as saying that Internet traffic in the United States has increased dramatically in recent years due to people searching for information about Covid-19.

In this study, due to nurses' access to cyberspace, even during treatment shifts, is one of the main reasons for obtaining information from the Internet.

The attitude of nurses was 6.87 ± 0.90, which was a sufficient and positive attitude and is consistent with the results of other studies (27, 28). There was no statistically significant difference between knowledge and attitude between emergency and special ward nurses. Considering that a study has not compared nurses so far, this lack of discrepancy between nurses' knowledge and attitude may be



due to the small sample size.

There is no significant relationship between education level, age and background with knowledge and attitude which is consistent with Nemati et al.'s study that the total score of knowledge was not affected by age, level of education and work experience (23).

Our research has some limitations. First, no standard tools for assessing nurses' knowledge and attitudes have already been approved in COVID-19. Therefore, WHO, CDC guidelines and COVID-19 reports have been used. Second, knowledge and attitude were examined in the teaching hospitals of Mazandaran University of Medical Sciences and the results of this study may not reflect the nurses in the whole country. However, due to the fact that the web-based survey was conducted and the response rate is low (30%), this generalization limits the survey.

### **Conclusion**

The level of nurses' knowledge was insufficient and the level of their attitude was sufficient. Therefore, it is recommended that health policy makers and nursing managers hold training classes and webinars to increase the level of awareness among nursing staff.

### **Ethical standards statement**

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### **Conflicts of interest**

The authors have stated that no conflict of interest occurs.

### **Authors' contributions**

All authors have intellectually committed to the study design and process. The final manuscript was revised and accepted by all authors.

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