

# Research Paper: The Attitudes, Knowledge and Performance of Ilam Nurses Regarding Disaster Preparedness



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## ABSTRACT

**Background:** Currently, hospital preparedness is an essential element for disaster management. Accordingly, the aim of this study was to examine the attitudes, knowledge and performance of nurses with respect to crisis management.

**Materials and Methods:** This descriptive cross-sectional study was undertaken among 112 nurses working in three hospitals affiliated to the Ilam University of Medical Sciences, Iran. A questionnaire designed according to previous studies was used to identify demographic information, nurses' attitudes (11 questions), knowledge (6 questions), and performance (6 questions) regarding hospital preparedness during disasters. The data were analyzed using SPSS version 19.0.

**Results:** The overall scores for attitude, knowledge, and performance of nurses were 27.35, 9.5, and 3.88, respectively. There was a significant correlation between educational degree and nurses' attitude ( $P=0.027$ ). Also, there was a significant relationship between work experience and nurses' attitude regarding hospital preparedness during disasters ( $P=0.022$ ).

**Conclusion:** Although most of the nurses had a fair attitude regarding hospital preparedness during disasters, their knowledge and performance were poor.

## 1. Introduction

Among various human knowledge fields, the knowledge of management may be considered as the most important, complicated, and difficult knowledge. This is because, on the one hand, this knowledge deals with the management, the form, and the compositions and activities of organizations, but on the other hand, it deals with the agents creating an organization, i.e. the human in-

dividuals. According to Gulick, management functions include planning, organizing, staffing, directing, coordinating, reporting, and budgeting [1].

Like any other profession, the nursing profession involves making necessary changes to the pattern of care for patients along with the incorporation of new knowledge and technologies. Thus, the nursing management can effectively overcome many difficulties and obstacles in the working environments by observing and

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applying management principles. However, improper nursing management can diminish the quality and skills of nursing managers in providing health care services at the community level.

As mentioned previously in different studies, management can be considered as an important activity in the human social life due to the technological advances in medical sciences and the imperative need of management. Currently, this has led to the realization of many missions and goals of organizations, optimal utilization of available resources and facilities, realization of human potentiality in terms of ability and talent into actuality, and better performance of managers with respect to planning, organizing, directing and decision-making, monitoring and controlling. The combination of these activities forms management and helps in coordinating and achieving goals [2, 3].

Crises have negative impacts on the general health and well-being of the affected population; so, providing health care is essential to survival. Therefore, if the health care organizations face a crisis due to the lack of planning to cope with the crises, both the organization and the whole crisis-hit community may get severely affected [4, 5]. In this regard, attracting the highest health capital of the country, hospitals as the frontline of treatment are the most operational units of the health system [6]. The main objective of developing a crisis management plan for hospitals is providing fast and timely health care services to reduce mortality and morbidity caused by unexpected disasters [7, 8].

According to Daneshmandi et al.'s research, the disaster readiness rate of the training units of hospitals was found to be good (70%). They also emphasized that in spite of the importance of training in promoting the level of knowledge and the ability of staffs in confronting critical conditions, the organizational structure of training units of hospitals was not clear [9]. Moreover, they asserted that no training posters and brochures about the unexpected disasters were published and installed and that there was no instruction for practicing and enhancing hospital preparedness [9].

Furthermore, Hajavi et al. studied the medical records of staffs in various fields of crisis management. Their results showed that the personnel had moderate awareness of legal issues in crisis management and weak awareness of human resource management. They also showed that the personnel's awareness of the safety and equipment used in dealing with the crisis, observing the risk acceptance principles in confronting crises,

and the prior preparedness of units for crises was very weak [10]. However, Ilam is a disaster-prone province in Iran having witnessed numerous occurrences of floods and earthquakes; hence, undertaking a research on the nurses' knowledge, attitude, and performance regarding their preparedness for confronting critical conditions in the hospitals of this province seems to be necessary. The results of the current study may help managers to plan and nurses to increase their preparedness in order to prevent or mitigate the effects of unexpected events.

## 2. Materials and Methods

The present research is a descriptive cross-sectional study conducted from June 2015 to July 2015. The population under the study consists of nurses working in the teaching hospitals of Ilam. Using census sampling, 112 nurses willing to cooperate in this investigation were selected as the sample of the study. To collect data, a researcher-made questionnaire was used. It was designed based on the relevant literature and the viewpoints of related specialists.

The questionnaire consisted of two parts. The first part was about the nurses' demographic information such as age, gender, education level, work experience, workplace, and the number of working shifts per week. The second part consisted of a questionnaire for assessing the knowledge (6 questions), attitude (11 questions), and performance (6 questions) of nurses regarding the preparedness of hospitals for critical conditions. Regarding the grading mode of preparedness questions related to the nurses' attitude towards the preparedness of hospitals for critical conditions, each question included three options consisting of Agree (3 points), Do not know (2 points), and Disagree (1 point) options. The overall score of this section was in the range of 11-33 points and was classified into three sub-categories (i.e. low scores (11-18 points), average scores (19-26 points), and high scores (27-33 points)).

In the questions related to the knowledge of nurses regarding the preparedness of hospitals for critical conditions, each question included three options (i.e. Agree (3 points), Do not know (2 points), and Disagree (1 point) options). In total, the score of this section was in the range of 6 to 18 and was classified into three sub-categories (i.e. low scores (6-9 points), average scores (10-14 points), and high scores (15-18 points)).

The question section related to the performance of the nurses regarding the preparedness of hospitals for critical conditions included three descriptive questions, which

were not assessed due to the plurality of answers by the study samples, and 3 three-choice questions in which the choices included Agree (3 points), Do not know (2 points), and Disagree (1 point) options. In total, the score of this section was in the range of 3 to 9 and was classified into three sub-categories (i.e. low scores (3 points), average scores (4-6 points), and high scores (7-9 points)).

To confirm the validity of the questionnaire, the content validity method was used. Thus, the questionnaire was given to 10 experts in the field of nursing and crisis management and their comments were considered to finalize the questionnaire. The reliability of the questionnaire was determined based on a preliminary study on 10 nurses through the test-retest method. Also, the Cronbach's alpha coefficient was 0.73.

After obtaining the approval from the ethics committee, the informed consents were collected from all the participants. The researcher personally referred to the hospitals in different days and work shifts and distributed the questionnaire among the participants. After they responded the questionnaires, they were collected. Data analysis was performed using the SPSS (version 19). Descriptive statistics (i.e. frequency, mean, standard de-

viation) and inferential statistics (i.e. independent t-test and one-way ANOVA) were used to determine the relationship between the nurses' attitude, knowledge, and performance and demographic characteristics. The significance level of  $P < 0.05$  was considered for all the tests.

### 3. Results

The results showed that 56 participants (50%) were male and 56(50%) were female. In addition, 106 nurses (98.2%) worked in the clinical unit of the hospitals and 6 nurses (1.8%) worked in the administrative unit of the hospitals. Most participants had Bachelor of Science in nursing degrees (85%) and had work experiences of 5 to 10 years (33%). Other demographic characteristics of the participants are depicted in Table 1.

In Table 2, the classification of nurses' scores on knowledge, attitude, and performance regarding the preparedness of hospitals for critical conditions along with the percentage obtained according to the classification of scores are presented. Although attitude is a qualitative factor, knowledge and performance are quantitative factors. Therefore, in the present study, it is attempted to utilize

**Table 1.** Demographic characteristics of the study samples

Demographic Variables	Sub-Categories	No. (Percent)
Age	22-29.9 years	48(42.9)
	30-39.9 years	42(37.5)
	40≤	22(19.6)
Gender	Male	56(50)
	Female	56(50)
Marital status	Single	30(26.8)
	Married	82(73.2)
Degree of education	Diploma in paramedicine	10(8.9)
	Bachelor of nursing	96(85.7)
	Master of nursing	6(5.4)
Work experience	<5 years	34(30.4)
	5.9-9 years	38(33.9)
	10.9-14 years	16(14.3)
	15≤	24(21.4)
Workplace	Administrative unit	6(1.8)
	Clinical unit	106(98.2)
Number of shifts per week	<7 shifts	28(25)
	7 shifts	28(25)
	>7 shifts	56(50)

**Table 2.** Classification of knowledge, attitude, and performance scores of nurses regarding the preparedness for critical conditions

Areas	Low Score	Average Score	High Score
Attitude scores of nurses	0%	34%	66%
Knowledge scores of nurses	59%	26.7%	14.3%
Performance scores of nurses	55.4%	41.1%	3.5%

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questions on attitude that can be scored quantitatively and interpreted like those on knowledge and performance.

The results indicate that there is a significant relationship between the nurses' education level and their attitude scores ( $P=0.027$ ); thus, the higher the education level of the personnel, the higher is the score of knowledge. In addition, there is a significant relationship between their work experiences and attitude scores ( $P=0.027$ ); in other words, the more the work experience and expertise, the higher is the attitude score. However, there

is no significant statistical relationship between knowledge scores and demographic variables ( $P<0.05$ ). The research results also show that there is a significant relationship between the nurses' education level and their performance scores ( $P=0.027$ ). Therefore, the nurses with higher education levels achieve higher performance scores (Table 2).

In Table 3, the nurses' obtained scores are presented in terms of sub-categories of demographic variables. As shown in this table, the age group of 22-29.9 years has

**Table 3.** Comparing knowledge, attitude, and performance scores of nurses in terms of demographic sub-categories

Demographic Variables	Sub-Categories	Mean of Attitude Scores	Mean of Knowledge Scores	Mean of Performance Scores	Total Mean Scores
Age	22-29.9 years	28.08	8.83	3.83	40.47
	30-39.9 years	21.85	9.71	3.9	35.46
	40≤	26.45	10.54	3.81	40.80
Gender	Female	27.71	10.10	3.78	41.59
	Male	27	8.89	3.92	39.81
Marital status	Single	28.26	7.86	3.73	39.85
	Married	27.51	10.09	3.9	41.50
Education degree	Diploma in paramedic	26	9.4	3.4	38.8
	Bachelor of Nursing	27.33	9.22	3.87	40.42
	Master of Nursing	30	14	4.33	48.33
Work experience	<5 years	28.35	8.47	4.11	40.93
	5-9.9 years	27.73	9.57	3.78	41.08
	10-14.9 years	26.25	11.5	3.87	41.62
	15≤	26.41	9.5	3.58	39.49
Workplace	Administrative unit	29.66	10	3	42.66
	Clinical unit	27.19	9.5	3.92	40.61
No. of shifts per week	<7 shifts	27.5	9.5	3.5	40.5
	7 shifts	27.14	10.85	3.78	41.77
	>7 shifts	27.39	8.82	4.07	40.28
Job title	Charge nurse of the ward	27.42	9.1	3.80	40.32
	Nurse manager of the ward	27.8	12.6	4.6	45
	Supervisor	26	10.25	3.5	39.75

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**Table 4.** Mean of attitude, knowledge, and performance scores of the nurses regarding the hospital preparedness for critical conditions

Questionnaire's Dimensions	Lowest Score	Highest Score	Mean	Standard Deviation
Attitude	21	33	27.35	2.39
Knowledge	6	18	9.5	3.78
Performance	3	7	3.88	1.16
Total	30	58	40.73	7.33

achieved the highest score (40.47 points) among other age groups. Also, the mean of scores obtained by the male nurses is higher than that of the female nurses. The mean and standard deviation of knowledge, attitude, and performance scores of the nurses regarding the preparedness of hospitals for critical conditions are presented in Table 4. In total, the comparison of scores shows that the total scores of the age group of 40 years and above, females, and married nurses were higher.

#### 4. Discussion

According to the findings, the scores obtained by the participants were divided into three categories: high scores (15-18 points), average scores (10-14 points), and low scores (6-9 points). In the case of knowledge, 59% of the participants got low scores (6-9 points), 26.7% got average scores (10-14 points), and 14.3% got high scores (15-18 points). In Imani et al.'s study, about half of the nurses had intermediate knowledge regarding crisis management. Their study showed that it is better to elevate the nurses' knowledge to a higher level [11]. But their study contradicts the findings of the present study because more than half of the nurses of the present study obtained low scores on the knowledge variable. However, it is worth mentioning that some factors such as participants and time and place of the study are different in both of the studies.

In the case of the performance of the nurses, 55.4% of the participants got low scores (3 points), 41.1% got average scores (4-6 points), and 3.5% got high scores (7-9 points). But in a study carried out by Daneshmandi et al. on the assessment of the level of preparedness for disasters in some selected hospitals of Iran, 7-0% cases showed a good level of preparedness in the training units [9]. But it is inconsistent with the results of our study due to certain reasons such as not holding educational classes and paying no attention to this issue by officials. Regarding holding preparedness maneuvers, the find-

ings showed that the preparedness maneuvers were seldom held. On the contrary, Malekshahi stated that only 3.58% of his research community participated in the maneuvers. Hence, the results of Malekshahi's study are not comparable to those of the present study. It is worth noting that the ongoing training of the nurses and holding preparedness maneuvers at least annually might be a top priority for assessing and improving the quality of crisis management programs. For sure, training should not be limited to attending workshops and conferences of crisis management. Thus, it is suggested that hospitals should assess the preparedness of their personnel by simulating and artificially creating critical conditions, and from this adventure, the personnel can experience how to deal with crises when they happen [12].

Iran is a disaster-prone country; 31 of the approximately 40 known natural disasters occur in Iran. Moreover, 90% of the population in Iran is exposed to the risk of massive earthquakes and floods [13]. Among the several components of unexpected disaster management of the health care providers, health care systems, especially hospitals, play the greatest and most important role as the basic units in providing services in the initial phase of the disaster. Health care services in natural disasters are the main source of human survival. Catastrophes and disasters have a significant impact on the public health and welfare of the affected population. Previously, it was believed that the performance of health care providers is limited to the period after the disasters. However, due to the lack of coordination between the governmental and nongovernmental organizations involved in health care services in the subsequent stages of the disasters, it is considered essential to work on the disaster preparedness of nurses before the disasters to provide better health care services [7].

The importance of this issue has resulted in elaborate research on the topic. A study examining the relationship between the hospitals' preparedness and the fatality rates caused by catastrophes and disasters in hospitals

showed that the US hospitals that had high preparedness index encountered minimal fatality rates (124 deaths per 12881 injuries transferred to the hospitals). The results also showed that Armenia with low preparedness index had high fatality rates (25000 deaths per 40,000 injuries transferred to the hospitals). In Kobe, Japan, in which the hospitals had moderate preparedness, there were 4572 deaths among the 19249 injuries (7 and 13).

A study investigating the effects of a disaster nursing education program on the enhancement of nurses' preparedness in the hospitals affiliated to Tehran University of Medical Sciences in 2004 showed that 62% of the studied hospitals had no disaster committees. Moreover, in 63% of cases, no training courses for managers and staffs were held to confront disasters. Besides, 85% of the authorities of the units of the hospitals had not participated in any training program [13]. Thus, these results are consistent with the results of the present study. It is asserted that there is still a lack of appropriate solution for dealing with incidents and disasters in Iran. It is recommended that special attention should be paid to this issue.

In a study done in the hospitals of California, it was revealed that 99% of the hospitals participating in the study utilized disaster preparedness programs and 95% of them had crisis planning committees. Besides, more than 9 out of 10 participating hospitals had mutual cooperation with pre-hospital emergencies. Almost all the hospitals declared disaster programs were widely used for their personnel with instant access to them. A total of 83% of these hospitals reported that the medical and management staffs had checked the programs. In addition, 96% of the hospitals annually practiced the preparedness programs for confronting disasters in maneuvers. The results of this study, which was conducted abroad, is not consistent with the results of the present study because the current study had no crisis committees and weekly maneuver exercises to evaluate the strengths and weaknesses of the hospitals in dealing with crises and disasters. Therefore, it is recommended that the authorities should pay special attention to the above mentioned issues.

## 5. Conclusion

Most of the scores of nurses regarding their attitude towards the hospital preparedness for critical conditions are high. But the knowledge and performance scores of nurses on the hospital preparedness for critical conditions are low.

The present preparedness questionnaire is conducted for the first time, so the results of the current study can-

not be compared to those of other studies. Also the questions about the hospital preparedness of the nurses for critical conditions are descriptive and are about the type of training maneuvers, the way the nurses are trained, and the crisis programs employed. Thus, in the case of a positive answer, the nurses should describe their answers. But all of them asserted that there were no ongoing maneuver and training and no updated crisis programs at all.

Since the questionnaire is prepared for the first time, it is recommended that more research should be done in other hospitals and with different sample sizes. Furthermore, regarding the attitude of the nurses, it is recommended to run crisis committees so as to provide necessary information to the personnel. Since most of the nurses obtained low scores in knowledge, it is suggested to hold training courses in the field of crisis management to extend their knowledge. And, finally, regarding the performance of the nurses, it is recommended that officials responsible for planning in hospitals should hold necessary maneuvers, clarify the crisis management planning for nurses, and hold training courses once more to update the personnel's knowledge each month.

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## Conflict of Interest

The authors declared no conflicts of interest.

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