

Toward having safe environment in critical care units: a multisite study

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Abstract

Objective: This study was conducted to assess the safety culture in Jordanian intensive care units.

Design: The study was descriptive, cross-sectional design, and multisite.

Setting: The Safety Attitude Questionnaire-Intensive Care Unit (SAQ-ICU) version was utilized. Three hundred completed questionnaires were returned from four critical care units.

Results: The results offered a fundamental element for further research on safety matter in

Jordanian ICUs. Many recommendations were highlighted by the Jordanian nurses in order to improve the safety culture in the ICUs including standard nurse-patients ratio, good communication and collaboration between health professionals, enhance continuing education and training. To the knowledge, this is the first study conducted in Jordan using the SAQ to examine nurses' safety culture attitudes in Jordanian ICUs.

Conclusion: The present findings provide a baseline for future research aiming for improving the quality of care in Jordanian ICUs.

Key words: Safety, ICU, safety attitudes, SAQ.

Introduction

Patient safety is a growing and interesting matter in the health care systems. The statistics indicate that adverse event is about 10% of the total admission in developed countries and lesser in the developing countries. (1)

Safety culture's definitions focused on the competencies, value, attitudes of the organization, (2) and effective communication between the professionals. (3)

Safe environment impact has been studied previously. The research on well-developed high stand-

ard hospital links positively between safe environment and patient's outcome, lower mortality rate, and nurses' satisfaction. (4-7)

The results of previous investigation revealed that there are many factors that affect the clinical practice in the health setting such as safe climate, moral aspects, staff number, support from the administration, and training rhythm. (8) In the same vein, other factors have been emerged including teamwork climate, safety climate, and perceptions of management, job satisfaction, working conditions, and stress recognition. (9)

Health care professionals and industries sharing the importance of assessing the safety in health institutions, and highlight the link between quality of care and safe environment. (10) The challenge and effort to construct safer environment in the health care settings have been recognized globally as the main outcome is patient safety. The developing countries such as Australia, Canada, and the USA responded to this critical topic, and several studies were conducted to investigate this important issue. (11)

In the developed countries such as Jordan, to date, limited information about safety aspect in Jordanian Intensive Care Units (ICUs) are available, and

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there is lack of understanding regarding factors that affecting the safety concept from nurses' perception. Having such baseline data will enable the investigators and policymakers to build conceptual framework for improvement plan. Thus, the aim of this study was to establish a baseline understanding of the safety culture that exists in a sample of Jordanian ICUs.

Material and methods

A descriptive, multisite, cross sectional design was used.

Sampling

Data was collected from four different regional hospitals including private and public hospitals to achieve full picture about study variables. After ethical permission was obtained from each unit, initial contact with the units was made to explain the purpose and process of the study.

Data collection

A package containing an information sheet, consent form, and survey instrument was given to each eligible participant. Consent was obtained to participate in the study and to access their medical records. Research assistant collected the questionnaires from participants individually.

Instrument

The Safety Attitude Questionnaire (SAQ) (ICU version) was used to measure safety culture in this study. It contained demographic questions, 60 items measuring six domains (i.e. six subscales) of safety culture, and three open questions for improving patient safety. A description of these six subscales is provided in **Table 1**. Five-point Likert responses to the subscales range from strongly disagree to strongly agree, or from very low to very high, depending on the subscale.

Data analysis

Descriptive analysis including means, standard deviation (SD) and percentages were calculated using SPSS version 23. Sexton et al (2006) instructions for SAQ-ICU analysis and calculation were followed. In addition, content analysis was employed to identify the themes and sub-themes emerged from open-ended questions. (12)

Results

In all 350 questionnaires that were distributed, 300 questionnaires were completed and returned (response rate was 85.7%) from different sites. The mean age of respondents was 28.1 years (SD

23.46), work experience in ICU was ranged from 1 to 14 years (mean was 4.43 years and SD was 2.96). Majority of respondents were female (65%). **Table 2** details the mean (SD) for the six-safety culture sub-domains. The highest mean per cent positive score was 87.2 for the job satisfaction subdomain, and lowest mean per cent positive score was 77.4 towards management perceptions.

To find out the relationship between the job type (charge nurse or bedside nurse), ICU type (medical, surgical, or both) and positive attitude towards culture safety, **Table 3** summarizes these findings. Several factors have been emerged from the open-ended questions. These factors affecting the safety concept in ICU including training the staff of new technical equipment, transfer between the inpatient and outpatient setting, staff shortage, communication between professionals, and team collaboration. **Table 4** represents these themes.

Discussion

Intensive care unit's environment is considered a stressful, complicated, and very difficult environment for the health professionals and patients as well. Working in ICU requires multidisciplinary team such as physicians, nurses, and others. (13) Many factors increase the risk for medical errors in the ICU such as workload, time pressure, and high technology. (8) ICU safety culture was intensively studied and investigated in the western culture using SAQ, which has been developed by Sexton in 2006. According to the researcher knowledge there is no study conducted to assess the safety culture among Jordanian ICUs. We examined 300 participants from different health settings both governmental and private. The results showed that SAQ was well adapted. Valid and reliable among Arabic culture as well as western culture.

The results of the current study are congruent and support the findings of previous studies that have been conducted in the neighborhood countries such as Saudi Arabia, (8) conducted similar study to assess the safety culture among Saudi ICUs. Their results showed that nurses from different settings such as medical, surgical, and pediatric ICUs had low safety culture. Significantly, the results from the current study showed that nurses had low perception to express their comfortable talking about their concerns when they have problems related to the care of patients.

The results of the current study indicated that nurses had highest score related to job satisfaction. These results are consistent with the previous results by other researchers. (14) Many recommendations were highlighted by

the Jordanian nurses in order to improve the safety culture in the ICUs including standard nurse-patients ratio, good communication and collaboration between health professionals, enhance continuing education and training. These recommendations are consistent with other nurses from different cultures such as Australia. In their study, Chaboyer and colleagues (2013) identified that managerial support, equality, and feedback had significant impact on the ICUs safety climate.

In the current study, the ICU nurses highlighted that workload and inappropriate ratio between nurse and patient had negative impact on the safety climate and might lead to decrease their job satisfaction and mistakes existence. This findings support the results of Hackner et al (2009), as their results indicated that direct care provided to the patient improve their condition and decrease the complication that might increase the mortality rate. (15)

Carayon and colleagues (2005) reported that no difference between nurses category and safety-culture perception. (16) In the same vein, Chaboyer et al (2013) reported the same results. The findings of the current study supported these findings. These results might relate to lack of charge nurse position, in fact, senior nurse playing the role of charge nurse in the evening and night shifts. The current study was conducted utilized a cross-sectional design, therefore, the results may not represent the entire Jordanian ICUs nurses. In addition, the study was conducted only in four Jordanian hospitals; this might be limitation to generalize the results.

Conclusion

Baseline assessment of safety culture is considered an important matter in identifying the strength and weak element that might affect the quality of care provided to the patients in critical care units. Hospitals' managers should pay more attentions to these factors if they are willing to provide optimal care for the patients.

Conflict of interest

All authors declare that they have no conflict of in-

terest in the current study.

Ethical approval

Ethical approval was obtained from the ethical committee at Al-Zaytoonah University of Jordan to conduct the current study.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Summary statement

What is already known about this topic

- Adverse events in hospitals are increasing in the developed countries to counter 10% of total admission
- Safety concept in critical care units is depending on the competencies of the health professionals
- Limited knowledge about the safety culture among Jordanian critical care units

What this paper adds?

- The present study addressed the importance of safety assessment in Jordanian critical care units
- The findings of the present study identified the specific recommendations and factors that directly affecting the safety principle
- This present study was considered a baseline study for future research investigating the safety in critical care units

The implications of this paper

- The findings of this study highlight the need to pay attention for the factors that affecting the safety culture in Jordanian critical care units such as nurse-patient ratio, communication channels, and rhythm between health professionals
- Special attention should be paid to importance of improving safety culture as this will lead improving patient care and outcome

Tables 1. SAQ subscales

Subscale	Definition
Teamwork climate	Perceived quality of collaboration between personnel
Job satisfaction	Positivity about the work experience
Perceptions of management	Approval of managerial actions
Safety climate	Perceptions of a strong and proactive organizational commitment to safety
Working conditions	Perceived quality of the ICU work environment and logistical support (staffing, equipment, etc.)
Stress recognition	Acknowledgement of how performance is influenced by stressors

Legend: SAQ=Safety Attitude Questionnaire; ICU=Intensive Care Unit.

Table 2. Safety culture domains- positive score (N=300)

Domain	Mean	SD	Median	Mean % positive
Teamwork climate	4.25	3.01	4.00	79.5
Safety climate	3.95	2.78	3.00	84.0
Job satisfaction	3.80	3.01	3.00	87.2
Stress recognition	3.35	2.10	3.50	81.5
Perceptions of management	2.95	2.01	3.00	77.4
Working condition	3.62	3.23	3.50	81.5

Table 3. Safety attitudes in relationship with Job type and ICU type (N=300)

	Team-work climate Mean (SD)	Safety climate Mean (SD)	Job satisfaction Mean (SD)	Stress recognition Mean (SD)	Management perceptions Mean (SD)	Working conditions Mean (SD)
Job category						
1. Charge nurse	68.25 (13)	67.1 (13)	71.3 (16)	58.2 (11)	46.3 (6)	62.1 (12)
2. Bedside nurse	67.45 (60)	60.1 (77)	70.3 (77)	57.3 (39)	51.4 (23)	65.3 (66)
ICU type						
1. Medical	63.2 (6)	57.1 (1)	72.3 (11)	63.1 (6)	49.2 (1)	64.2 (10)
2. Surgical	75.2 (4)	71.2 (4)	74.3 (5)	72.3 (5)	61.5 (4)	72.3 (5)
3. Mixed	68.2 (66)	62.3 (40)	70.1 (82)	57.2 (42)	51.1 (25)	64.8 (64)

Table 4. Nurses' recommendations to enhance safety climate in ICUs

Themes	Quotations
Training of modern/high technical equipment	Training of new implemented equipment play a pivotal role in decreasing mistake in ICU
Transition between the inpatient and outpatient settings	Lack of information during handover between inpatient and outpatient settings increasing the errors especially in medication and follow-up investigation
Staff shortage	Lack of staff number increases the nurse-patient ratio
Health professional's communication	Poor communication between nurse and physician leads to error in providing the care plan
Team collaboration	Lack of team work sometimes leads to delay in providing essential treatment to the critical patient
Standard job description	Doing non-nursing tasks sometimes leads to error in performing certain procedures that should be done by physician

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