

## The perspectives toward patient safety culture among nurses staff in educational hospitals in Gorgan in 2011

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### Abstract

**Background and purpose:** The basic responsibility of nurses is to maintain patient safety including notifying patients and colleagues about risk and risk reduction methods, supporting the patient safety and reporting events to a responsible person. Without creating a safety culture in all health facilities a sustainable development in the patient care do not occur. This study aims to determine the patient safety culture in teaching hospitals in Gorgan.

**Materials and methods:** In this cross-sectional study, a target group includes nurses at 5 Azar, Taleghani and Deziani Hospitals in Gorgan in 2011. The study population included 348 nurses in these hospitals. The data collection instrument was a questionnaire with 43 questions. Statistical tests were ANOVA and T-Test.

**Results:** Twenty four percent of nurses believed patient safety culture is weak, 46.8% of them, moderate and 30.7% good. The weakest dimension was non-punitive response to error and strongest dimension was organizational education. Statistic test showed significant relationship between patient safety culture and experience ( $p= 0.021$ ), employment status ( $p= 0.001$ ), hospital ( $p= 0.001$ ), ward ( $p= 0.003$ ).

**Conclusion:** The status of the patient safety culture was related moderate from the nurses' view point but it is necessary it improved in dimensions of the non-punitive response and the staff workload to note that it is highly recommended to take some actions in this regard.

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**Key words:** Medical Error, Patient Safety, Patient Safety Culture, Nurse

## *Archive of SID* **1. Introduction**

Patient safety refers to prevention of damage caused by medical errors and malpractice (1). The report of the American Medical Institute in 2000 attracted the attention of government and people to medical errors, and changed the common belief that professional mistakes occur rarely by healthcare teams (2). Medical errors constitute one of the five most common causes of death in the United States, and occur at an unacceptably high level. The World Health Organization estimates that each year tens of millions of people suffer from debilitating injuries or die as the direct result of unsafe therapy interventions, with the frequency of medical errors reaching 7.5% (3). Nevertheless, almost 50% of these events are preventable (4). Given the detrimental effect of medical errors on patients' health, this has become a concern of healthcare customers (5). Numerous studies in different countries have indicated that 2.9%-61.1% of patients have experienced at least one adverse effect (6-14). According to the results of Harvard Clinical Function study, adverse clinical events occurred in 3.7% of admissions in New York in 1984, with the frequency of events caused by negligence reaching 1% (15,16). According to the American medical council, medical errors account for 44000-98000 deaths in the US each year (17). It is also estimated that the frequency of death caused by medical error exceeds that of cancer, motorcycle accidents or AIDS (18).

Lack of a valid registry system for medical errors in Iran hinders any statistics; however, the situation does not appear to be better than the worldwide figures (2). Medical errors and malpractice are very costly for patients and the healthcare system (19). A study by Jane et al indicated that the direct and indirect costs of malpractice exceed those of HIV/AIDS (20). Concern raised by these reports attracts the attention of governments and healthcare personnel worldwide to strategic and strong implementation of patient safety programs and highlights the risks of injuring patients (21). Patient safety culture is described as the common values, beliefs, behaviors, perceptions and attitudes and healthcare personnel, and it may be considered as the first priority and common value in an

organization (1). A culture depicts how everything is done in a specific environment. In order to establish safety culture in a healthcare organization, the first step would be to evaluate the status quo. Such an evaluation helps us become aware of the managers' perception and behaviors about safety and recognize the most inappropriate sections requiring corrective measures (3). An organization with an open safety culture acts fairly towards its personnel in case of adverse events. Such organizations learn from mistakes, and the causes of problems are sought in the system rather than the individuals. Patient safety culture provides a sophisticated framework, the dimensions of which guide personnel's behavior towards patient safety (19). It is believed that hospitals need to implement patient safety culture in order to improve quality and safety in healthcare, and this may be accomplished through structural interventions in personnel.

According to the American Clinical Institute, the presence of a safety culture leads to adverse events reported without scolding the personnel, thus preventing future systemic and human errors and improving patient safety. Therefore, if hospitals wish to enhance patient safety, they need to learn about patient safety culture (4). According to a report by the Agency for healthcare quality and research, patient safety culture requires a correct understanding of values, beliefs, norms, and what matters for an organization, and what attitudes and behaviors towards patients have been supported, implemented or expected. Thus, it is essential for healthcare organizations to evaluate patient safety culture to improve patient safety in healthcare procedures (19).

Nursing functions are becoming more extensive and complex each day, and nurses assume a major role in provision of personal and social health. Nurses are widely involved in patient care. Night shifts, long working hours, and unpredictability of their activities increase the risk of exhaustion. This compromises their physical function and capacity, thus raising the risk of errors (22). According to the international council of nurses, patient safety is necessary for improvement of nursing quality and all nurses are heavily

responsible for maintaining patient safety in all aspects, including notifying the patient and colleagues about risks and ways to reduce them, supporting patient safety and reporting adverse events to the authorities (23). Monitoring patient safety is a current challenge of public hospitals. Patient safety is improving on a sluggish scale as there is no public consensus for realizing patient rights (3). The extension and gravity of medical errors necessitates further studies focuses on patient safety (1).

Previous studies on safety culture revealed different results. It was more than 50% according to Hannah et al (24), 85.5% according to Fitzpatrick and Scherer (25), 38% according to Hellings et al (26), 43/3% according to Sonon and Castle (27), and 25.9% according to Abdi et al (28). Considering the importance of safety culture, we undertook the present study to determine patient safety culture from the nurses' point of view in teaching hospitals of Gorgan. The results may provide a clearer understanding of safety culture and patient rights and managers may use these data to improve the appropriate culture in hospitals.

## 2. Materials and Methods

This is a descriptive, analytical cross-sectional study conducted in 2011 in teaching hospitals of Gorgan. The study environment consisted of 5 Azar, Taleghani and Deziani hospitals. The study population included all nursing staff in these hospitals. 348 nurses, recruited through simple randomized sampling, participated in the study (with a response rate of 0.95). Data was collected using a questionnaire developed by the American agency for healthcare research and quality, titled "evaluation of patient safety culture in hospital" (29). The questionnaire consists of two sections: the first sections deals with demographic information of the participant and the second addresses patient safety culture. The demographic information included age, work experience, sex, employment status, education level, and the employing ward/site. Questions in the second section dealt with general understanding of patient safety by staff (questions 1-4), expectations and

understanding of the ward manager regarding patient safety improvement (questions 5-8), organizational education or ongoing improvement (questions 9-11), teamwork within units (questions 12-15), open and unambiguous relations (questions 16-18), feedbacks and communications related to medical errors (questions 19-21), non-punitive reaction to mistakes (questions 22-24), staff's workload (questions 25-28), hospital manager's support of patient safety (questions 29-31), teamwork between different units in hospital (questions 32-35), patient transfer between wards (questions 36-39) and frequency of reported events (questions 40-43), yielding a total of 43 questions in 12 domains. The answers to questions in these 12 domains were graded from "I Agree Completely", through "I Agree", "No Comment", "I Disagree" and "I Disagree Completely". In questions with a positive meaning, the answers were scored from 5 to 1 for "I Agree Completely" through "I Disagree Completely", and the inverse was true for questions with a negative meaning. In order to categorize, the range from the highest to the lowest score was divided into three situations: below 40% of the maximal score would be Poor, 40%-60% of the maximal score would be Intermediate, and 60%-100% of the maximal score would be good. The questionnaire has been validated for the Iranian culture by Tehran University of Medical Sciences through agent analysis (30).

Smith published a report, assessing and confirming the claim made by the developers of the tool that it assesses patient safety culture rather than the attitude of the staff alone (31). In this study, the validity of the questionnaire was confirmed by experts and authorities on the subject, and its reliability was acceptable with Cronbach's alpha equal to 0.87. The project was approved by the Ethics Committee at Golestan University of Medical Sciences. The participants were informed about the objectives of the study, and their verbal consent was obtained.

Subsequently, the questionnaires were distributed anonymously among the personnel, and the nurses completed them in a self-administered fashion. Data were analyzed using ANOVA and t-test on SPSS version 16.

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3. Results

The mean age of the nurses in this study was 34.08 ± 7.02 years, and most of them (27.3%) were aged 32-36 years. The mean work experiences was 9.41 ± 6.7 years, with most nurses (37.6%) having 6-10 years of experience. 88.8% of nurses were women and the rest were men. Most respondents had bachelor’s degree (97.7%), were employed in 5 Azar hospital (64.9%), were under contract (37.1%) and worked in the intensive care unit (21.6%).

Among domains in this study, the supervisor’s expectations and perception of improving patient safety, organizational education or continuous improvement, teamwork within units, patient transfer between wards, and determining the frequency of reported events were in the Good category. The Average category consisted of staff’s overall perception of patient safety, open and clear communications, feedback and communications related to medical errors, hospital manager’s support of patient safety, and teamwork between different hospital units. In addition, no punitive response to errors and the staff’s workload fell in the Poor category (Table1).

Table 1. Distribution of frequency of dimensions of patient safety culture from the viewpoint of nurses participating in this study

| Domain   | Mean   | Standard deviation | Medium | Minimum score | Maximum score | Category |
|--|--------|--------------------|--------|---------------|---------------|----------|
| Staff’s overall perception of patient safety                           | 13.06  | 2.45               | 13     | 4             | 20            | Average  |
| Supervisor’s expectations and perception of patient safety improvement | 15.59  | 2.38               | 16     | 8             | 20            | Good     |
| Organizational education or continuous improvement                     | 12.47  | 1.56               | 12     | 6             | 15            | Good     |
| Teamwork within units  | 15.25  | 2.88               | 16     | 6             | 20            | Good     |
| Open and clear communications  | 9.63   | 2.23               | 10     | 3             | 15            | Average  |
| Feedback and communications related to medical errors                  | 10.78  | 1.91               | 11     | 3             | 15            | Average  |
| Non-punitive response to errors  | 6.96   | 2.25               | 7      | 3             | 13            | Poor     |
| Staff’s workload   | 10.46  | 2.82               | 10     | 4             | 20            | Poor     |
| Hospital manager’s support of patient safety                           | 9.71   | 2.32               | 10     | 3             | 15            | Average  |
| Teamwork between different hospital wards                              | 12.22  | 3.36               | 12     | 4             | 20            | Average  |
| Patient transfer between wards   | 14.96  | 2.51               | 15     | 6             | 20            | Good     |
| Determining the frequency of reported events                           | 14.25  | 3.15               | 15     | 4             | 20            | Good     |
| Overall status of patient safety culture                               | 145.41 | 16.51              | 145    | 101           | 197           | Average  |

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In general, 24.4% of nurses in hospitals of Gorgan evaluated patient safety to be poor, 46.8 evaluated it to be average, and 30.7% gave good evaluations. Among the domains studied, non-punitive response to errors was the poorest domain with 61.5% of nurses evaluating it to be poor. The organizational education was the strongest domain with 90.2% of nurses evaluating to be good.

We observed a significant relationship between nurses’ work experience and patient safety culture (p=0.021), as well as between employment status of nurses and patient safety culture (p=0.001) with officially employed nurses having higher safety culture.

The hospitals were significantly different in terms of patient safety (p=0.001) with Taleghani Hospital having a better status compared to others. Also, different wards of hospitals had significant differences (p=0.003) with operating room staff giving higher evaluations of patient safety compared to other personnel. No significant relationship was found between the sex of nurses and patient safety culture (p=0.057), nor between nurses’ education level and patient safety culture (p=0.07). Moreover, the age groups of nurses and patient safety culture were not significantly related (p=0.063). Table2. Presents the variables related to patient safety culture in nurses participating in our study.

**Table 2.** Variables related to patient safety culture in nurses participating in this study

| Variable                | Category          | Mean ± standard deviation | Test result |
|-------------------------|-------------------|---------------------------|-------------|
| Age groups (years)      | <25               | 140.34 ± 15.9             | P=0.063     |
|                         | 26-31             | 144.76 ± 18.1             |             |
|                         | 32-36             | 144.75 ± 13.7             |             |
|                         | 37-41             | 145.6 ± 18.5              |             |
|                         | 42-46             | 150.41 ± 15.6             |             |
| Work experience (years) | >47               | 151.45 ± 14.9             | P=0.021     |
|                         | <5                | 142.05 ± 16.3             |             |
|                         | 6-10              | 144.65 ± 16.3             |             |
|                         | 11-15             | 148.04 ± 16.5             |             |
|                         | 16-20             | 148 ± 15.9                |             |
| Gender                  | 21-25             | 152.5 ± 17.1              | P=0.075     |
|                         | >25               | 155.12 ± 14.03            |             |
| Education level         | Male              | 140.97 ± 18.63            | P=0.001     |
|                         | Female            | 145.97 ± 16.1             |             |
|                         | College           | 157.83 ± 14.8             |             |
| Employment status       | Bachelor’s        | 145.1 ± 16.2              | P=0.07      |
|                         | Master’s          | 161 ± 45.2                |             |
|                         | Official          | 148.89 ± 15.1             |             |
|                         | Under contract    | 143.11 ± 16.7             |             |
| Hospital                | Contracted        | 148.77 ± 16.6             | P=0.001     |
|                         | Mandatory Service | 139.12 ± 16.05            |             |
|                         | 5 Azar            | 144.26 ± 16.7             |             |
| Ward                    | Taleghani         | 154.51 ± 12.1             | P=0.003     |
|                         | Deziani           | 140.77 ± 16.4             |             |
|                         | Emergency room    | 138.68 ± 17.2             |             |
|                         | Psychiatry        | 147.39 ± 7.20             |             |
|                         | Internal          | 149.81 ± 15.0             |             |
|                         | Intensive care    | 143.37 ± 14.7             |             |
|                         | Outpatient care   | 150.63 ± 18.5             |             |
|                         | Gynecology        | 139.45 ± 16.4             |             |
|                         | Surgery           | 145.23 ± 14.3             |             |
| Infectious disease      | 148.75 ± 14.1     |                           |             |
| Operating room          | Neonatology       | 141.1 ± 16.7              | P=0.001     |
|                         | Operating room    | 154.75 ± 11.05            |             |

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### **4. Discussion**

Our findings indicate that the nurses provided an average evaluation of patient safety culture. In a study by Hannah et al for assessment of patient safety culture in 29 hospitals of Virginia, USA, more than 50% of the staff provided good evaluations (24). The mean score of patient safety culture reported by Scherer and Fitzpatrick was 58.8% and 57% in operating room personnel (25). These findings are consistent with ours. Alalahmadi evaluated to patient safety culture in 13 general hospitals of Riyadh, Saudi Arabia in 2010, encompassing 223 hospital staff including nurses, technicians, managers and medical personnel. 60% of participants evaluated the overall level of patient safety to be excellent or very good, 33% acceptable and 7% regarded it poor (32). In a study by Forouzan in teaching hospitals of Shiraz, 413 nurses were recruited from 9 teaching hospitals, and the status of patient safety culture was reported unacceptable in all hospitals (33). The mean positive scores reported by Hellings et al was 38% in 5 Belgian hospitals (26) and the same figure reported by Castel and Sunon was 43.3% in nursing homes (27). A study by Abdi et al in teaching hospitals of Tehran, the score of patient safety culture was 25.9% (28). These findings are inconsistent with our report. Among domains studied, non-punitive response to errors was deemed the poorest. This is in line with reports of Said, Emel in Turkey (1), Alalahmadi in Saudi Arabia (32), Hannah et al in Virginia (24) and Forouzan in Shiraz (34). It appears that the factor contributing to poor patient safety culture in the domain of non-punitive response to errors, it refraining from reporting errors in fear of punishment, and not using errors as a source of education to prevent future errors. Improving patient safety in hospitals requires the system to make certain changes, including the elimination of scolding individuals for errors. Assigning blame weakens the motivation to report errors, and hinders us from recognizing the weaknesses in the system and procedures. If an error goes unreported, its informational value will be unused, thus limiting our ability to analyze the causes and consequently our ability to prevent future events.

Three detrimental factors need to be eliminated before patient safety culture is enhanced: 1) scolding; 2) fear; and 3) negligence and silence. Errors should not be covered up, but must be learned from and used as the first step towards eliminating their impact and improving patient safety. The managerial capacities of an open communicative atmosphere may be used to promote continuous organizational education (34). In addition to non-punitive response to errors, the domain of staff's workload was assessed poor as well. Heavy workload of the personnel will limited the time needed for proper handling of clinical or managerial duties. On the other hand, fatigue caused by heavy workloads will compromise the staff's ability to think correctly and following the appropriate therapeutic procedures. In order to circumvent this problem, sufficient funds must be assigned for hiring nursing staff and the working hours of nurses must be managed efficiently over days of the week. The domain of organizational education was assessed to be the strongest. This is consistent with reports of Alalahmadi in Saudi Arabia (32), Dolci et al in Mexico (35) and El-jardali in Lebanon (36). It appears that education is essential for necessary changes to reduce medical errors, improve safety and enhance the quality of healthcare. Most instructors believe that the principles of patient safety must be incorporated into medical education, preferably in clinical courses, whereas most physicians encounter medical errors when they are student of nonclinical courses and do not receive practical training. Patient safety committee may provide training for head-nurses and supervisors to identify the reported cases of errors (in collaboration with quality control and quality improvement units) and develop necessary interventions to prevent future events (34). One limitation of our study was the poor collaboration by nurses in responding to the questions, and their concern that their answers may be reflected to hospital management. In order to deal with this problem, we made arrangements with university authorities and obtained the necessary permissions.

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We also explained the objectives of the study to the participants and reassured them about the anonymity of all information. Another limitation was that the nurses did not have sufficient time to complete the questionnaires; therefore, we considered enough time for the nurses and allowed them to answer the questions without haste in and sufficient time during working hours. Factors contributing to improvement of the current situation include strengthening the patient safety committee and following the decisions regularly, developing indices of patient safety in hospitals, promoting a systemic approach to errors instead of blaming individuals for them, commitment of high-ranking authorities to learning from errors, documenting past medical errors, and encouraging members of staff who improve patient safety.

For future studies, we recommend qualitative research to identify the causes of errors, interventional studies to identify the optimal interventions for improvement of patient safety culture, and other studies to address the cost effectiveness of these interventions. These studies may be extended to private and social security hospitals and compare different management styles in terms of patient safety culture.

The safety culture of nurses in this study had an overall average status. The domains of staff's overall perception of patient safety, open and clear communications, feedback and communications related to medical errors, hospital manager's support of patient safety, and teamwork between different hospital units had an average level and the domains of non-punitive response to errors and the staff's workload required improvement with adoption of appropriate measures. The findings of this study suggest a need for better patient safety culture in hospitals. For this purpose, hospital managers and staff should attempt to enhance the situation through actions such as developing a system for reporting events and promoting teamwork.

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