

The impact of storytelling on safety culture in hospitals: A semi experimental study

Merzieh Adel Mehraban

Iran University of Medical Sciences

Merzieh Gharehbagni-NoveinFar

Iran University of Medical Sciences

Tahmine Salehi

salehi.t@iums.ac.ir

Iran University of Medical Sciences

Shima Hagani

Ezzat Abbariki

Iran University of Medical Sciences

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Abstract

Background

Patient safety is the most important issue in the healthcare system. To minimize errors in patient care, this study was conducted to investigate the impact of storytelling training on patient safety culture among nurses at an educational medical center of the Iran University of Medical Sciences.

Methods

This was a semi experimental study with a pretest, posttest, and follow-up design conducted in 2023 at Firouzgar Educational Hospital to investigate the impact of storytelling training on patient safety culture among nurses. The study involved 64 nursing staff in selected hospitals who were randomly divided into two groups: an intervention group and a control group. The intervention group received six storytelling sessions on patient safety, while the control group received no intervention. Patient safety culture data were collected using the Hospital Survey on Patient Safety Culture questionnaire before, after, and one month after the storytelling sessions. The data were analyzed and compared using SPSS software version16.

Result

Patient safety culture in the intervention group was significantly greater than that in the control group ($P > 0.001$). The effect size of the intervention on patient safety culture was 0.159, indicating a high impact of the intervention on this variable, as this value was greater than 0.08. The highest impact was observed for the training and skills dimension (0.185), and the lowest impact was observed for the staff dimension (0.49).

Conclusions

By recognizing the impact of storytelling on safety culture, this study revealed that hospitals can implement strategies to harness the power of narratives to improve patient safety culture among staff. By sharing real-life experiences, hospitals can cultivate a culture that prioritizes patient safety and quality of care.

Application to Practice:

This study suggested the implementation of comprehensive knowledge transfer programs, including storytelling, to enhance patient safety culture among nurses.

Introduction

Patient safety culture is important for improving and enhancing the quality of patient care, as it reduces the likelihood of hazardous events and even the costs of healthcare. The presence of a proper patient safety culture in an organization reduces the frequency of errors and their adverse effects in hospitals [1]. The first step toward achieving this goal is to evaluate the current culture because moving toward safe patient care without knowing about safety culture can lead to increased costs and risks [2].

Safety culture assessment can be the starting point for patient safety programs, increasing awareness of the role of an appropriate culture in creating a safe environment for the patient [3]. Organizational safety culture assessment provides a clear view of patient safety dimensions that require more attention, allowing hospitals to identify the strengths and weaknesses of safety culture and patient safety issues [4].

It can be argued that one of the best ways to transfer tacit knowledge is through storytelling because most experiential knowledge within organizations is conveyed through stories based on real memories and individuals' experiences [5]. One of the advantages of using individuals' experiences through storytelling is facilitating the transfer of theoretical sciences to the clinical arena. In fact, storytelling has been one of the earliest methods for sharing scientific advancements and discoveries, even in digital format [6]. Stories play a vital role in preserving, exchanging, and transferring knowledge from one generation to another in every culture [7]. On the other hand, using individuals' experiences in patient safety incidents can also play an important role in improving patient safety. Encouraging nurses, who constitute the majority of healthcare providers, to share their mistakes can thus create an informal and effective method of education through storytelling to obtain nurses' implicit knowledge [8].

In this regard, nurses play a crucial role in maintaining and improving patient safety. Identifying the factors affecting patient safety will help them achieve success in implementing patient safety processes. Therefore, the presence of an innovative empowerment program to increase patient safety culture by encouraging nurses to talk about their mistakes and create education and development is unique and innovative [9].

As mentioned, it is expected that through the transfer of tacit knowledge and clinical experiences regarding patient safety by expressing the personal experiences of nurses, which is a less costly and more practical method, the knowledge and attitudes of nurses in the field of patient safety will improve. The aim of this study was to determine the effect of storytelling training on the patient safety culture of nurses in selected educational hospitals in Tehran.

Methods

This was a semi experimental study with a pretest, posttest, and follow-up design conducted in 2023 at Firouzgar Educational Hospital. The hospital has two separate buildings to prevent data contamination during the intervention. After providing informed consent from the Ethics Committee of the Iran

University of Medical Sciences (IR.IUMS.1401.921), providing informed consent to the hospital director, and explaining the study objectives and coordination with the nursing office, sampling was performed using a random method.

Sixty-four nurses were selected for the study, 32 of whom were assigned to the intervention and control groups. Nurses with at least a bachelor's degree and a minimum of six months of work experience were chosen. The exclusion criterion included not participating in more than one training session and not participating in any of the assessment stages (before, after, and one month after the intervention).

After coordinating with the educational supervisor, workshops on patient safety were designed in the continuous training system. After providing informed consent for the intervention group, six 1.5-hour storytelling sessions on patient safety were designed, involving personal experiences in legal and patient safety issues in the form of storytelling without mentioning names or specific centers and engaging nurses in discussions and group work. Before each session, the researcher informed the participants about the storytelling topic. Storytelling session topics included medication errors, falls, unsafe discharge, personal consent, misdiagnosis, ineffective patient communication, lack of patient and caregiver education, improper patient assessment, and hemovigilance errors. In these sessions, experiences and incidents affecting patient safety were presented in the form of stories, and participants shared their work-related memories and experiences related to the topic in these workshops, effectively converting implicit knowledge into explicit knowledge. Patient safety culture in the intervention and control groups was evaluated before, after, and one month after the end of the storytelling sessions using the Hospital Survey on Patient Safety Culture (HSOPSC) questionnaire. No training was provided to the control group during the research period, and only at the end of the research were the training materials given to the intervention group in the form of handouts.

The tool used in this research is the Hospital Survey on Patient Safety Culture (HSOPSC), which consists of two sections: 1- The demographic information section of the questionnaire includes gender, education level, age, and work experience in the department, hospital work experience, hours worked per week, department name, and employment type. 2- The main section of the Hospital Survey on Patient Safety Culture (HSOPSC) version 1 includes 43 questions and twelve dimensions. Teamwork (4 questions), staffing (3 questions), compliance with procedures (3 questions), training and skills (4 questions), no punitive response to mistakes (4 questions), handoffs (5 questions), feedback and communication about incidents (4 question), communication openness (3 questions), supervisor expectations and actions promoting patient safety (3 questions), overall perception of patient safety (3 questions), management support for patient safety (3 questions), and organizational learning (3 questions) [10].

The responses are rated on a Likert scale (strongly disagree, disagree, neutral, agree, or strongly agree) from 1 to 5, and "do not know" responses are excluded from the total scores. A higher overall score indicates a better patient safety culture. This tool has been used in at least 20 European countries, including Sweden and Norway, as well as various studies in the United States, and its reliability has been

confirmed (0.70–0.90) [10]. Additionally, this questionnaire has been used in numerous studies in Iran and has demonstrated good reliability for use in Iranian hospitals [11–17].

To assess reliability, the questionnaire was distributed among 20 randomly selected nurses in the research community, and the Cranach's alpha for internal consistency was calculated as 0.71. Data analysis was conducted using SPSS version 16 software, employing repeated-measures ANOVA to compare the safety culture before, after, and one month after the intervention.

Results

The results of this study showed that the two groups under investigation did not have statistically significant differences in demographic characteristics (Table 1).

Table 1
Demographic characteristics of employed nurses in the Firouzgar hospital in both intervention and control groups

Demographic Characteristics/Group	Intervention		Control		Results
	Frequency	Percent	Frequency	Percent	
Sex	Female	29	6/90	28	$\chi^2 = 0/160$
	Male	3	4/9	4	$df = 1$
	Total	32	100	32	$*689/P = 0$
Age (year)	< 30	9	1/28	13	$t = 0/470$
	30–39	15	9/46	12	$df = 62$
	> 40	8	25	7	$\chi^2 640/P = 0$
	Total	32	100	32	100
	SD ± Mean	$42/6 \pm 72/34$		$38/7 \pm 91/33$	
	Max- Min	52 – 26		49 – 26	
Education	Bachelor	29	6/90	30	$**999/P = 0$
	M.S and more	3	4/9	2	$2/6$
	Total	32	100	32	100
Work experience (year)	< 5	10	3/31	12	$t = 0/775$
	9 – 5	7	9/21	7	$df = 62$
	14 – 10	6	8/18	7	$\chi^2 441/P = 0$
	> 15	9	1/28	6	$8/18$
	Total	32	100	32	100
Work in week (hour)	30>	1	1/3	0	$**802/P = 0$
	40 – 30	16	50	18	$3/56$
	40<	15	9/46	14	$8/43$
	Total	32	100	32	100
Kind of Department	Internal	14	8/43	17	$1/53$
	Surgical	5	6/15	4	$5/12$
	ICU	10	3/31	7	$9/21$

	Emergency	3	4/9	1	1/3	
	Dialysis	0	0	3	4/9	
	Total	32	100	32	100	
Kind of Employment	Official	24	75	19	4/59	**119/P = 0
	Contractual	7	9/21	7	9/21	
	Temporary employment	1	1/3	6	8/18	
	Total	32	100	32	100	

Table 1 shows that the average ages of the nurses in the intervention and control groups were 42.6 ± 72.34 and 38.7 ± 91.33 years, respectively. The mean work experience was 23.6 ± 29.10 in the intervention group and 07.7 ± 99.8 in the control group. The majority of nurses in both groups were female (90.6% in the intervention group and 87.5% in the control group) and held a bachelor's degree (90.6% in the intervention group and 93.8% in the control group). Additionally, most nurses in both groups worked between 30 and 40 hours per week (50% in the intervention group and 56.3% in the control group). Nurses in the internal department were more common in both the intervention (43.8%) and control (53.1%) groups. The employment status of most individuals in the intervention (75%) and control (59.4%) groups was official.

The analysis of variance with repeated measures in Table 2 revealed that there was no statistically significant difference in the safety culture scores of the control group over time ($p = 0.487$, not significant at $p < 0.05$).

Table 2

Comparing the Averages and Standard Deviations of Patient Safety Culture among Nurses Working in Selected Educational Hospitals of the Iran University of Medical Sciences

Time/Patient Safety Culture in	Before intervention		Immediately after intervention		One month after intervention		One-way ANOVA results with repeated measures.
	Mean	SD	Mean	SD	Mean	SD	
Intervention Group	3/15	0/15	3/41	0/21	3/26	0/18	$F = 40/168 P < 0/001$ $\chi^2 = 0/564$
Control Group	3/09	0/13	3/12	0/12	3/10	0/15	$F = 0/729 P = 0/487$ $\chi^2 = 0/023$
Results	$t = 1/650$ $df = 62$ $P = 0/104$		$F = 47/314$ $P < 0/001$ $\chi^2 = 0/437$		$F = 11/512$ $P < 0/001$ $\chi^2 = 0/159$		

There was no significant difference between the two groups before the intervention ($p = 0.104$). However, after the intervention, the mean score in the intervention group was significantly greater than that in the control group ($p < 0.001$).

This difference persisted one month after the intervention. Analysis of variance with repeated measures revealed no significant difference in safety culture within the control group before, after, or one month after the intervention. In contrast, the intervention group showed a significant difference in patient safety culture at least at one of the time points examined ($p < 0.001$). The pairwise comparison test demonstrated that the mean scores after the intervention were significantly greater than those before the intervention ($p < 0.001$) and one month after the intervention ($p < 0.001$). Additionally, the patient safety culture scores after the intervention were significantly greater than those one month after the intervention ($p < 0.001$).

Discussion

The results of the hospital nurses' safety culture in the selected hospital indicated an improvement after storytelling. Expressing experiences in the form of stories significantly enhanced the attitudes of the participating nurses toward patient safety culture. A high level of participation in storytelling sessions appeared to be a key factor in achieving the learning goal, as it made the nurses feel positive by sharing their memories and experiences and contributing to the learning of others. Storytelling facilitates the sharing of tacit knowledge among individuals, leading to learning, motivation, and inspiration. It also engages individuals and organizations in thinking and involves their minds and emotions, which are essential for attitude change. The sharing of experiences and information among nurses had a

significant impact on the knowledge of the research nurses, as confirmed by the post intervention and follow-up tests. These findings are consistent with those of similar studies, such as the study by Qasemi and colleagues, which supported the positive impact of storytelling on the clinical competence of nurses in a semi experimental two-group study of ICU nurses [18].

Furthermore, other studies have shown that storytelling is beneficial for changing attitudes in various fields. For example, research by Sochacki revealed that incorporating storytelling into nursing education has assisted students in experiencing and behaving like clinical nurses in real-life scenarios [19]. Furthermore, George and his colleagues demonstrated that innovative storytelling can effectively enhance medical students' attitudes toward dementia patients [20]. Similarly, a study by Price and colleagues utilizing digital storytelling as an innovative approach in nursing education illustrated that authentic stories enabled nursing students to understand and address the specific needs of patients and their families while also improving their communication skills [21]. Another study by Liao and colleagues on the impact of storytelling in medical education indicated that students exposed to storytelling outperformed their counterparts, as listening to patients' stories helped them better identify patients' issues [22]. Additionally, a study by Gucciardi and colleagues on the impact of storytelling on self-management in type 2 diabetes patients revealed that storytelling facilitates knowledge change, group participation, learning, reflection, understanding, and acceptance of the disease [23].

Of course, it can be said that changing existing conditions can be difficult with interventions such as storytelling, as in some studies, storytelling has not brought about much change in existing situations. However, storytelling can have a positive impact on creating change and even lead to organizational commitment to changes [24]. However, in some cases, organizations may not be able to achieve their goals in this area.

In storytelling, creating a mental connection between the story told, the conversation, and the participants' stories is very important, and it is necessary to provide an opportunity for individuals to find reflections of the story told in their own memories [25]. However, there is often not enough opportunity for this, especially in this study, where nurses faced time constraints. In addition, storytelling will have a continuous impact when it is recorded and maintained somewhere in the organization, which unfortunately was not possible in this study.

By comparing the findings of this research with those of other studies on the use of storytelling to convey implicit knowledge to various groups, such as nurses, medical students, and even patients and their families, it can be inferred that storytelling is an effective method for transferring tacit knowledge. This can result in outcomes such as changes in attitude, improved knowledge, and enhanced clinical skills.

Conclusions

By recognizing the impact of storytelling on safety culture, this study revealed that hospitals can implement strategies to harness the power of narratives to improve patient safety culture among staff.

By sharing real-life experiences, hospitals can cultivate a culture that prioritizes patient safety and quality of care

Implications for Occupational Health Practice

Storytelling significantly impacted nurses' attitudes toward patient safety culture, with lasting positive effects observed in a one-month follow-up study. It is advisable to implement knowledge transfer initiatives on patient safety and care, incorporating storytelling to share nurses' experiences with colleagues across healthcare facilities.

Application to Practice

This study suggested the implementation of comprehensive knowledge transfer programs, including storytelling, to enhance patient safety culture among nurses. Therefore, it is essential for healthcare organizations to integrate storytelling into their safety initiatives, as it has the potential to drive meaningful change and ultimately create a safer and more effective care environment for patients.

Declarations

- **Ethics approval and consent to participate:** In this study, the researcher obtained the ethical code (IR.IUMS.1401.921) from the Ethical Committee of Iran University of Medical Sciences and, after obtaining permission from the hospital's directors, collected the data. In addition, the informed consent to participate was obtained from all of the participants. Participants at each stage of the research had the option to withdraw, but fortunately, no one chose to withdraw.
- **Consent for publication:** the informed consent to publish the findings was obtained from all of the participants.
- **Availability of data and materials:** the research data supporting the results of the manuscript is provided within the supplementary information files.
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- **Authors' contributions**

Conceptualization: [M A M], [T S], [M G N]

Data curation: [M G N], [E A]

Formal analysis: [M G N], [SH H]

Funding acquisition: [IUMS]

Investigation: [M A M], [M G N]

Methodology: [M A M], [T S], [M G N], [SH H]

Project administration: [M A M]

Resources: [M A M]

Supervision: [M A M], [T S]

Visualization: [M A M], [M G N], [SH H]

Writing-original draft: [M G N]

Writing-review & editing: [M A M], [T S],

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