



The Psychometric Properties of the Farsi Version of “Hospital Survey on Patient Safety Culture” In Iran’s Hospitals

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(Received 22 Feb 2011; accepted 12 Jan 2012)

Abstract

Background: If you want to start a long journey towards patient safety, you should create a good culture of patient safety among employees alongside structural interventions. The first step in doing so is the assessment of current culture in the organization using different tools. One of the most commonly used instruments of measuring patient safety culture is Hospital Survey of Patient Safety culture (HSOPS). The aim of this study was to assess the validity and reliability of Farsi version of this questionnaire for the first time in Iran’s hospitals.

Methods: We purposefully selected four hospitals out of seven general Tehran University of Medical Sciences affiliated hospitals. Then a 420 sample of staff of these hospitals were taken randomly. Staff was asked to complete the questionnaire. Confirmative factor analysis, correlation coefficient, Cronbach’s alpha were employed in statistical analyses.

Results: Factor loadings for almost all questions were acceptable. Factors jointly explained 77.8% of the variance in the responses. The Cronbach’s alpha coefficient was between 0.57 and 0.8. The study revealed that over 70% of employees were working at their hospitals more than 40 hours a week and also more than half of the employees were not reporting errors.

Conclusion: Farsi version of HSOPS with 12 dimensions and 42 questions is a valid and reliable questionnaire to measure patient safety culture for the first time in Iran hospitals. This tool will be helpful in tracking improvements and in heightening awareness on patient safety culture in Iran.

Keywords: Patient, Hospitals, Validity, Reliability, Questionnaire, Iran

Introduction

Quality of care is one of the most important issues in health sector. It consists of several elements that patient safety is one of the main (1). Efforts in improving patient safety should be address quality and try to identify and eliminate unsafe processes and inappropriate procedures (2).

Considering the prevalence of medical errors and the huge burden of their costs that imposed to the health system (3, 4), it is vital to be aware of patient safety culture in the health sector in order to change this culture and making it consistent with the recent advances in quality of care; because im-

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proving patient safety is not only a clinical issue, but it is also related to the organizational aspects (5). Experts believe that hospitals should be establishing patient safety culture among their staff along with structural intervention (1). It could be claimed that patient safety culture is one of the essential elements in promoting safety and improving quality of patient care (6, 7).

Safety culture is a culture where safety is the main concern for individuals (8). In this case we can consider patient safety culture as adoption and application of patient safety as the first priority in the organization (9).

Institute of Medicine (IOM) stated that if there is a culture in an organization which employees report adverse events freely and without any fear, they could learn from their mistakes and thus prevent systemic and human made errors in future (10). IOM consider changing patient safety culture as the greatest challenge in approaching toward a safer care and recommends that healthcare organizations assess their patient safety culture, establish comprehensive PS programs to increase detection of adverse events, and redesign systems to reduce opportunities for error (11).

Assessing the level of safety culture is the start point in creating such a culture in an organization, because moving toward a safer care without knowledge of the status quo may lead to increased costs and risks (12).

Safety culture surveys are now being used to assess this culture in healthcare organizations, and a comprehensive report of scale development was provided (13-16). Hospital Survey On Patient Safety culture which is a commonly used instrument to measure multiple dimensions of patient safety culture developed by Agency for Healthcare Research and Quality (AHRQ) is applied increasingly in the United States and England (11, 17). It is considered valid, reliable, and the most efficient tools used for patient safety culture (18, 19), thus a number of countries has applied the questionnaire after translating it into their own language. After translating a questionnaire into another language and applying it in a different setting, it is necessary to check the validity and reliability of it in the new context (1).

The aim of this study was to translate HSOPS into Farsi and then assess the validity and reliability of the translated version in Iran hospitals.

Materials and Methods

This study had a cross-sectional design carried out in a period of six month – from August 2009 to February 2010 – in general public hospitals of Tehran. We selected 4 hospitals out of 7 general hospitals affiliated with Tehran University of Medical Sciences (TUMS) – The biggest and the first ranked medical university in Iran that located in the capital of this country - purposefully (considering the size, geographical distribution and appropriate cooperation with researchers) as four clusters. Nurses, doctors, lab and radiology staff working in these hospitals were the study population. The overall number of these personnel in selected hospitals (our sample frame) was 2135. Our sample size was 420 to enable us to do confirmative factor analysis (CFA). One of the most popular strategies to determine sample size for a CFA is according to the number of parameters (five cases per parameter at least). Considering that the questionnaire has 84 parameters, we estimated 420 samples. Then we proportionally allocated our samples into each hospital and categories (doctor, nurse, lab and radiology staff). Finally the questionnaires were hand-distributed randomly (simple random) to our samples. We returned to hospitals up to five times in a period of 40 days after distributing the self-administered questionnaires to gather completed questionnaires.

The original questionnaire

The questionnaire was developed by the Agency for Healthcare and Quality (AHRQ) in 2004 to assess hospital staff opinions about patient safety issues, medical error, and event reporting and includes 42 items that measure 12 areas or composites of patient safety culture (1). The survey also includes two questions that ask respondents to provide an overall grade on patient safety for their work area/unit and to indicate the number of

events they have reported over the past 12 months. Moreover, there were seven items that asked for work-related information, e.g. the respondent's primary department in hospital, how long he/she has been working at this unit etc (20). Eighteen of the 42 items belonging to 12 dimensions were worded negatively. The five-level Likert scale was employed for the responses. The scales used for the questions were (1) strongly disagree, disagree, neither, agree, or strongly agree and (2) never, rarely, sometimes, most of the time, or always. It should be mentioned that HSOPS is a free access tool and it was not necessary to get official permission to use it.

Preparing Farsi version of the questionnaire

One of the researchers (JM) translated the questionnaire into Farsi. Then, both the translated questionnaire and the original one were handed to some experts in order to revise it. After that, the comprehensibility of the survey was tested on 30 staff of the study population who had not been included in our sample. After altering some questions according to staff's opinions and applying their ideas, we prepared the final version of the Farsi questionnaire.

Statistical Analysis

After collecting data, we used confirmative factor analysis (principal component analysis with Varimax rotation) to assess whether the factor structure of the original questionnaire can be used with Iranian data.

The internal consistency of the factors was calculated with Cronbach's alpha (α). Since the questionnaire comprised of positively and negatively worded items, the negative ones were first recoded to make sure that a higher score always means a more positive response.

The construct validity was studied by calculating scale scores for every factor (after any necessary reverse coding) and subsequently calculating Pearson correlation coefficients between the scale scores. All statistical analyses were performed using SPSS 11.5.

Results

Confirmative factor analysis

Factor analysis of the AHRQ resulted in 12 dimensions (21). Using orthogonal 12 factor model (according to the given 12 dimensions) and weighted least squares method (due to the 5 point Likert which was applied) to solve the related equations, the amount of factor loadings for each questions and their quality of fitness into the model were obtained. After solving the related equations, the value of 14.25 was obtained for Fit Function (FF). According to the number of FF, the value of goodness of fitness index (GFI) was equal to 0.96 and the AGFI, which is adjusted for degree of freedom, was equal to 0.98. These two indices showed that, the model had a very good fitness to our data. Factor loadings for all (but two) questions were between 0.39 and 0.87, which showed the appropriateness of the structure of Farsi version of the questionnaire. Only two questions which belongs to the dimension 2 (overall perception of patient safety) had a factor loading of lower than 0.39 (Q15 (Patient safety is never sacrificed to get more work done) with the factor loading of 0.34, and Q17 (We have patient safety problems in this unit) with 0.1). The factors jointly explained 77.8% of the variance in the responses (Table 1).

Additionally, we calculated the internal consistency for all factors and compared them with the internal consistency found in the original study (Table 2).

The internal consistency of factors in the Farsi questionnaire was lower for each factor than the original items in the American study except for dimension 3 "supervisor/manager expectations and actions promoting patient safety" and dimension 9 "staffing", which were a bit higher in ours. The Cronbach's alpha coefficient in our study was between 0.57 (D2) and 0.8 (D3). The existence of Q17 in dimension 2 is the reason of low internal consistency. If we eliminate this question from the dimension, the internal consistency will be raised to 0.66. Additionally, Internal consistency reliability for all items was high ($\alpha = 0.82$) and the Spearman-Brown coefficient was 0.81.

Table 1: Factor loadings of the Farsi questionnaire items

Questionnaire Items	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12
When a mistake is made, but is caught and corrected before affecting the patient, how often is this reported?	0.62											
When a mistake is made, but has no potential to harm the patient, how often is this reported?	0.87											
When a mistake is made that could harm the patient, but does not, how often is this reported?	0.78											
It is just by chance that more serious mistakes don't happen around here		0.65										
Patient safety is never sacrificed to get more work done		0.34										
We have patient safety problems in this unit		0.1										
Our procedures and systems are good at preventing errors from happening		0.42										
My manager says a good word when he/she sees a job done according to established patient safety procedures			0.63									
My manager seriously considers staff suggestions for improving patient safety			0.69									
Whenever pressure builds up, my manager wants us to work faster, even if it means taking shortcuts			0.59									
My manager overlooks patient safety problems that happen over and over			0.66									
We are actively doing things to improve patient safety				0.52								
Mistakes have led to positive changes here				0.62								
After we make changes to improve patient safety, we evaluate their effectiveness				0.53								
People support one another in this unit					0.69							
When a lot of work needs to be done quickly, we work together as a team to get the work done					0.54							
In this unit, people treat each other with respect					0.62							
When one area in this unit gets really busy, others help out					0.39							
Staff will freely speak up if they see something that may negatively affect patient care						0.81						
Staff feel free to question the decisions or actions of those with more authority						0.49						
Staff are afraid to ask questions when something does not seem right						0.6						
We are given feedback about changes put into place based on event reports							0.78					
We are informed about errors that happen in this unit							0.67					
In this unit, we discuss ways to prevent errors from happening again							0.58					
Staff feel like their mistakes are held against them								0.86				
When an event is reported, it feels like the person is being written up, not the problem								0.5				
Staff worry that mistakes they make are kept in their personnel file								0.57				
We have enough staff to handle the workload									0.63			
Staff in this unit work longer hours than is best for patient care									0.71			
We use more agency/temporary staff than is best for patient care									0.42			
We work in "crisis mode" trying to do too much, too quickly									0.39			
Hospital management provides a work climate that promotes patient safety										0.69		
The actions of hospital management show that patient safety is a top priority										0.86		
Hospital management seems interested in patient safety only after an adverse event happens										0.63		
Hospital units do not coordinate well with each other											0.63	
There is good cooperation among hospital units that need to work together												0.62
It is often unpleasant to work with staff from other hospital units												0.52
Hospital units work well together to provide the best care for patients												0.65
Things "fall between the cracks" when transferring patients from one unit to another												0.54
Important patient care information is often lost during shift changes												0.7
Problems often occur in the exchange of information across hospital units												0.42
11. Shift changes are problematic for patients in this hospital												0.4

Table 2: The comparison of internal consistency between American and Iranian study

Dimension	n of questions	The original questionnaire	The Farsi questionnaire
1-Frequency of event reporting	3	0.84	0.78
2- Overall perceptions of patient safety	4	0.74	0.57
3- Supervisor/manager expectations and actions promoting patient safety	4	0.75	0.8
4- Organizational learning – continuous improvement	3	0.76	0.7
5- Teamwork within units	4	0.83	0.68
6- Communication openness	3	0.72	0.68
7- Feedback and communication about error	3	0.78	0.74
8- Nonpunitive response to error	3	0.79	0.77
9- Staffing	4	0.63	0.64
10- Hospital management support for patient safety	3	0.83	0.79
11- Teamwork across hospital units	4	0.8	0.77
12- Hospital handoffs and transitions	4	0.8	0.76

Construct validity

Moreover, we calculated scale scores by obtaining the mean of the item scores within one factor for every respondent. After that, correlations between the scale scores were calculated. The highest

correlations was between “Supervisor/manager expectations and actions promoting patient safety” and “Hospital management support for patient safety” ($r = 0.54$), but no correlation was exceptionally high (Table 3).

Table 3: Inter-correlations of the 12 factors

Dimension	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11
1-Frequency of event reporting											
2- Overall perceptions of patient safety	0.273**										
3-Supervisor/manager expectations and actions promoting patient safety	0.123*	0.363**									
4- Organizational learning – continuous improvement	0.162**	0.199**	0.195**								
5- Teamwork within units	0.224**	0.411**	0.404**	0.391**							
6- Communication openness	0.338**	0.366**	0.283**	0.338**	0.374**						
7- Feedback and communication about error	0.327**	0.166**	0.286**	0.371**	0.258**	0.321**					
8- Nonpunitive response to error	0.126*	0.380**	0.384**	0.049	0.319**	0.145**	0.145**				
9- Staffing	0.048	0.190**	0.281**	-	0.106	0.014	0.056	0.358**			
10- Hospital management support for patient safety	0.351**	0.442**	0.541**	0.157**	0.291**	0.322**	0.347**	0.326**	0.187**		
11- Teamwork across hospital units	0.250**	0.361**	0.40**	0.271**	0.409**	0.366**	0.355**	0.249**	0.083	0.519**	
12- Hospital handoffs and transition	0.135*	0.403**	0.199**	0.270**	0.317**	0.456**	0.188**	0.149**	-0.0051	0.290**	0.532**

* $P < 0.05$, ** $P < 0.01$.

Other findings

In total, 343 healthcare staff members (out of 420) provided survey feedback completely (response rate 81.6%). The minimum response rate between four groups of staff belonged to physicians (63%). Over 18% of respondents worked in surgical unit, and less than 3% in pediatrics. About 44% of staff have been working over 11 years in their current hospitals, while only 14% had such experience in their current units. Over 70% of employees were working at their hospitals more than 40 hours a week. In addition, the vast majority of respondents (86%) had direct interaction and contact with patients. More than half of the respondents (53%) had been reported no errors, and 30% only one or two errors in the last year. Finally, over 80% of participants assessed the patient safety of their unit positive (excellent, good or acceptable).

Discussion

Our survey response was higher than expected, which may indicate hospital staffs' patient safety concerns. According to the results of CFA, Farsi version of the questionnaire with 12 domains given is a good instrument for measuring patient safety culture in Iran's hospitals. In a study conducted in Belgium, the Belgian version of HSOPS (with original 12 domains) was confirmed (22), while factor analysis results of studies done in Netherlands and Turkey did not confirm the original structure of 12 domains (1, 16). According to findings, about 44% of workers have been working over 11 years in their current hospitals, while only 14% had such experience in their current units. This might be indicative of relatively high staff shifting between hospital units that could be a hindering factor to the familiarization of personnel with the culture of unit. One of the excellent findings of this study that has a powerful relation with patient safety is about working hours; 27% of our respondents were working between 20 to 39 hours a week, while in the Belgian study about 61 percent were working the same hours in the hospital (22). Over 70% of our study participants were working more than 40 hours per week. Lack of medical personnel and especially

nurses in Iranian hospitals as well as other countries (23) has led to extra working hours for the present workforce and make them tired and susceptible for committing patient safety errors. Finally, our study showed that nearly 83% of our respondents have reported less than two patient safety event reports in the past 12 month, which was similar with the findings of the American study (80%) (21). Too low error reporting in both studies might reflect the willingness of personnel to Underreporting which could be due to the punitive culture of hospitals.

This study is the first one in Iran in the field of patient safety culture, which was done as a MS project. Iranian health care system wants to start their long journey towards patient safety. The ministry of health and medical education of Iran was announced 10 hospitals as patient safety hospital for piloting PS project a few month ago. The starting point for developing patient safety and in particular safety culture should be the evaluation of the current culture by using an appropriate instrument (1).

In conclusion, one of the most valuable contributions of this study was the validation of a popular instrument in measuring patient safety culture. The factor structures of the Iranian, original Hospital Survey on Patient Safety Culture is identical, and all items are kept. The Farsi questionnaire factors show a lower but acceptable internal consistency than in the AHRQ study. This study shows that the HSOPS questionnaire is an appropriate instrument to assess patient safety culture in Iranian hospitals.

Ethical considerations

Ethical issues (Including plagiarism, Informed Consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc) have been completely observed by the authors.

Acknowledgments

This study was done as a part of MS project and funded by Tehran University of Medical Sciences. We thank the individuals and organizations who participated in our research, specially managers, and

other personnel of Dr. Shariati, Sina, Vali-e-asr, and Ziaieian hospitals of TUMS. In addition, we should appreciate late Dr Banafsheh Golestan who was a member of our team and unfortunately passed away a few months after starting the project, Amin Ghanbarnejad who contributed to our CFA analysis and Marlin Smit for her kind help in the stage of study design. The authors declare that they have no competing interests.

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