Patient Safety & Quality Improvement Journal
http://psj.mums.ac.ir
PSQI

Validation of the Persian Version of the Safety Attitudes Questionnaire

Nahid Aziminasab[1], Shahram Amini[2], *Negar Morovatdar[1]

1. Clinical Research Development Unit, Imam Reza Hospital, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.
2. Department of Anesthesiology, Mashhad University of Medical Sciences, Mashhad, Iran.

ARTICLEINFO

Article type:
Original Article

***Article History*:**
Received: 15-Mar-2020
Accepted: 20-Jul-2020

Key words:
Iran, Reliability, Safety attitudes questionnaire, Validity.

ABSTRACT

Introduction:
This study aimed to validate the Persian version of the safety attitudes questionnaire (SAQ) in Mashhad, Iran.

Materials and Methods:
The SAQ was distributed to 160 surgical team members at Imam Reza Hospital in Mashhad, Iran, in 2019. In total, 150 valid responses were returned. The Cronbach's α and item-dimension correlations were calculated for reliability assessment. Confirmatory factor analysis (CFA) was also performed to assess the validity using Confirmatory Fit Index (CFI), Expected Cross-Validation Index (ECVI), and Root Mean Square Error of Approximation (RMSEA) values.

Results:
The mean age of the study population was estimated at 28.7 years, and the majority (n=116, 77.3%) of the participants were female. The goodness-of-fit index from the CFA showed a well-founded model fit (CFI=0.8, ECVI=0.8, and RMSEA=0.02). The Cronbach's α for the scale was calculated at 0.74 within the range from 0.4 (perception of management) to 0.83 (job satisfaction). The SAQ showed good internal consistency reliability. Correlation coefficients for the association between each item and the corresponding dimensions ranged from 0.431 to 0.884, which was regarded as a good correlation.

Conclusion:
The SAQ was a valid and reliable instrument and could be a useful instrument to measure safety attitudes in hospitals among Iranian populations.

► ***Please cite this paper as:***
Aziminasab N, Amini Sh, *Morovatdar N. Validation of the Persian Version of the Safety Attitudes Questionnaire Journal of Patient Safety and Quality Improvement. 2020; 8(3): 139-143. Doi: 10.22038/psj.2020.47082.1265

Introduction

Patient safety is an important issue in the healthcare systems, and the studies have shown that low attention to this issue will induce injury to patients and increase hospital stays by increasing medical errors (1,2). Patient safety has been emphasized as a main organizational mechanism of hospitals to improve safe, effective, and timely healthcare (3). Safety of healthcare environments can be affected by patient safety culture (4), which is defined by the British Health and Safety Commission as "the product of individual and group values, attitudes, perceptions, competencies, and patterns of behavior that determine the commitment to and the style and proficiency of an organization's safety management" (5).

Corresponding author:
Clinical Research Development Unit, Imam Reza Hospital, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran. E-mail: Morovatdarn@mums.ac.ir

In recent years, more attention has been paid to the development of patient safety environments given that issues of patient safety are becoming more important by countries around the world. With this background in mind, adequate evaluation is a requisite of research on patient safety culture (5), and several tools have been developed to assess this issue (6,7); however, only the Safety Attitudes Questionnaire (SAQ) has been developed to assess the patient outcomes (8). Different versions of this questionnaire were validated in many countries, including Switzerland (9), United States (8), Norway (10), and Taiwan (11), whereas the Persian version of the questionnaire was not validated in the operating room context. Therefore, this study aimed to validate the Persian version of the SAQ questionnaire in Mashhad, Iran.

Materials and Methods

This cross-sectional study was conducted from October 2019 to March 2020 on 160 surgical team members, including physicians (surgeons and anaesthesiologists), perioperative nurses, and licensed practical nurses at Imam Reza Hospital, Mashhad, Iran. The study population was informed of the research objectives, and the self-administered questionnaires were collected one hour after they had been distributed. The questionnaire was developed by Sexton, which comprises 60 items, 30 of which are the main items. The short version of the generic SAQ, which included 30 items was utilized in this study (8). The SAQ includes six domains, including teamwork climate, safety climate, job satisfaction, perception of management, stress recognition, and working conditions, each of which consists of several questions. All items were rated on a 5-point Likert scale (1=strongly disagree, 2= slightly disagree, 3=neutral, 4=slightly agree, and 5=strongly agree) and a 'not applicable option' was included for each item. The study population were also requested to fill the demographic characteristics form (e.g. gender, age, profession). The original version (English-language) of this scale was translated to Persian, and subsequently, it was back-translated to English by another translator. It was then reviewed by a panel of experts in the fields of medical and public health management. It is worth mentioning that inappropriate parts of the questionnaire were discussed and then revised.

Data analysis

All data were analyzed in SPSS software (version.16) through mean±SD and percentages for quantitative and qualitative data, respectively. Mean±SD scores were calculated for all SAQ items. The positive response rate was used to assess the attitudes toward patient safety culture on different dimensions of the questionnaire, and positive responses were items that scored higher than 3. The scores on negatively worded items (e.g. 'in this clinical area, it is difficult to speak up if I perceive a problem with patient care' and 'In this clinical area, it is difficult to discuss errors') were reversed before the analysis.

Cronbach's α coefficient and confirmatory factor analysis (CFA) were employed to assess the reliability and validity of the SAQ. Furthermore, the root mean square error of approximation (RMSEA) and comparative fit index (CFI) were used for CFA. Spearman's correlation coefficients were calculated to describe the association between different dimensions, and a p-value less than 0.05 was considered statistically significant.

Results

A total of 160 questionnaires were distributed to the participants with a response rate of 93% (n=150). The mean age of the study population was 28.7±6.7 years, and the majority of the participants were female (n=116, 77.3%). Regarding the field of specialty, 51.3% (n=77), 25.3% (n=38), and 23.3% (n=35) of the participants were surgical technicians, nurses, and anesthetic technicians, respectively. Moreover, the mean working experience of the respondents in the hospital was 5.2 years. Table 1 tabulates the number of positive responses (slightly agree and strongly agree) and item-dimension correlation. Correlation coefficients of the association between each item and the corresponding dimensions ranged from 0.431 (for item 11 and safety climate) to 0.884 (for item 20 and stress recognition). Furthermore, the mean value of the 30 items

was 3.29 (range: 2.24-4.09). Items 20 (I am less effective at work when I am fatigue) and 26 (levels of staffing in this clinical area are sufficient to handle the number of patients) obtained the highest (4.09) and lowest (2.24) mean scores, respectively.

Table 1: Item description of the safety attitudes questionnaire

Dimensions, item number, item text	NPR (%)	Item-dimension correlation
Teamwork climate		
1. Nurse input is well received in this clinical area.	55 (36.7)	0.729
2. In this clinical area, it is difficult to speak up if I perceive a problem with patient care.	72 (48)	0.480
3. Disagreements in this clinical area are appropriately resolved.	49 (32.7)	0.719
4. I have the support I need from other personnel to care for patients.	103 (68.7)	0.691
5. It is easy for personnel in this clinical area to ask questions when there is something that they do not understand.	116 (77.3)	0.595
6. The physicians and nurses here work together as a well-coordinated team.	91(60.7)	0.761
Safety climate		
7. I would feel safe being treated here as a patient.	41 (27.3)	0.661
8. Medical errors are handled appropriately in this clinical area.	37 (24.7)	0.662
9. I know the proper channels to direct questions regarding patient safety in this clinical area.	111 (74)	0.441
10. I receive appropriate feedback about my performance.	59 (39.3)	0.694
11. In this clinical area, it is difficult to discuss errors.	61 (40.7)	0.431
12. I am encouraged by my colleagues to report any patient safety concerns I may have.	77 (51.3)	0.658
13. The culture in this clinical area makes it easy to learn from the errors of others.	93 (62)	0.534
Job satisfaction		
14. I like my job.	122 (81.3)	0.550
15. Working in this hospital is like being part of a large family.	76 (50.7)	0.835
16. This is a good place to work.	60 (40)	0.862
17. I am proud to work in this clinical area.	54 (36)	0.867
18. Morale in this clinical area is high.	57 (38)	0.732
Stress recognition		
19. When my workload becomes excessive, my performance is impaired.	125 (83.3)	0.786
20. I am less effective at work when I am fatigued.	132 (88)	0.884
21. I am more likely to make errors in tense or hostile situations.	121(80.7)	0.804
22. Fatigue impairs my performance during emergencies.	116 (77.3)	0.794
Perception of management		
23. Management supports my daily efforts.	41(27.3)	0.672
24. Management does not knowingly compromise the safety of patients.	77(51.3)	0.510
25. I get adequate and timely information about events in the hospital that might affect my work from the unit management.	79 (52.7)	0.583
26. The levels of staffing in this clinical area are sufficient to handle the number of patients.	35 (23.3)	0.636
Working condition		
27. This hospital does a good job of training new personnel.	111 (74)	0.492
28. All the necessary information for diagnostic and therapeutic decisions is routinely available to me.	78 (52)	0.549
29. Trainees in my discipline are adequately supervised.	68 (45.3)	0.679
30. Problems of the personnel in this clinical area are dealt with constructively by our management.	48 (32)	0.673

NPR: Number of positive response (including slightly agree and strongly agree)

Regarding the dimensions, the mean scores of the teamwork climate, safety climate, job satisfaction, stress recognition, perception of management, and working condition were estimated at 20±3.8, 21.71±4.3, 16.08±4.2, 15.94±2.97, 12±2.4, and 13.25±2.78, respectively. Cronbach's α of the total scale was determined at 0.74, and it was ranged from 0.4 (perception of management) to 0.83(job satisfaction) showing the strong reliability of the SAQ. Correlation coefficients, as well as the significance of all dimensions and total scale, are displayed in Table 2.

The analysis of inter-item correlation showed that all scales, except for stress recognition were positively correlated with each other, and the correlation coefficients ranged from 0.36 to 0.66 (P<0.05).

Table 3 summarizes the calculated correlation coefficients. The CFA showed that all of the dimensions fitted the data well and indicated a good model fit for the overall safety construct. For all the dimensions, the CFI, ECVI, and RMSEA were obtained at 0.8, 0.8, and 0.02, respectively.

Table 2: Dimension description and scale reliability of the safety attitudes questionnaire

Dimensions	Cronbach's α
Teamwork climate	0.740
Safety climate	0.682
Job satisfaction	0.835
Stress recognition	0.832
Perception of management	0.406
Working condition	0.691
Total	0.74

Table 3: Inter-correlations of safety attitudes questionnaire dimensions.

Dimensions	Teamwork climate	Safety climate	Job satisfaction	Stress recognition	Perception of management	Working condition
Teamwork climate	1					
Safety climate	0.66*	1				
Job satisfaction	0.56*	0.53*	1			
Stress recognition	-0.131	-0.038	-0.122	1		
Perception of management	0.46*	0.52*	0.44*	0.04	1	
Working condition	0.47*	0.52*	0.36*	-0.03	0.63*	1

*P<0.05

This cross-sectional study evaluated the validity and reliability of SAQ in Iran. Although the SAQ has been translated into different languages (12,10), this is the first time it was translated into Persian and validated in Mashhad, Iran. The internal consistency of the SAQ is as good as that of the original English version (8,12). The SAQ questionnaire is also valid based on its good model construct. Cronbach's α coefficients higher than 0.8 indicate excellent internal consistency (13), and an excellent internal consistency by Cronbach's α coefficients was found for job satisfaction and stress recognition domains. Moreover, the internal consistency of the other domains was good, except for the working condition, which was reported poor. Other studies validated this questionnaire reported acceptable values for internal consistency (14-16).

The experts confirmed the content validity of the SAQ questionnaire as good. Furthermore, the construct validity of this tool was confirmed by the goodness of fit indicators in a CFA. The six-dimensional model fitted the data well; moreover, it was found that the CFI was lower than that in other studies (17,18). In our study, the RMSEA was estimated at 0.02, which was better than the values reported in the studies conducted in Taiwan (0.06) (11) and China (0.05) (18).

The inter-item correlation indicated that all scales, except for the stress recognition, were positively related. Other studies reported a low or no correlation of this domain with other factors of SAQ (19); however, it has been discussed in the studies as a reverse correlation with other domains of the SAQ (20). Regarding the limitations of this study, one can name the convenience sampling method utilized in this study; therefore, the findings may not be generalized to all hospital employees in Iran. It is worth mentioning that this study is empowered by the inclusion of an operation room context to validate the SAQ questionnaire.

Conclusion

The Persian version of the SAQ was a valid and reliable tool in Mashhad, Iran. Validation of SAQ induced the attention of hospital managers and health workers for patient safety culture.

Acknowledgments

The authors would like to thank the Clinical Research Development Unit, Imam Reza Hospital, Mashhad University of Medical Sciences, Mashhad, Iran, for their assistance in this study. This study was extracted from a thesis (No. 9033) submitted to the Mashhad University of Medical Sciences, Mashhad, Iran.

References

1. de Vries EN, Ramrattan MA, Smorenburg SM, Gouma DJ, Boermeester MA. The incidence and nature of in-hospital adverse events: a systematic review. Qual Saf Health Care (Internet). 2008 (cited 2008);17:216–23.
2. Huang DT, Clermont G, Kong L, Weissfeld LA, Sexton JB, Rowan KM, et al. Intensive care unit safety culture and outcomes: a US multicenter study. Int J Qual Health care : J Int Soc Qual Health Care (Internet). 2010 Jun 9 (cited 2010 Jun 9); 22(3):151–61.
3. Ostroff C, Kinicki AJ, Tamkins MM. Organizational Culture and Climate. In: Handbook of Psychology (Internet). John Wiley & Sons, Inc.; 2003 (cited 2003 Apr 15).
4. Schein EH. Organizational culture and leadership. Vol. The Jossey-Bass business & management series. San Francisco: Jossey-Bass; 2010.
5. Advisory Committee on the Safety of Nuclear Installations. Advisory Committee on the Safety of Nuclear Installations (1993) ACSNI study group on human factors. Third report. Organising for safety, London: Health and ACSNI study group on human factors. Third report. Organising for safety, London, UK: Advisory Committee on the Safety of Nuclear Installations; 1993.
6. Bodur S, Filiz E. Validity and reliability of Turkish version of "Hospital Survey on Patient Safety Culture" and perception of patient safety in public hospitals in Turkey. BMC Health Serv Res (Internet). 2010 Jan 28 (cited 2010 Jan 28); 10:28.
7. Colla JB, Bracken AC, Kinney LM, Weeks WB. Measuring patient safety climate: a review of surveys. Qual Saf Health care (Internet). 2005 (cited 2005); 14:364–6.
8. Sexton JB, Helmreich RL, Neilands TB, Rowan K, Vella K, Boyden J, et al. The Safety Attitudes Questionnaire: psychometric properties, benchmarking data, and emerging research. BMC Health Serv Res (Internet). 2006 Apr 3 (cited 2006 Apr 3); 6:44.
9. Zimmermann N, Küng K, Sereika SM, Engberg S, Sexton B, Schwendimann R. Assessing the Safety Attitudes Questionnaire (SAQ), German language version in Swiss university hospitals--a validation study. BMC Health Serv Res (Internet). 2013 Sep 10 (cited 2013 Sep 10);13:347.
10. Deilkås ET, Hofoss D. Psychometric properties of the Norwegian version of the Safety Attitudes Questionnaire (SAQ), Generic version (Short Form 2006). BMC Health Serv Res (Internet). 2008 Sep 22 (cited 2008 Sep 22); 8:191.
11. Lee W-C, Wung H-Y, Liao H-H, Lo C-M, Chang F-L, Wang P-C, et al. Hospital safety culture in Taiwan: a nationwide survey using Chinese version Safety Attitude Questionnaire. BMC Health Serv Res (Internet). 2010 Aug 10 (cited 2010 Aug 10); 10:234.
12. Modak I, Sexton JB, Lux TR, Helmreich RL, Thomas EJ. Measuring safety culture in the ambulatory setting: the safety attitudes questionnaire--ambulatory version. J Gen Intern Med (Internet). 2007 Jan 1 (cited 2007 Jan 1); 22(1):1–5.
13. Dov Z. Safety climate and beyond: A multi-level multi-climate framework. Saf Sci (Internet). 2008 Mar 1 (cited 2008 Mar 1);46(3).
14. Gabrani A, Hoxha A, Simaku A, Gabrani JC. Application of the Safety Attitudes Questionnaire (SAQ) in Albanian hospitals: a cross-sectional study. BMJ open (Internet). 2015 Apr 15 (cited 2015 Apr 15);5(4):e006528.
15. Kristensen S, Sabroe S, Bartels P, Mainz J, Christensen KB. Adaption and validation of the Safety Attitudes Questionnaire for the Danish hospital setting. Clin Epidemiol (Internet). 2015 Feb 2 (cited 2015 Feb 2);7:149–60.
16. Raftopoulos V, Savva N, Papadopoulou M. Safety culture in the maternity units: a census survey using the Safety Attitudes Questionnaire. BMC Health Serv Res (Internet). 2011 Sep 27 (cited 2011 Sep 27);11:238.
17. Kaya S, Barsbay S, Karabulut E. The Turkish version of the safety attitudes questionnaire: psychometric properties and baseline data. Qual & Saf Health care (Internet). 2010 Dec 29 (cited 2010 Dec 29);19(6):572–7.
18. Li Y, Zhao X, Zhang X, Zhang C, Ma H, Jiao M, et al. Validation study of the safety attitudes questionnaire (SAQ) in public hospitals of Heilongjiang province, China. PloS one (Internet). 2017 Jun 21 (cited 2017 Jun 21); 12(6): e0179486.
19. S. Kaya, S. Barsbay, E. Karabulut. The Turkish version of the safety attitudes psychometric properties and baseline data. Qual Saf Health Care, 19 (2010), pp. 572-577.
20. A. Zenere, M.E. Zanolin, R. Negri, F. Moretti, M. Grassi, S. TardivoAssessing safety culture in NICU: psychometric properties of the Italian version of Safety Attitude Questionnaire and result implications. J Eval Clin Pract, 22 (2015), pp. 275-282.