SAFETY IN HEALTH

SHORT REPORT   **Open Access**

Patient safety culture within a university hospital: feasibility trial

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Abstract

Background: Developing a patient safety culture is an evolving process for organizations. An accepted tool to assess the patient safety culture is the Hospital Survey on Patient Safety Culture (HSOPSC). Recently, the HSOPSC was translated into German. It was the primary aim of this short report to assess the reliability of the German HSOPSC within a university hospital in Austria.

Findings: The German version of the survey was adjusted to local circumstances. Finally, the survey contained 48 questions using the five-point Likert response scale of agreement. The online survey was sent out to 6317 employees. A total of 415 employees took part in the online survey (6.6 %). The majority (n = 299, 72.0 %) had been employees without an executive function. 70 (16.9 %) physician, 229 (55.2 %) nurses, 47 (11.3 %) medical technical assistants and 69 (16.6 %) administrative employees answered to the survey. The dimension that received the highest positive score was "manager expectations and actions promoting safety" (3.90 ± 0.84 SD). Within outcome measures "patient safety in general" showed the lowest score (2.34 ± 0.71 SD).

Conclusion: Reliability for the survey according to Cronbach's alpha coefficient was considered good. The German version of the HSOPSC can be a useful instrument within Austrian hospitals to assess the patient safety culture. This particular survey can be used as a reference value for further patient safety climate surveys within the organization.

Keywords: Patient safety, Patient safety culture

Background

Patient safety culture is determined by the requirement of understanding of values, attitudes, competences and patterns behavior and focus on organization's care processes and involved workforces [1–3]. However, developing a patient safety culture is an evolving process within an organization and needs patient safety programs on international, national and organizational levels. In 2006, the World Health Organization (WHO) launched the High 5 s project to address continuing major concerns about patient safety around the world [4]. For example, on a national level, the Austrian Federal Ministry of Health released a model for a distinct patient safety strategy and defined five intervention fields based on the

capacity building concept and comprises i) policy development measures, ii) organization development, iii) personnel development measures, iv) monitoring measures and v) measures to raise public awareness [5]. Within the organizational level, clinical risk management and critical incident reporting systems accompanied with open communication and teamwork are some components to create a patient safety culture within an organization [6, 7].

Measuring patient safety culture can be performed in different ways such as interview-technique, on-site observations, focus groups and individual or self-administered questionnaires [3]. An accepted tool to assess the patient safety culture is the so-called Hospital Survey on Patient Safety Culture (HSOPSC) and was developed by the Agency for Healthcare Research and Quality [8]. The survey consists of 12 dimensions of culture pertaining safety. The HSOPSC is widely distributed in the USA and in the meantime also within Europe [3, 9–11]. Whereas in some

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European countries the assessment of the patient safety culture became mandatory and was linked to reimbursement as well as to issue reports on improvement strategies [10]. However, for Austria no such rules exist. HSOPSC survey results are available for organizations and investigated subgroups such as physicians, nurses, students or pharmacists' attitudes concerning patient safety [12–16].

In the past, questions about the applicability of the US HSOPSC arose [10] as significant differences between healthcare systems exist and suggest careful testing in other countries. Recently, the HSOPSC was translated into German and was tested within a University Hospital in Switzerland [11]. It was therefore the primary aim of this feasibility trial to assess if the German version of the HSOPSC is reliable within a university hospital in Austria. To the best of our knowledge this is the first report concerning the measurement of patient safety culture in Austria.

Methods
Questionnaire
ETH Zurich, Center for Organizational and Occupational Sciences [17] translated the HSOPSC survey into German. Survey results were separated into three levels:

- Level 1: 9 dimensions concerning the unit-level
- Level 2: 3 dimensions concerning the hospital-level
- Level 3: 4 Outcome measures

According to the recommendation of ETH the survey was changed to local circumstances. Within the dimensions "staffing" two questions were deleted and for "Manager expectations and actions promoting safety" one question was deleted. An additional file shows the final version of the survey as used in this feasibility trial [see Additional file 1].

Deleted questions were: 1) Staff in this unit work longer hours than is best for patient care; 2) We use more agency/temporary staff than is best for patient care; 3) Whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means taking shortcuts. Furthermore, one outcome measure "number of event reporting" was not used within the feasibility trial, as the critical incident reporting system was implemented just in parallel and no valid results could have been expected. Finally, the survey contained 48 questions using the 5-point Likert response scale of agreement.

Online survey
In 2014, an online survey was conducted and was sent to 6317 employees. Email addresses were obtained from the in house mailing list. Employees were informed about the aim of the survey and were invited to participate. Furthermore, employees were informed that all data will be stored in the Department of Quality and Risk Management and that data analysis will be strictly anonymous. Data tracking process and linking them to persons were explicitly excluded. Each participant was given a transaction authentication number (TAN) using the software Evasys, Healthcare Survey Automation Suite. Each TAN could only be used once and each person could only participate once. Employees had the free choice to decline participation or at any time to withdraw from the survey. Participants were given the possibility to skip questions if they felt uncomfortable with answering. The online survey was open for one month and after two weeks a reminder was sent from the system to non-responders. The conduct of the online survey was approved by the Medical University Graz Ethics Committee (vote-number: 26-172 ex 13/14).

Statistical analysis
Survey data were analyzed using descriptive statistics. Internal consistency of the questionnaire and its dimensions was measured by Cronbach's alpha coefficient. Reliability was considered good if values were >0.7 and very good if values were >0.9. All analyses were conducted using SPSS version 21.

Findings
Demographic statistics
A total of 415 employees took part in the online survey (6.6 %). The majority (n = 299, 72.0 %) had been employees without an executive function. 70 (16.9 %) physician, 229 (55.2 %) nurses, 47 (11.3 %) medical technical assistants and 69 (16.6 %) administrative and other employees answered to the survey (Table 1). Employees from surgical departments had been the largest group

Table 1 Demographic data (n = 415)

		%
Professional experience	0 – 2 years	7.2
	2 – 5 years	12.3
	5 – 10 years	19.3
	10 – 20 years	28.0
	More than 20 years	33.2
Employment	Part time	20.7
	Full time	79.3
Area of work	Patient care	93.2
	Science	4.1
	Education	2.7
Professional group	Physician	16.9
	Nurse	55.2
	Medical Technical Assistant	11.3
	Administration and others	16.6

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(n = 191, 46.0 %), followed by non-surgical departments (n = 146; 35.2 %), diagnostic departments (n = 28, 6.7 %) and administration (n = 50; 12.0 %).

Concerning the 9 dimensions of level 1, "staffing" was ranked lowest whereas "Manager expectations and actions promoting safety" received the highest score (Table 2). Within level 2, all three dimensions were lower when compared to results affecting patient safety culture within a unit/department (level 1). The outcome measure "patient safety in general" was scored lowest within the survey. Comparing results for the subgroups of employees with and without managerial responsibility revealed that in general employees with managerial responsibility were more confident within nearly each dimension (Table 3). Overall, the reliability according to Cronbach's alpha coefficient for each question was good and ranged from 0.65 to 0.88.

Discussion

In recent years it has been shown that the HSOPSC survey is a useful tool to assess the patient safety culture within healthcare environments. Since 2009, the University Hospital Graz initiated comprehensive patient safety initiatives [6, 18], however, employees perceived patient safety climate prior implementation of patient safety initiatives were not performed so far. In contrast to many European countries where the use of the HSOPSC became mandatory, the Austrian government did not recommend the survey so far. For that reason this feasibility trial

represents the first institutional survey to assess the patient safety culture in an Austrian hospital.

The dimension that received the highest score was "manager expectations and actions promoting safety" and was even higher in the subgroup of employees with managerial responsibility. "Staffing" was expected to receive a low score and is comparable to already existing studies [2, 19]. All dimensions concerning hospital wide aspects were scored lower when compared to unit levels. Furthermore, employees with managerial responsibilities feel more positive than employees without managerial responsibilities.

The "overall perception of safety" was high whereas "patient safety in general" was scored low, in general and within the subgroups. On the one side, outcome measures reveal that more patient safety activities and information campaigns are needed. On the other side, participation in this feasibility trial was low, therefore results reflect trends.

In general a threshold for which patient safety can be considered as developed or has to improve would be helpful for future surveys [3]. Nevertheless, results give valuable hints for further improvements with respect to perceived patient safety culture. The key to success will be education and training of healthcare workers focusing on patient safety as well as greater awareness of patient safety amongst patients [20].

A limitation of the current study was the response rate to the online survey. Reason could be the fact that

Table 2 Pooled survey results (n = 415)

	Mean	SD	Median	Min	Max
9 dimensions concerning a unit or department					
Manager expectations and actions promoting safety	3.90	0.84	4.00	1.00	5.00
Organizational learning	3.78	0.69	4.00	1.33	5.00
Teamwork within hospital units	3.58	0.71	3.50	1.25	5.00
Communication openness	3.69	0.73	3.67	1.00	5.00
Feedback and error communication	3.66	0.89	3.67	1.00	5.00
Non-punitive response to error	3.36	0.88	3.33	1.00	5.00
Staffing	2.88	0.93	3.00	1.00	5.00
Management support for patient safety	3.64	0.80	3.75	1.00	5.00
Handoffs and transition within the unit	3.59	0.76	3.75	1.00	5.00
3 dimensions concerning the hospital					
Teamwork across hospital units	3.35	0.58	3.25	1.25	5.00
Handoffs and transition across units	3.32	0.70	3.25	1.00	5.00
Supervisor expectations and actions promoting safety	3.45	0.89	3.67	1.00	5.00
3 Outcome measures					
Frequency of event reporting	3.45	1.11	3.67	1.00	5.00
Overall perceptions of safety	3.68	0.73	3.75	1.00	5.00
Patient safety in general	2.34	0.71	2.00	1.00	5.00

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Table 3 Comparing employees with a managing position (subgroup 1, n = 116) to employees without managing position (subgroup 2, n = 299)

		Mean	SD	Median	Min	Max
9 dimensions concerning a unit or department						
Manager expectations and actions promoting safety	Subgroup 1	4.13	0.79	4.00	1.00	5.00
	Subgroup 2	3.81	0.84	4.00	1.00	5.00
Organizational learning	Subgroup 1	3.88	0.71	4.00	1.67	5.00
	Subgroup 2	3.74	0.68	3.67	1.33	5.00
Teamwork within hospital units	Subgroup 1	3.78	0.70	3.75	1.75	5.00
	Subgroup 2	3.50	0.70	3.50	1.25	5.00
Communication openness	Subgroup 1	3.82	0.69	4.00	1.00	5.00
	Subgroup 2	3.64	0.75	3.67	1.00	5.00
Feedback and error communication	Subgroup 1	3.81	0.89	4.00	1.00	5.00
	Subgroup 2	3.61	0.89	3.67	1.00	5.00
Non-punitive response to error	Subgroup 1	3.55	0.85	3.67	1.00	5.00
	Subgroup 2	3.28	0.88	3.33	1.00	5.00
Staffing	Subgroup 1	2.99	0.94	3.00	1.00	5.00
	Subgroup 2	2.84	0.93	3.00	1.00	5.00
Management support for patient safety	Subgroup 1	3.79	0.80	4.00	1.00	3.79
	Subgroup 2	3.59	0.79	3.75	1.00	3.59
Handoffs and transition within the unit	Subgroup 1	3.56	0.81	3.50	1.00	5.00
	Subgroup 2	3.60	0.74	3.75	1.00	5.00
3 dimensions concerning the hospital						
Teamwork across hospital units	Subgroup 1	3.38	0.60	3.25	1.25	4.75
	Subgroup 2	3.34	0.57	3.25	1.75	5.00
Handoffs and transition across units	Subgroup 1	3.31	0.72	3.00	1.25	5.00
	Subgroup 2	3.33	0.69	3.25	1.00	5.00
Supervisor expectations and actions promoting safety	Subgroup 1	3.66	0.91	3.67	1.00	5.00
	Subgroup 2	3.37	0.87	3.33	1.00	5.00
3 Outcome measures						
Frequency of event reporting	Subgroup 1	3.60	1.04	4.00	1.00	5.00
	Subgroup 2	3.39	1.14	3.67	1.00	5.00
Overall perceptions of safety	Subgroup 1	3.76	0.74	3.75	1.00	5.00
	Subgroup 2	3.65	0.73	3.75	1.00	5.00
Patient safety in general	Subgroup 1	2.32	0.75	2.00	1.00	5.00
	Subgroup 2	2.35	0.69	2.00	1.00	5.00

25-50 % of all employees within the hospital had no yet activated their email account [18]. Another reason can be the inflationary trend to perform surveys in general.

Conclusion

In conclusion, the German version of the HSOPSC was a useful instrument to investigate the patient safety culture, however, improvements are needed. To show a homogenous picture of a patient safety culture within the organization it is necessary to increase awareness and motivation to participate in further surveys. This survey can be used as a reference value for further patient safety climate surveys within the organization.

Additional file

Additional file 1: Final version of the online questionnaire.

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