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Original research article

Hospital patient safety culture in selected Slovak hospitals: a cross-sectional study

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Abstract

Introduction: Patient safety is one of the most serious and currently very relevant global health problems. In addition to indicators of quality of nursing care, it is important to consider safety culture as one of the factors in the effort to ensure patient safety.

Aim: To assess nurses' perception of hospital patient safety culture.

Methods: Empirical data was collected using the Hospital Survey on Patient Safety Culture (HSOPSC). The research sample consisted of 196 nurses working in six Slovak hospitals. The relationships between variables were tested by Spearman's rho. Multiple linear regression analysis was used to determine predictors of the degree of patient safety.

Results: The highest number of positive responses was observed in the department's teamwork domain (63.1%), feedback and communication (61.2%), education and continuous improvement (55.3%). A significant negative predictor of the perception of patient safety was the higher number of adverse events reported in the last year (–0.226; 0.002), and the higher number of hours worked per week (–0.215; 0.002). Significant positive predictors of the degree of patient safety were the following hospital culture of patient safety dimensions: teamwork within units (0.165; 0.048), management support for patient safety (0.172; 0.045), and handoffs and transitions (0.172; 0.049).

Conclusions: The level of patient safety culture underlines the quality and safety of care provided by health care providers. The Patient Safety Culture Assessment serves to identify areas for improvement, as well as to raise safety awareness among professionals. Our study can therefore be considered partial and can form a starting point for the further implementation of quantitative and qualitative research on a larger sample of respondents.

Keywords: Hospitals; Nurses; Patient safety; Safety culture

Introduction

For many years, patient safety has been among the foundations of health care provision (Ulrich and Kear, 2014). Within the methodological guidelines, patient safety is defined as "the prevention of adverse events during the period of healthcare care provision with the aim of minimizing patient harm and achieving safer healthcare" (Methodical Guidelines..., 2014). The World Health Organization defines this term as a coordinated effort that serves to prevent harm to the patient during the health care delivery process (WHO, 2015). For health care providers, patient safety becomes a high priority, which is also part of the provided nursing care and scientific research topics, the main goal of which is to constantly improve patient safety in practice and to be able to constantly move it forward. In European countries, adverse events due to care delivery have been shown to occur in up to 8–12% of hospitalized patients and have a significant impact on overall patient morbidity and mortality (Ammouri et al., 2015). If safety procedures are followed, up to 50–70% of these events can be prevented (Granel et al., 2020).

The concept of patient safety is closely related to the culture of safety, which, according to the methodological guidelines, is understood as an environment in an institutional health care facility, where the overall behavior, whether collective or individual, is based on a constant effort to minimize harm to the patient (Methodical Guidelines..., 2014). In their study, Ulrich and Kear (2014) concluded that safety culture represents the values shared among organizational members. Values determine what is important in an organization, and the beliefs of members determine how things work in the organization. The overall improvement of patient safety is aided by the interaction of team members, organizational structures, and systems, which together create standards of organizational behavior. Safety culture is a framework composed of several parts. In their review study Sammer et al. (2010) defined components that include leadership, staff teamwork, implementation of evidence-based practice (EBP), team communication, need for education, and patient-centered nursing care.

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Great importance is also attached to building a culture of safety in the health care system, which should be aimed at organizations, professionals, and patients, and of course learning from mistakes (Behzadifar et al., 2019). In connection with this, over the last decade we have noticed an increase in publications aimed at evaluating the culture of patient safety in the hospital environment.

The aim of our study was to assess nurses' perception of hospital patient safety culture in selected Slovak hospitals and to assess its impact on the level of patient safety.

Material and methods

The study adopted a descriptive cross-sectional design. Research was carried out in six public hospitals in two regions in Slovakia. Respondents (registered nurses) were recruited using the convenience sampling method. We approached 6 Slovak hospitals, and agreed to carry out the research received from four hospitals (Liptovský Mikuláš, Dolný Kubín, Trstená, Považská Bystrica). Out of the total number of 250 questionnaires, 205 were returned (return rate 78%), while 10 were excluded based on education (doctor, medical assistant) and workplace (outpatient clinics within hospitals). Our sample consisted of 195 nurses working in internal medicine and surgery departments of Slovak hospitals. The research was conducted from September 2021 to December 2021. Data were collected using the Hospital Survey on Patient Safety Culture (HSOPSC) and translated into Slovak, using the forward-backwards translation method (Sorra & Nieva, 2004). HSOPSC consists of 42 items and 12 dimensions (Teamwork within units; Supervisor/manager expectations and actions promoting patient safety; Organizational learning and continuous improvement; Openness in communication; Feedback and communication about errors; Nonpunitive response to errors; Staffing; Management support for patient safety; Teamwork across units; Handoffs and transitions; Overall perception of patient safety; Frequency of events reported). It also includes an assessment of the degree of patient safety and the number of adverse events reported over the past 12 months. The options in the questionnaire for the respondents are offered in the form of a 5-point Likert scale, as follows: 1 – strongly disagree; 2 – disagree; 3 – neither; 4 – agree; 5 – strongly agree and from 1 – ever; 2 – rarely; 3 – sometimes; 4 – most of the time; 5 – always. The tool contains other items – demographics categories, patient safety grade, number of reported events in the last year. The Slovak version of the HSOPSC was included in the questionnaire (Sovariova Soosova et al., 2018). The reliability of the original version of the questionnaire reached a value of 0.857, which reflects the acceptable reliability of the results. For the statistical analysis of the data, we used the statistical program SPSS version 25. The scores are recalculated to obtain the average percentage of positive responses. For positively worded items, the percentage of positive answers is obtained by the sum of the answers 'I agree' and 'completely agree' (resp. mostly and always), negative answers by the sum of the answers 'I disagree' and 'completely disagree' (resp. never and rarely). A positive response value of 75% or more represents "strong" support for patient safety. Any results at 50% are neutral, any under are negative (Wang et al., 2014). To assess the relationship between ordinal and cardinal variables, we used Spearman's rho correlation coefficient at the 1% and 5% significance levels. We used multiple linear regression analysis to assess predictors of safety grade. Degree of safety was included as a dependent variable. Selected working characteristics of nurses were included in the testing as independent variables in the first step, and dimensions of the patient safety culture in the hospital were added in the second step. The results were tested at a statistical significance level of 1% and 5%. The research was carried out after obtaining the approval of the ethics committee of each hospital involved in the research, after submitting the application and developing the research problems, objectives, hypotheses, and information for the nurses.

Results

The total number of questionnaires distributed was 250, and the return rate was 78.0%. The research sample consisted of 195 nurses who worked in internal medicine (58.0%) and surgical departments (42.0%) of Slovak hospitals. In terms of education, the research involved nurses with secondary education (18.4%), higher professional education (15.0%), with a bachelor's degree (44.6%) and with a master's degree (22.0%). The mean age of the nurses was 43.5 years, ranging from 22 to 64 years. The average length of experience as a nurse is 20.5 years, ranging from 1 year to 40 years. In relation to the job position, the greater part of our research sample consisted of nurses who specialize in the relevant field of specialization (56.4%). According to our research, the majority of them work more than 30 hours/week (97.0%). Most nurses (66.7%) also agreed that their working time alternates between day, night, or afternoon shifts. Up to 84.7% of nurses do not plan to leave their current job position.

The average percentages of positive responses in the individual dimensions are reported in Table 1.

We recorded the highest values of positive answers in the following dimensions: teamwork within units, feedback and error communication, organizational learning and continuous improvement. We record the lowest % of positive responses in the following dimensions: staffing, communication openness, handover and transitions, and nonpunitive response to errors.

The correlation analysis between the dimensions of the HSOPSC, the Patient Safety Grade, the Number of Events Reported, and selected work characteristics of nurses is presented in Table 2.

Table 1. The level of nurses' perception on patient safety (%) within dimensions of HSOPSC

Dimensions of HSOPSC	The highest number of positive responses
Teamwork within units	63.08%
Feedback and communication about errors	61.20%
Organisational learning and continuous improvement	55.38%
Management support for patient safety	47.01%
Frequency of events reported	44.96%
Teamwork across units	42.56%
Overall perception of patient safety	39.36%
Supervisor/manager expectations	37.44%
Staffing	28.08%
Openness of communication	24.61%
Handoffs and transitions	17.18%
Nonpunitive response to errors	15.81%

Table 2. Correlations between the HSOPSC dimensions versus selected work characteristics of nurses, patient safety grade, and number of adverse events

Dimensions of the HSOPSC	Number of hours worked $r(S)$	Education of nurses $r(S)$	Number of adverse events $r(S)$	Patient safety grade $r(S)$
Teamwork within units	0.089	0.101	**–0.241****	**0.151***
Supervisor/manager expectations	0.031	–0.068	0.108	**0.165***
Organisational learning and continuous improvement	**–0.143***	–0.024	–0.020	**0.154***
Management support for patient safety	0.075	**0.160***	0.093	**0.165***
Overall perception of patient safety	–0.099	–0.011	**–0.174***	**0.154***
Feedback and communication about errors	0.109	**0.217****	0.120	**0.257****
Openness of communication	–0.083	0.063	**–0.205****	**0.174***
Frequency of events reported	0.120	0.092	0.072	**0.145***
Teamwork across units	0.092	0.035	0.060	**0.279****
Staffing	**–0.160***	–0.091	–0.032	**0.218****
Handoffs and transitions	–0.015	–0.074	–0.117	**0.292****
Nonpunitive response to errors	**–0.141***	–0.135	**–0.163***	**0.288****

Legend: Spearman's rho correlation coefficient at the 1% (** $p \leq 0.001$) and 5% (* $p \leq 0.05$) significance levels.

The results of the correlation analysis show statistically significant relationships with a negative low strength correlation between the number of hours worked and the dimensions of the hospital's patient safety culture: organizational learning and continuous improvement ($r = –0.143$; $p = 0.046$), staffing ($r = –0.160$; $p = 0.025$), and nonpunitive response to errors ($r = –0.144$; $p = 0.049$). From the point of view of nurse education, we confirmed statistically significant relationships with a positive low strength correlation in the dimensions of management support for patient safety ($r = 0.160$; $p = 0.025$) and feedback and communication about errors ($r = 0.217$; $p = 0.002$). In terms of the number of reported adverse events over the past year and the dimensions of the hospital culture of patient safety, we confirmed statistically significant relationships with a negative low strength correlation in the following dimensions: overall perception of patient safety ($r = –0.174$; $p = 0.015$), teamwork within units ($r = –0.241$; $p = 0.001$), communication openness ($r = –0.205$; $p = 0.004$), and nonpunitive response to errors ($r = –0.163$; $p = 0.023$).

We determined the predictors of the level of security by linear regression analysis of patients. In the first step, the selected variables were included in the testing as independent variables of nurses' work characteristics (Table 3).

A higher number of reported adverse events in the past year and a higher number of hours worked per week were significant predictors of patient safety. It can be concluded that the number of adverse events reported in the last year and the number of worked hours per week can both predict the low degree of safety. Nurses' work characteristics contributed about 12.4% to the explanation of the variability of the degree of safety.

Table 3. Patient Safety Grade and work characteristics

Patient safety grade	Standardized beta coefficient	p
Number of adverse events reported in the last year	–0.226**	**0.002**
Length of practice	–0.078	0.277
Number of hours worked per week	–0.215**	**0.002**
Education	0.022	0.769
Corrected R^2	***F*-test**	***p***
0.124	29.18	**0.002**

Legend: R^2 – corrected coefficient of determination, at the 1% (** $p \leq 0{,}001$) significance level.

In the second step, the dimensions of the hospital culture of patient safety were added (Table 4).

The following dimensions were significant predictors of the degree of safety: teamwork within units, management support for patient safety, and handoffs and transitions – which explained up to 41.9% variability in the degree of patient safety. A better assessment of individual dimensions is related to a higher degree of patient safety.

Table 4. Patient safety grade and dimensions of the HSOPSC

Patient safety grade	Standardized beta coefficient	*p*
Teamwork within units	0.165*	**0.048**
Supervisor/manager expectations	0.078	0.291
Organisational learning and continuous improvement	0.047	0.579
Management support for patient safety	0.172*	**0.045**
Overall perception of patient safety	0.055	0.470
Feedback and communication about errors	0.161	0.098
Openness of communication	0.062	0.541
Frequency of events reported	0.056	0.488
Teamwork across units	0.123	0.067
Staffing	0.025	0.728
Handoffs and transitions	0.172*	**0.049**
Nonpunitive response to errors	0,129	0.128
Corrected R^2	***F*-test**	***p***
0.419	59.88	0.001

Legend: R^2 – corrected coefficient of determination, at 5% (* $p \leq 0.05$) significance levels.

Discussion

Patient safety is a central component of quality care. In connection with continuous efforts to improve the quality of care provided (Gambashidze et al., 2017; Griffiths et al., 2019; Sammer et al., 2010), the goal is to reduce the incidence and impact of adverse events on health care systems worldwide (Kirwan et al., 2013). The aim of the study was to find out how nurses perceive the culture of safety of hospitalized patients in selected Slovak hospitals. Achieving a positive response score of 75% and above is considered an optimal safety culture.

The best rated dimensions in our research were: teamwork within units, feedback and communication about errors, and organizational learning and continuous improvement. However, the score of positive answers in the mentioned dimensions did not reach the minimum value of 75%. The results of our study coincide with the results of other authors (Bartoníčková et al., 2018b; Gurková et al., 2020b) who also recorded the highest percentage of positive responses in these dimensions. In contrast, the dimensions that were the worst rated were staffing, Openness of communication, handoffs and transitions, and nonpunitive response to errors. Staffing was the worst rated dimension in several studies (Gurková et al., 2020a; Kalánková et al., 2021; Sováriová Soósová et al., 2017), confirming that staffing is one of the biggest challenges for nurses in providing quality nursing care while ensuring patient safety. Gurková et al. (2020a) state that the problem of understaffing in the sociocultural context brings more nursing assistants, which is only a temporary solution to the situation.

Through correlational analysis, we identified positive statistically significant relationships between the level of patient safety, nurse education, and the dimensions of patient safety culture in the hospital. The results show that the higher the level of the education of nurses, the better they know how to evaluate individual dimensions and, at the same time, see errors that affect the culture of patient safety in the given dimensions. Nurses who have higher education have greater knowledge not only of practice, but also of management and communication, which they know how to use effectively in the hospital environment (Aiken et al., 2017; Bartoníčková et al., 2018a; Robida, 2013; Sováriová Soósová et al., 2017).

We confirmed negative statistical relationships between the number of hours worked and the following dimensions of the hospital's patient safety culture: organizational learning and continuous improvement, staffing and nonpunitive response to errors. In the study of Kalánková et al. (2021), the number of hours worked (overtime) was listed among the significant predictors of the lower rated dimensions: organizational learning and continuous improvement, feedback, Openness in communication, and staffing. In our study, we also confirmed negative statistically significant relationships in terms of the number of reported adverse events over the last year and the dimensions of the hospital's patient safety culture: overall perception of patient safety; teamwork within units; openness in communication; and nonpunitive response to errors. Factors that affect this result could be the number of patients per nurse, the lack of nurses on the job, the physical and psychological burden of nurses, the number of hours worked, ineffective communication on the part of supervisors, and insufficient material resources, including equipment at the workplace (Ammouri et al., 2015; Lee and Oh, 2020; Sováriová Soósová et al., 2017). Through linear regression analysis, we confirmed that a significant negative predictor of the perception of the degree of patient safety was a higher number of reported adverse events in the last year and a higher number of hours worked per week. The dimensions of the hospital culture of patient safety were significant positive predictors of the degree of safety: teamwork within units, management support for patient safety, and handoffs and transitions. These variables significantly explained up to 41.9% of the variability in the degree of patient safety. Authors of national and international studies support our results (Kalánková et al., 2021; Kirwan et al., 2013; Sováriová Soósová et al., 2017). As negative predictors of the degree of patient safety they reported: the number of reported adverse events per year, the number of weekly hours worked, and longer work experience in the given department. Positive predictors of patient safety in their studies were: the education of nurses and the dimensions of teamwork within units, management support for patient safety, and staffing.

Limitations of the study

A methodological limitation of the study was the selection of respondents from only two regions of Slovakia (Žilinský, Trenčiansky). Selecting respondents from across the entire territory of Slovakia would solve this limitation. Our study can therefore be considered partial and can form a starting point for the further implementation of quantitative and qualitative research on a larger sample of respondents.

Conclusions

The culture of patient safety is an important predictor of the level of patient safety in hospitals in Slovakia. The results of our research show that the best evaluated dimensions were: teamwork within units, feedback and error communication, organizational learning, and continuous improvement. The

lowest % of positive responses were in the dimensions of: staffing, openness in communication, handover and transitions, and nonpunitive response to errors. A higher number of reported adverse events in the past year and a higher number of hours worked per week were significant predictors of patient safety. A patient safety culture assessment serves to identify areas for improvement, as well as to increase safety awareness among professionals. At the same time, it can help track changes in patient safety and enable a comparison of results at the national and international level.

Ethical aspects and conflict of interests

The authors have no conflict of interests to declare.

Kultúra bezpečnosti pacienta vo vybraných slovenských nemocniciach: prierezová štúdia

Súhrn

Úvod: Bezpečnosť pacientov patrí medzi najzávažnejší a stále aktuálny celosvetový problém zdravotníctva. Okrem ukazovateľov kvality ošetrovateľskej starostlivosti je dôležité zohľadňovať aj kultúru bezpečnosti ako jeden z faktorov v snahe zaistiť bezpečnosť pacienta.

Cieľ: Zistiť, ako hodnotia sestry kultúru bezpečnosti hospitalizovaných pacientov.

Metodika: Zber empirických údajov prebiehal pomocou dotazníka The Hospital Survey on Patient Safety Culture (HSOPSC). Výskumnú vzorku tvorilo 196 sestier pracujúcich v 6 nemocniciach na Slovensku. Na posúdenie vzťahu medzi ordinálnymi a kardinálnymi premennými bol použitý Spearmanov korelačný koeficient rho. Na posúdenie prediktorov stupňa bezpečnosti bola použitá viacnásobná lineárna regresná analýza.

Výsledky: Najvyššie percento pozitívnych odpovedí boli zaznamenané v dimenziách tímová spolupráca na oddelení (63,08%), spätná väzba a komunikácia (61,20%), vzdelávanie a kontinuálne zlepšovanie (55,38%). Signifikantným negatívnym prediktorom vnímania stupňa bezpečnosti pacientov bol vyšší počet hlásených nežiaducich udalostí za posledný rok (–0,226; 0,002) a vyšší počet odpracovaných hodín za týždeň (–0,215; 0,002). Významnými pozitívnymi prediktormi stupňa bezpečnosti boli dimenzie nemocničnej kultúry bezpečnosti pacientov: tímova spolupráca na oddelení (0,165; 0,048), funkcie manažmentu (0,172; 0,045) a odovzdávanie informácií (0,172; 0,049).

Záver: Úroveň kultúry bezpečnosti pacienta ovplyvňuje kvalitu poskytovanej zdravotnej starostlivosti. Hodnotenie kultúry bezpečnosti pacienta slúži na identifikáciu oblastí na zlepšenie, ako aj na zvýšenie povedomia o bezpečnosti pacientov medzi odborníkmi. Našu štúdiu možno považovať za parciálnu a predstavuje východisko pre realizáciu ďalších kvantitatívnych a kvalitatívnych štúdií na väčšej vzorke respondentov.

Kľúčové slová: bezpečnosť pacienta; kultúra bezpečnosti; nemocnice; sestry

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