

PERCEPTION OF PATIENT SAFETY CULTURE AMONG HOSPITAL STAFF DOJEMANJE KULTURE VARNOSTI PACIENTOV MED BOLNIŠNIČNIM OSEBJEM

Rumyana STOYANOVA^{1*}, Rositsa DIMOVA¹, Bianka TORNYOVA², Momchil MAVROV², Harieta ELKOVA³

¹Medical University - Plovdiv, Health management and health economics, 15a Vassil Aprilov blvd, 4002 Plovdiv, Bulgaria

²Medical University - Plovdiv, Healthcare management, 15a Vassil Aprilov blvd, 4002 Plovdiv, Bulgaria

³Hospital "St. Panteleymon", Physical and Rehabilitation Medicine, 4004 Plovdiv, Bulgaria

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ABSTRACT

Keywords:

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Introduction: A patient safety culture (PSC) is a complex phenomenon, representing an essential part of the organizational culture and refers to the shared values, conceptions and beliefs which contribute to the formation and encouragement of safe behavioural models in a health organization. With this study, the authors wanted to delineate the attitude of hospital staff in Bulgaria regarding PSC and to document to whether attitudes differ between physicians and other healthcare professionals (HCPs).

Methods: A national cross-sectional survey among 384 HCPs was conducted using an online version of the Bulgarian version of Hospital Survey on Patient Safety Culture (B-HSOPSC). The data was analysed with descriptive statistics, non-parametric Mann-Whitney U and x² tests.

Results: The physicians represented 37.50% (144) of the sample and other HCPs 62.50% (240). Respondents from governmental/municipal hospitals prevailed (53.6%). The dimensions "Staffing" and "Non-punitive response to error" were most problematic, as their percentage of positive response rates (PRRs) were lowest. However, "Handoffs and transitions" and "Supervisor/manager expectations and actions promoting safety" showed the highest mean values in both physicians and other HCPs. From all participants, 76.0% have never reported an adverse event or error.

Conclusion: The results of the study show that all respondents demonstrate a positive attitude regarding PSC. A comparison of the mean values and that of PRRs in the dimensions did not show any group differences, according to the type of staff position, i.e. physicians or other HCPs.

IZVLEČEK

Ključne besede:

zdravstveni delavci, kultura varnosti pacientov, e-platforme, HSOPSC

Uvod: Kultura varnosti pacientov je kompleksen pojav, ki je bistven del organizacijske kulture in se nanaša na skupne vrednote, pojmovanja in prepričanja, ki prispevajo k oblikovanju in spodbujanju varnih vedenjskih modelov v zdravstveni organizaciji. Avtorji so v tej študiji želeli opisati odnos bolnišničnega osebja do kulture varnosti pacientov v Bolgariji ter dokazati, ali se stališče zdravnikov razlikuje od stališča drugih zdravstvenih delavcev

Metode: Opravljena je bila nacionalna presečna raziskava med 384 zdravstvenimi delavci, za katero je bila uporabljena spletna različica bolgarske različice ankete o bolnišnični kulturi varnosti pacientov (B-HSOPSC). Podatki so bili analizirani z opisno statistiko, neparametričnim Mann-Whitneyjevim U testom in x² testom.

Rezultati: Zdravnikov je bilo 37,50 % (144), drugih zdravstvenih delavcev pa 62,50 % (240). Prevladovali so respondenti iz državnih/občinskih bolnišnic (53,6 %). Najbolj problematični sta bili dimenziji »osebje« in »nekaznovalni odziv na napake«, saj je bil odstotek pozitivnih odgovorov pri njiju najnižji. Pri dimenzijah »Predaja pacientov in premestitve« in »Pričakovanja in ukrepi nadzornika/direktorja bolnišnice za spodbujanje varnosti« pa so bile srednje vrednosti najvišje tako pri zdravnikih kot pri drugih zdravstvenih delavcih. Delež udeležencev, ki niso nikoli sporočili neželenega dogodka ali napake, je bil 76,0 %.

Zaključek: Rezultati študije kažejo, da vsi respondenti izkazujejo pozitiven odnos do kulture varnosti pacientov. Primerjava med srednjimi vrednostmi in pozitivnimi odgovori pri dimenzijah ni pokazala razlik med skupinami glede na vrsto položaja osebja, tj. zdravniki ali drugimi zdravstvenimi delavci.

*Corresponding author: Tel. + 359 89-9936 048; E-mail: rumi_stoqnova@abv.bg

1 INTRODUCTION

Errors in medical practice have been a topic of concern since ancient times, and still remain a focus of attention, particularly after the publishing of the Institute of Medicine (IOM) report "To Error is Human: Building a Safer Health System" (1, 2). Initially, the term "safety" was mainly used in other spheres, such as the nuclear and chemical industries, as well as in aviation, however over the last two decades it has gained significant attention in the field of medicine and healthcare (3, 4).

According to the Institute of Medicine, safety is defined as "the freedom of accidental injury" (5). On the other hand, the WHO defines patient safety as the "reduction of risk of unnecessary harm associated with healthcare to an acceptable minimum" (1, 6). In fact, patient safety culture (PSC) is a term that differs from patient safety, although the former might be considered as a prerequisite for the latter (7). PSC is a complex phenomenon, representing an essential part of an organizational culture and refers to the shared values, conceptions and beliefs which contribute to the formation and encouragement of safe behavioural models in any health organization (8, 9). PSC is, in fact, a set of actions taken by the healthcare organization in order to achieve safe delivery of care. It includes effective leadership, a spirit of teamwork and co-operation, application of standardized procedures, open communication, continuous education of the staff, justice (a culture, that predominantly recognizes system errors and failures, rather than individual errors, and assumes responsibility for them) and patient centred care (10). In fact, PSC directly impacts safe medical care through the adoption of high quality and successful practices and models that encourage patient safety, and thus, indirectly prevents the delivery of low quality medical care. Generally, a lower quality of care and higher number of medical errors are associated with poor PSC. In fact, the quality of care significantly depends on the professional competence and skills of all HCPs. There is undeniable evidence that medical errors and adverse events can be significantly reduced if HCPs, especially physicians and nurses, are more focused on the safety of patients (11).

In practice, physicians and nurses may face different tasks and challenges even in the same medical environment (e.g. divisions, operating rooms, and laboratories), and their attitudes towards patient safety varies depending on the specific events they encounter (11). Therefore, it is critically important to understand the opinions and attitudes towards patient safety from various hospital staff viewpoints. Assessment of PSC is thus often performed, using surveys with validated questionnaires (12, 13). The Hospital Survey on Patient Safety Culture (HSOPSC) developed by the United States Agency for Healthcare Research and Quality (AHRQ) in 2004, has been translated and validated for use in a number of languages (14). In

our country, Bulgaria, regardless of the keen interest in PSC, limited research has been done to clearly identify the difference of perceptions among physicians and other HCPs towards hospital PCS based on the internationally validated questionnaires. Moreover, regulations about implementation of reporting systems of patient safety are still lacking in Bulgaria. Therefore, implementing the Bulgarian version of the Hospital Survey on Patient Safety Culture (B-HSOPSC) could contribute to the improvement of healthcare quality by increasing hospital staff awareness on issues related to safety (15).

The aim of this study is to delineate the attitudes of hospital staff in Bulgaria regarding PCS and to document whether such attitudes differ between physicians and other HCPs. The survey was performed online using the B-HSOPC.

2 METHODS

2.1 Study design and context

A national cross-sectional survey was conducted using an internet-based software platform for registration and evaluation of hospital PCS through B-HSOPSC. The present study was part of the №11-2017 Project of the Medical University. Linguistic validation and cultural adaptation of the B-HSOPSC questionnaire was performed, and the results showed acceptable psychometric characteristics (15).

2.2 Participants

The participants included a diverse group of professionals, either physicians or other HCPs, directly involved in patient care at their respective hospitals, regardless of the length of experience at the institution. All of them were eligible for participation in this study. It is important to note that for the purposes of the current research the term other HCPs stand for nurses, midwives, clinical and radiology technicians and rehabilitators. After obtaining written consent, the hospital staff were asked to complete the B-HSOPSC questionnaire on the e-based platform.

2.3 Data collection and questionnaire

The survey was organized as a multistep process, initially 50 out of a total of 346 multispecialty private or public hospitals (representing 14.0% of all healthcare facilities in the country) were randomly selected from all 28 administrative areas in the country. Around 5,300 medical staff were working in the selected units. A snowball sampling method was used for sample selection. This method relies on referrals from initially sampled respondents to other persons believed to have the characteristics of interest (16).

During step 1, hospital executives and managers were provided by post and email with information brochures

including a link to the web-based platform allowing access to the online questionnaire (www.rsps.bg). A cover letter introducing the purpose and expected outcomes of the project was included as additional material. Through the letters an attempt was made to obtain managers' cooperation and their encouragement of hospital staff to participate in the survey. The next stage included follow-up reminder phone calls to the hospital managers. The snowball sampling method allowed us much less control over potential respondents than otherwise, and so we had no information on how many respondents received the hyperlink to information about the study's aims, making it impossible to calculate the response rate.

The B-HSOPSC includes 42 questions, grouped in 12 different dimensions measuring patient safety culture. The questionnaire also measures two outcome variables (patient safety grade and number of adverse events reported). In three of the dimensions, the frequency of response option was used ("Feedback and communication about error", "Communication openness" and "Frequency of events reported"). The other nine dimensions were rated on a five-point Likert-type scale with agreement responses ranging from 1 ("strongly disagree" or "never") to 5 ("strongly agree" or "always"). To avoid staff anxiety regarding any negative consequences (penalties, negative image impact, etc.) of participation, and thus encourage respondents to participate, no questions about the hospital name or brand and demographic details such as gender, age and educational level were included. The participants were asked only to indicate the areas of the administrative county where the hospital is located, hospital ownership (private or public) and its teaching status.

2.4 Data analysis methods

Data was collected in the period from July to October 2018. The data was exported to SPSS 17.0 statistical software and analysed with descriptive statistics and non-parametric Mann-Whitney U and Chi-square tests. The level of significance was set at 5% probability ($P < 0.05$).

3 RESULTS

A total of 384 valid questionnaires were collected from the respondents from 15 administrative areas in Bulgaria. The percentage of other HCPs was the highest 62.50% (240), while physicians represented 37.50% (144) of the sample. Respondents from governmental or municipal hospitals prevailed (53.6%). About 61.4% of the study participants had more than 5 years' work experience, and 89.6% had direct contact with patients at the workplace. Other work-related characteristics of the respondents are shown in Table 1.

In our study a comparison of the mean values and that of positive response rates (PRRs) in the dimensions did not show any group differences according to the type of staff position, i.e. physicians or other health professionals.

Only in dimension D10 was a statistically significant difference found between physicians' responses and those of other HCPs, the latter giving higher mean values ($P = 0.017$) (Table 2).

Table 1. Work-related characteristic of the study participants, (n=380).

Work-related Details	Physicians n (%)	Other health professionals n (%)	Total n (%)
Working units			
Internal medicine	64 (44.44)	79 (32.92)	143 (37.24)
Surgery	32 (22.22)	81 (33.75)	113 (29.43)
Other units	48 (33.34)	80 (33.33)	128 (33.33)
Total	144 (100.0)	240 (100.0)	384 (100.0)
Years in hospital			
<1	9 (6.25)	19 (7.92)	28 (7.30)
1-5	44 (30.56)	80 (33.33)	124 (32.30)
6-10	43 (29.86)	55 (22.92)	98 (25.50)
≥11	48 (33.33)	86 (35.83)	134 (34.90)
Total	144 (100.0)	240 (100.0)	384 (100.0)
Years in department			
<1	9 (6.25)	20 (8.33)	29 (7.55)
1-5	46 (31.94)	73 (30.42)	119 (30.99)
6-10	38 (26.39)	52 (21.67)	90 (23.44)
≥11	51 (35.42)	95 (39.58)	146 (38.02)
Total	144 (100.0)	240 (100.0)	384 (100.0)
Ownership			
Not specified	18 (12.50)	8 (3.33)	26 (6.77)
Governmental/municipal	75 (52.08)	131 (54.58)	206 (53.65)
Private	51 (35.42)	101 (42.09)	152 (39.58)
Total	144 (100.0)	240 (100.0)	384 (100.0)
Teaching hospitals			
Not specified	22 (15.28)	6 (2.50)	28 (7.29)
Yes	104 (72.22)	171 (71.25)	275 (71.61)
No	18 (12.50)	63 (26.25)	81 (21.10)
Total	144 (100.0)	240 (100.0)	384 (100.0)
Contact with patient directly			
Not specified	3 (2.08)	6 (2.50)	9 (2.35)
Yes, often	134 (93.06)	210 (87.50)	344 (89.58)
No	7 (4.86)	24 (10.00)	31 (8.07)
Total	144 (100.0)	240 (100.0)	384 (100.0)
Number of events reported			
No event reports	102 (70.83)	190 (79.17)	292 (76.04)
1-2 events	30 (20.83)	33 (13.75)	63 (16.41)
3-5 events	9 (6.25)	8 (3.33)	17 (4.43)
6-10 events	2 (1.39)	6 (2.50)	8 (2.08)
11-20 events	1 (0.7)	3 (1.25)	4 (1.04)
Total	144 (100.0)	240 (100.0)	384 (100.0)

Table 2. A comparison of the means and percentage of positive response rates (PRRs) regarding “patient safety culture” in the items and dimensions of the B-HSOPSC among study participants.

Dimensions (D)	Physicians mean±SD	Other health professionals mean±SD	P	Physicians' PRR	Other health professionals' PRR	P
D1_Supervisor/manager expectations and actions promoting safety	3.61±0.859	3.63±0.779	0.811	93 (64.6)	156 (65.0)	0.934
D2_Organizational learning-continuous improvement	3.65±0.881	3.57±0.926	0.386	100 (69.4)	154 (64.2)	0.344
D3_Teamwork within hospital units	3.52±0.916	3.59±0.814	0.514	82 (56.9)	146 (60.8)	0.520
D4_Communication openness	3.63±0.981	3.49±0.992	0.169	84 (58.3)	128 (53.3)	0.397
D5_Feedback and communication about errors	3.64±1.018	3.65±1.003	0.897	84 (58.3)	138 (57.5)	0.957
D6_Non-punitive response to errors	2.92±0.932	3.07±0.833	0.225	58 (40.3)	102 (42.5)	0.748
D7_Staffing	2.85±0.625	2.75±0.595	0.072	60 (41.7)	103 (42.9)	0.894
D8_Hospital management support for patient safety	3.43±1.033	3.63±0.865	0.075	84 (58.3)	153 (63.8)	0.343
D9_Teamwork across hospital units	3.39±0.996	3.60±0.796	0.064	75 (52.1)	149 (62.1)	0.069
D10_Handoffs and transitions	3.64±0.904	3.87±0.730	0.017*	95 (66.0)	174 (72.5)	0.216
D11_Frequency of event reporting	3.47±1.170	3.63±1.175	0.196	77 (53.5)	143 (59.6)	0.287
D12_Overall perceptions of safety	3.56±0.881	3.71±0.724	0.232	92 (63.9)	167 (69.6)	0.298

*P<0.05

The dimensions D10, D5 and D1 had the highest mean values from both physicians and other HCPs, whereas D7, D6 and D9 received the lowest mean values (Table 2).

The percentage of positive response rates were the highest in both respondents' groups in the dimensions D10, D1 and D2. On the other hand, the least valued dimensions by both groups (i.e., the lowest percentage of positive response rates) were found for D6, D7 and D11, and thus these seem to negatively affect the overall level of patient safety culture. As such, the results indicate that these areas are problematic in terms of patient safety in hospitals across the country.

The mean positive values in the dimensions in descending order among all respondents are presented in Table.3.

Table 3. The overall percentage of positive responses to each dimension.

	Number of items in the dimension	PRRs* (%)
D10_Handoffs and transitions	4	70.1
D12_Overall perceptions of safety	4	67.4
D2_Organizational learning-continuous improvement	3	66.1
D1_Supervisor/manager expectations and actions promoting safety	4	64.8
D8_Hospital management support for patient safety	3	61.7
D3_Teamwork within hospital units	4	59.4
D9_Teamwork across hospital units	4	58.3
D5_Feedback and communication about errors	3	57.8
D11_Frequency of event reporting	3	57.3
D4_Communication openness	3	55.2
D7_Staffing	4	42.4
D6_Non-punitive response to errors	3	41.7
Total	42	58.5

*PRRs - Positive response rates

The results of this study showed an average composite positive response rate among physicians of 56.9 ± 9.03 , with this figure being slightly higher among other HCPs (59.4 ± 9.33). The total composite perception of PSC among both physicians and other HCPs in the study was found to be 58.52 ± 8.93 .

It is worth noting that among all the participants as many as 76.0% have never reported an adverse event or error. Of these, 190 (79.1%) are other HCPs, and 102 (70.8%) are physicians. No statistically significant differences were found between the number of reported adverse events and medical errors based on the staff positions of the participants (Table 1).

4 DISCUSSION

The results of the study show that PSC is generally well accepted by HCPs, who show a positive attitude towards it, varying from 41.7% to 70.1%. The total positive response rate of the current work is similar to that reported in an Indian (58.0%) study, although lower than that given in a study from the US (63-64%) and higher compared to the results reported in Slovenian research (53%) (17-20). This is likely due to differences in both cultural and healthcare systems.

This study showed an average composite positive response rate among physicians of 56.9%, and this was higher among other health professionals, mostly nurses (59.4%). This finding is similar to the results reported in India (53.1% for doctors and 60.0% for nurses) (17), although the opposite trend was observed in the Netherlands, with more positive ratings among physicians (21). The tendency of more positive response rates among the nursing staff found in the current study could be explained by their direct access to the inbuilt organizational system, which facilitates day-to-day supervision and conflict management. Furthermore, the majority of the reporting systems that are available are controlled by the nursing staff (17).

In the present study ten of the 12 dimensions showed positive response rates of over 50%. The dimensions D10, D12 and D2 showed the highest positive response rates of 70.1%, 67.4% and 66.1%, respectively. Similarly to in the Slovenian studies, in our work none of the dimensions reached the set threshold of 75%, as was reported in the original AHRQ study (20, 22).

In most studies, the highest positive response rate was reported for dimension D3 (18, 23-26). In contrast, the majority of the related studies there is a low positive response rate for dimension D9 (24, 25). The present study did not show a significant difference in the positive response rates for D3 (59.4%) compared to D9 (58.3%). These two dimensions had an average rate of positive responses in the current study.

The positive score for the dimension D3 in Bulgarian hospitals was lower compared to that found in some other studies. A likely explanation for this is the specific for Bulgarian culture, which emphasizes an individualistic mindset and behaviour. On the other hand, the domain D10, which requires cooperation between health professionals both inside their units and among them, showed a lower positive response rate in a number of other international studies (20%-40%) when compared to the findings of our study (18, 21, 23, 24). In the current work, this dimension had the highest positive response rate (70.1%). These high scores could be explained by the specifics of the post-communist countries: the persisting authoritarian and hierarchical management style, as well the presence of well-established co-ordination structures and mutual trust among healthcare specialists (27, 28).

The lowest positive response rate results in the present study were for dimension D6 (41.7%), which has also been found in other studies (29-32). It seems likely that not reporting adverse events is predominantly due to fear of being blamed, legally prosecuted and fear of licence suspension (20, 22).

The second lowest scored dimension is D7. The likely explanation for this is the understaffing of hospital settings in Bulgaria. Unfortunately, there has been a downward trend in the number of doctors and nurses over the last decades, and this results in work overload during shifts and increases the risk of not providing safe healthcare (33). On the one hand, the number of working hours is related to the quality of performance, as being tired and less alert increase the incidence of medical errors (34). On the other hand, recruitment agencies for locum work are not used in Bulgaria.

The dimension D4 also indicates that there is a need to set priorities in this area. The unsatisfactory outcome with regard to this dimension could be attributed to the communication barriers within the healthcare team caused by cultural and national differences (17). Ineffective communication increases the risk of adverse events or errors occurring, and is directly related to declining quality of care (32, 35-37).

The negative results in the three dimensions are consistent with those from a Brazilian study, as well as those in a systematic review involving 18 studies from Arab countries in which various dimensions, including D4, D6 and D7, also require further improvement (5, 32).

El-Jardali et al. found that the number of reported events filed was significantly associated with the composite questions measuring communication openness and non-punitive response to errors (38). Moreover, the dimension D5 is most closely related to the event reporting dimension (39). Our results showed a comparatively low positive scores in this dimension, which highlights the critical role

of D5 as a tool to ensure patient safety and the quality of healthcare provided. In the present study, 76.1% of the participants responded that they had never reported a patient safety event. This figure is higher compared to that seen in studies conducted in India (56.0%) and Brazil (65.0%), and lower than that in research carried out in the Netherlands - 97.49% (32, 40, 41).

Our study showed that most of the hospital staff fear asking questions in cases when they feel something went wrong. They also are worried that their mistakes are kept in their personnel file. The likely explanation for this is the a of punishment and loss of good reputation, as well as the fear of the widely used individual approach in the hospital management style and the preference for blaming individuals for mistakes, rather than systems. Other studies have also documented similar results (42), and Leape claims that adverse event-reporting systems will not be efficient within a punitive culture (3). Therefore, a non-punitive culture should be promoted to prevent mistakes and reduce the incidence of such events for patients in hospital settings.

The dimension D11 was not rated significantly differently by the two groups in our study, unlike in other works. Other studies found differences between the groups and explained them using the existing model that nurses, doctors, and supervisors/managers usually have different views in certain situations (43 ,44). In our study, the physicians were more likely to report adverse events and errors compared to other health professionals, which again contradicts the results of other research (45). The likely explanation is that physicians in most cases assume greater responsibility for events compared to other HCPs. On the other hand, this phenomenon could be explained by the presence of greater distance and sub-ordination among nurse and midwives from their managers. This makes them more dependent, and less free to report adverse events and errors.

Generally, a significant percentage of the respondents did not report any adverse events over the last 12 months. This could be an indicator that potential safety problems may go unrecognized, or are not addressed properly in Bulgarian hospitals.

The dimensions D4, D6 and D7 which had negative response ratings by the hospital staff should be addressed in order to optimize patient safety in Bulgaria. Subsequently, hospital managers, should undertake differentiated measures (depending on the specific professional group) in order to achieve positive changes in this regard.

4.1 Strengths and limitations

For the first time in Bulgaria a study of PSC culture was conducted using the self-administered online B-HSOPSC questionnaire, and thus avoiding the likelihood of

interviewer bias. The study was part of a university project and the participants took part on a voluntary basis without any financial incentives. The confidentiality of the participants was secured through the anonymity of the responses. A web survey in general allows better anonymity of respondents and better objectivity of their responses, especially when the survey topic is very sensitive, as in the current case. Additionally, the respondents were assured that their responses would not result in any penalty actions, and thus the responses obtained are believed to be highly reliable.

The present study has some limitations that should be noted. First, the small sample size could affect the results, and does not allow generalizations to the whole country. Secondly, the snowball sampling method was used for two reasons - the sensitivity of the topic (which requires the cooperation of the hospital management) and the regulations on personal data protection. Thus the researchers had no control of respondent selection and were unaware of how many of potential respondents received the hyperlink in order to participate and chose not to. Regardless of the random sampling of the hospitals in the country, respondents were selected not randomly but based on their availability.

Another limitation is that in order to secure anonymity and a good response rate questions regarding demographic characteristics such as sex and age were excluded, as well as questions that might identify the specific hospital (such as name, brand and address). However, regardless of the measures used to maintain the anonymity of the respondents, the level of participation was less than expected. This limitation does not allow us to monitor PSC in all hospitals or to make comparisons between hospitals in Bulgaria and learn how things change over time.

5 CONCLUSION

In general, the present study showed positive ratings of PSC in Bulgarian hospitals, regardless of the work position of respondents. Based on the evidence presented in this work, hospital management should focus on introducing a positive PSC and improving the problematic areas. Undoubtedly, large-scale research and more detailed analysis could encourage and help health authorities and hospitals to develop proper patient safety policies and strategies. It would also facilitate the adoption of a non-punitive approach and analyses of systematic errors, rather than focusing on individuals to blame and punish.

CONFLICT OF INTEREST

No conflicts of interest are reported in relation this this study.

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ETHICAL APPROVAL

The study was approved by the Medical University's research ethics committee (No. 05/19.10.2017).

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