Overview of Patient Safety Culture in Bosnia and Herzegovina With Improvement Recommendations for Hospitals

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Objectives: This study investigates the patient safety culture (PSC) in Bosnia and Herzegovina (BiH). We identify factors that contribute to higher patient safety and improved reporting of adverse events, thereby developing recommendations to improve PSC.

Methods: The study used a correlation design based on cross-sectional surveys in the healthcare sector of BiH (N = 2617). We analyzed the correlation between 9 PSC factors, 4 background characteristics (explanatory variables), and 2 outcome variables (patient safety grade and number of events reported). We also analyzed the variance to determine perceived differences in PSC across the various staff roles in hospitals.

Results: The highest rated PSC factors were Hospital handoffs and transitions and Hospital management support for patient safety and the lowest rated factor was Nonpunitive response to error. Each of the 9 factors showed considerable potential to improve from a hospital, department, and outcome perspective. A comparison of the various employee positions shows significant differences in the PSC perceptions of managers versus nurses and doctors as well as nurses versus doctors.

Conclusions: We found average scores for most PSC factors, leaving the considerable potential for improvement. Compared with the number of events reported and background characteristics, it is evident that PSC factors contribute significantly to patient safety. These factors are essential for the targeted development of PSC. We propose evidence-based practices as recommendations for improving patients’ safety factors.

Key Words: hospital survey, patient safety culture, safety climate, hospital improvement, Bosnia and Herzegovina

Methods

This correlational research is based on cross-sectional data, using the Bosnian adaption of the “Hospital Survey on Patient Safety Culture” (HSOPSC-BiH).49 Between September 2016 and February 2017, the survey was conducted in 9 hospitals in as many cities in BiH. The questionnaires were paper based as the insufficient technological infrastructure proved to be insufficient. Participants had the option of taking the empty questionnaire from a box in each unit and depositing completed
## TABLE 1. Questionnaire Covering HSOPSC-BiH and Outcome Variables

| Variable                                             | Category                              | n   | N%  |
|------------------------------------------------------|---------------------------------------|-----|-----|
| What is your primary work area or unit in this hospital? | Many different hospital units/no specific unit | 80  | 3.1%|
|                                                      | Medicine (nonsurgical)                | 450 | 17.2%|
|                                                      | Surgery                               | 503 | 19.2%|
|                                                      | Radiology                             | 84  | 3.2% |
|                                                      | Pediatrics                            | 116 | 4.4% |
|                                                      | Emergency department                  | 34  | 1.3% |
|                                                      | Intensive care unit (any type)        | 144 | 5.5% |
|                                                      | Psychiatry/mental health               | 170 | 6.5% |
|                                                      | Rehabilitation                        | 250 | 9.6% |
|                                                      | Pharmacy                              | 12  | 0.5% |
|                                                      | Laboratory                            | 34  | 1.3% |
|                                                      | Anesthesiology                        | 129 | 4.9% |
|                                                      | Other                                 | 279 | 10.7%|
|                                                      | No response                           | 332 | 12.7%|
| What is your position in this hospital?               | Nurse/registered nurse                | 1504| 57.5%|
|                                                      | Doctor/specialist/assistant           | 515 | 19.7%|
|                                                      | Other health worker                   | 231 | 8.8% |
|                                                      | Manager                               | 134 | 5.1% |
|                                                      | Other                                 | 115 | 4.4% |
|                                                      | No response                           | 118 | 4.5% |
| How long have you worked in this hospital?            | <1 y                                  | 187 | 7.1% |
|                                                      | 1–5 y                                 | 330 | 12.6%|
|                                                      | 6–10 y                                | 512 | 19.6%|
|                                                      | 11–15 y                               | 378 | 14.4%|
|                                                      | 16–20 y                               | 326 | 12.5%|
|                                                      | ≥21 y                                 | 807 | 30.8%|
|                                                      | No response                           | 77  | 2.9% |
| How long have you worked in your current work area/unit?  | <1 y                                  | 269 | 10.3%|
|                                                      | 1–5 y                                 | 507 | 19.4%|
|                                                      | 6–10 y                                | 635 | 24.3%|
|                                                      | 11–15 y                               | 370 | 14.1%|
|                                                      | 16–20 y                               | 285 | 10.9%|
|                                                      | ≥21 y                                 | 467 | 17.8%|
|                                                      | No response                           | 84  | 3.2% |
| Typically, how many hours per week do you work at this hospital? | <20 h/wk                             | 23  | 0.9% |
|                                                      | 20–39 h/wk                            | 602 | 23.0%|
|                                                      | 40–59 h/wk                            | 1614| 61.7%|
|                                                      | 60–79 h/wk                            | 208 | 7.9% |
|                                                      | 80–99 h/wk                            | 39  | 1.5% |
|                                                      | ≥100 h/wk                             | 35  | 1.3% |
|                                                      | No response                           | 96  | 3.7% |
| How long have you worked in your current specialty or profession? | <1 y                                  | 197 | 7.5% |
|                                                      | 1–5 y                                 | 419 | 16.0%|
|                                                      | 6–10 y                                | 530 | 20.3%|
|                                                      | 11–15 y                               | 354 | 13.5%|
|                                                      | 16–20 y                               | 319 | 12.2%|
|                                                      | ≥21 y                                 | 685 | 26.2%|
|                                                      | No response                           | 113 | 4.3% |

(Continued next page)
TABLE 1. (Continued)

| Variable | Category | n   | N% |
|----------|----------|-----|----|
| In the past 12 mo, how many event reports have you filled out and submitted? | No event reports | 1827 | 69.8% |
| | 1–2 event reports | 446 | 17.0% |
| | 3–5 event reports | 131 | 5.0% |
| | 6–10 event reports | 52 | 2.0% |
| | 11–20 event reports | 21 | 0.8% |
| | ≥21 event reports | 13 | 0.5% |
| | No response | 127 | 4.9% |

Please assess your work area/unit in this hospital on overall patient safety.

| Variable | Category | n   | N% |
|----------|----------|-----|----|
| Failing | 18 | 0.7% |
| Poor | 96 | 3.7% |
| Acceptable | 693 | 26.5% |
| Very good | 936 | 35.8% |
| Excellent | 708 | 27.1% |
| No response | 166 | 6.3% |
| Total | 2617 | 100.0% |

n, absolute frequencies; N%, relative frequencies.

questionnaires in the second box. Data collection took between 2 and 4 weeks at each hospital and was conducted in cooperation with the respective hospital manager. The survey encompassed all health professionals used at these hospitals; they could answer during or outside of their working hours. The hospitals were divided into 3 categories: small (1–199 hospital beds), medium (200–399 hospital beds), and large (400 or more hospital beds). We also defined 13 work areas and 5 staff roles within these work areas (Table 1). Ethical approval was obtained from the ethics committee of the University Clinical Center of the Republic of Srpska (No 01-9-621.2/16), and ethics committee of the Public Institution of Hospital Travnik (No 7409).

The Questionnaire

The survey was conducted using the HSOPSC-BiH, adapted from the HSOPSC and psychometrically tested based on empirical data from BiH.49 The HSOPSC-BiH has 29 items across 9 factors: 4 unit factors (Supervisors and managers’ expectations and actions promoting safety; Teamwork within units; Communication openness and feedback on errors; and Nonpunitive response to errors), three hospital factors (Hospital management support for patient safety; Teamwork across hospital units; and Hospital handoffs and transitions) and 2 outcome factors (Overall perceptions of safety and continuous improvement; and Frequency of event reporting). All items are based on 5-point Likert scale ratings (“strongly disagree” [1] to “strongly agree” [5]) or frequency (“never” [1] to “always” [5]).

The HSOPSC-BiH includes several demographic background variables (e.g., Primary work area, Staff position, Period in Current Hospital or Period in this Profession), 8 of which were used in the analysis, along with 2 outcome items (Tables 1, 3). The item “Please assess your work area/unit in this hospital on overall patient safety” (referred to here as the Patient safety grade) is advocated by Sorra and Dyer50 as the most reliable outcome variable for overall patient safety and was used in their study and numerous other studies as an outcome variable.51–55 The second outcome item “In the past 12 months, how many event reports have you filled out and submitted?” relates to the Number of events reported (see last 2 items in the Table 1).

Statistical Analysis

We used descriptive statistics to present background and study variables (Table 1). The factors were split into unit, hospital, and outcome levels and depicted accordingly (Table 2). The Spearman correlation was conducted to determine the relationship between 6 explanatory variables (Patient Safety Grade, Number of Events Reported, Period in Current Hospital, Period Worked in Current Unit, Hours Worked per Week, Period in this Profession) and the 9 factors of PSC (Table 3). Subsequently, we analyzed the variance for all professional groups (Table 4).56 All analyses were based on the Statistical Package for Social Sciences (SPSS) 24.

RESULTS

Sample Characteristics

The questionnaire was distributed to all employees present at the time, resulting in 2617 participants (response rate, 54%). The response rate across hospitals ranged from 38% to 86%. Based on size definitions, 63.6% of healthcare professionals worked in large hospitals, 27.2% in medium hospitals, and 9.2% in small hospitals. The sample distribution based on the respondents’ primary work areas, role, experience, work hours, and time spent in current specialty/hospital as well as the outcome variables of frequency of events reported and PSC perceptions can be found in Table 1.

Overall Patient Safety

The mean values for items based on 5-point Likert scale ratings (“strongly disagree” to “strongly agree”) or frequency (“never” to “always”) were calculated. All mean values less than 3 are to be interpreted as negative (“strongly disagree” and “disagree”). The mean value 3 is neutral (neither agree nor disagree). All mean values of factors greater than 3 are to be interpreted as positive values (“strongly agree” and “agree”). The mean values of all 4 unit-level variables are greater than 3, with “Nonpunitive response to error” just above this threshold (M = 3.03). The factors on the hospital level lie between 3.56 and 3.83, and the mean values of the outcome factors show satisfying values between 3.68 and 3.71. Table 2 lists the descriptive statistics of the 9 factors.
Factors Associated With Patient Safety Grade and Number of Events Reported

The Spearman correlations revealed that all factors correlate with the Patient safety grade and that a moderate connection/correlation can be seen in all unit-level factors. Thus, all correlations at the unit-level factors are significant. In comparison, the hospital’s factors correlate more strongly ($P < 0.01$%) with Patient safety grade. The 2 factors Hospital management support for patient safety and Teamwork across hospital units show a slightly higher correlation than the factor Hospital handoffs and transitions. Both outcome factors correlate with Patient safety grade. Overall perceptions of safety and continuous improvement show a moderate correlation, whereas Frequency of event reporting shows little correlation. All other variables, Number of events reported, Period in current hospital, Period worked in current unit, Hours worked per week, and Period in this profession, show little correlation with the factors. Moreover, the duration of employment and weekly working hours were not correlated with the 9 factors.

Comparison of Different Staff Roles

In the variance analysis, we differentiated between the mean values of the 4 different professional groups. Welch analysis of variance (ANOVA) revealed significant differences between at least 2 groups for all factors. The results indicate no significant differences for the first (Supervisor, manager expectations and actions promoting safety) and third factors (Communication openness and feedback about error). Managers rated Teamwork within units significantly higher than did other professional groups. The last unit factor, Nonpunitive response to error, showed a significant difference between nurses and managers. In terms of hospital factors, managers’ ratings of Hospital management support for patient safety and Teamwork across hospital units were significantly higher than that of nurses and doctors. Moreover, the post hoc analysis results revealed that the latter factor is perceived to be significantly better by nurses than by doctors. Hospital handoffs and transitions showed that nurses were significantly less critical than doctors. Among the outcome factors, the key finding is that nurses are more likely to report incidents in the reporting system than doctors. This factor is relevant when analyzing the overall number of incidents reported annually; approximately 70% of the hospital staff surveyed did not report a single incident over the last 12 months.

DISCUSSION

This study evaluated PSC in BiH hospitals using HSOPSC-BiH. Overall, the results reveal considerable potential for improvement in PSC at all levels. The highest scores were given to Hospital handoffs and transitions, Hospital management support for patient safety, and Frequency of event reporting. These results are comparable with those of other studies.64-67 Hospital handoffs and transitions can have low values because of medical errors, treatment delays, increased risk of malpractice, and repeated treatments.58-61 The good values obtained in this study cannot be explained based on background variables as there is hardly any correlation. Introducing effective interventions to improve handovers is of high priority for patient safety in BiH. Consequently, a first intervention could be to introduce standard handover reports, which may significantly reduce the number of errors and adverse events.61

Hospital management support for patient safety is one of the most widely discussed PSC factors in patient safety literature.62-64 Managers shape an organization’s culture by their preferences, resources, rewards, punishments, preoccupations, responses to organizational crises, etc.65 The good results in BiH might be a result of a suitable management culture or management behavior. Research has shown that participative leadership has a positive effect on PSC in hospitals.64,66,67 These results illustrate the benefits of implementing participative leadership and educational campaigns for managers.68,69 The 2 strategic measures could play a significant role in improving hospital management support for patient safety.70

Establishing an error response system can be the first step toward a more open-minded hospital culture.59 Simply introducing such a system might, however, be inadequate to improve PSC and reduce errors.53 An effective error reporting system requires a bundle of additional management measures (e.g., training, building trust, publishing successful measures).30,71,72 Another critical aspect of handling such a system: the easier the handling, the more incidents will be reported.64,71,73 All hospitals surveyed had an error reporting system in place, which might be the main reason for this factor’s high values. However, the number of incidents reported suggests that there remains considerable potential for improvement.

TABLE 2. Descriptive Statistics for HSOPSC-BiH

| Variable                                    | n   | M   | SD  | 95% CI          | –   | +   | Sk  | Ku  |
|---------------------------------------------|-----|-----|-----|-----------------|-----|-----|-----|-----|
| Unit level                                  |     |     |     |                 |     |     |     |     |
| Supervisor, manager expectations and actions promoting safety |  2538 | 3.58 | 0.94 | 3.52 3.62 | –0.800 | 0.268 |
| Teamwork within units                       |  2486 | 3.68 | 0.86 | 3.59 3.68 | –0.873 | 0.378 |
| Communication openness and feedback about error |  2403 | 3.45 | 0.81 | 3.39 3.47 | –0.319 | –0.336 |
| Nonpunitive response to error               |  2379 | 3.03 | 0.87 | 2.93 3.01 | 0.046 | –0.641 |
| Hospital level                              |     |     |     |                 |     |     |     |     |
| Hospital management support for patient safety |  2498 | 3.78 | 0.84 | 3.67 3.75 | –0.946 | 0.967 |
| Teamwork across hospital units              |  2485 | 3.56 | 0.78 | 3.45 3.53 | –0.576 | 0.084 |
| Hospital handoffs and transitions           |  2431 | 3.83 | 0.68 | 3.76 3.83 | –0.713 | 0.730 |
| Outcome                                     |     |     |     |                 |     |     |     |     |
| Overall perceptions of safety and continuous improvement |  1958 | 3.68 | 0.67 | 3.65 3.72 | –0.773 | 1.063 |
| Frequency of event reporting                |  2437 | 3.71 | 1.11 | 3.6 3.71 | –0.572 | –0.600 |

n, absolute frequencies; M, mean; SD, standard deviations; CI, confidence interval; Sk, skewness; Ku, kurtosis.
| TABLE 3. Inferential Statistics With 9 Factors |
|---------------------------------------------|
|                                           |
| **Unit level**                             |
| Supervisor, manager expectations and actions promoting safety | rs = 0.320* (n = 2381) | rs = 0.058† (n = 2421) | rs = −0.055‡ (n = 2471) | rs = −0.044‡ (n = 2464) | rs = −0.013 (n = 2452) | rs = −0.056† (n = 2436) |
| Teamwork within units | rs = 0.323* (n = 2335) | rs = 0.035 (n = 2370) | rs = −0.044‡ (n = 2417) | rs = −0.024 (n = 2409) | rs = −0.021 (n = 2401) | rs = −0.057† (n = 2379) |
| Communication openness and feedback about error | rs = 0.363* (n = 2271) | rs = 0.127* (n = 2307) | rs = 0.016 (n = 2340) | rs = 0.016 (n = 2333) | rs = 0.018 (n = 2325) | rs = −0.015 (n = 2310) |
| Nonpunitive response to error | rs = 0.258* (n = 2245) | rs = 0.091* (n = 2283) | rs = −0.022 (n = 2314) | rs = 0.004 (n = 2310) | rs = 0.016 (n = 2302) | rs = −0.017 (n = 2286) |
| **Hospital level**                          |
| Hospital management support for patient safety | rs = 0.437* (n = 2360) | rs = 0.034 (n = 2396) | rs = −0.030 (n = 2438) | rs = −0.009 (n = 2429) | rs = −0.028 (n = 2421) | rs = −0.035 (n = 2402) |
| Teamwork across hospital units | rs = 0.406* (n = 2348) | rs = 0.017 (n = 2379) | rs = −0.021 (n = 2424) | rs = −0.025 (n = 2417) | rs = −0.044‡ (n = 2405) | rs = −0.036 (n = 2387) |
| Hospital handoffs and transitions | rs = 0.300* (n = 2293) | rs = 0.030 (n = 2329) | rs = −0.055‡ (n = 2372) | rs = −0.040 (n = 2364) | rs = −0.010 (n = 2357) | rs = −0.032 (n = 2340) |
| **Outcome**                                |
| Overall perceptions of safety and continuous improvement | rs = 0.407* (n = 1845) | rs = 0.044 (n = 1888) | rs = 0.004 (n = 1909) | rs = 0.011 (n = 1902) | rs = −0.028 (n = 1900) | rs = 0.002 (n = 1898) |
| Frequency of event reporting | rs = 0.296* (n = 2314) | rs = 0.051‡ (n = 2338) | rs = 0.038 (n = 2375) | rs = 0.035 (n = 2369) | rs = −0.016 (n = 2361) | rs = 0.034 (n = 2345) |

*P = 0.001.
†P = 0.01.
‡P = 0.05.

rs, Spearman correlation coefficient.
TABLE 4. HSOPSC-BiH Factors—Comparison Between Staff Roles

| Factor                                      | Group                          | n   | M    | SD   | 95% CI          | ANOVA/Welch | Post Hoc‡ |
|---------------------------------------------|-------------------------------|-----|------|------|-----------------|-------------|---------|
| Supervisor, manager expectations and       | A: Nurse/registered nurse      | 1459| 3.55 | 0.95 | 3.50–3.60       | F(3.422) = 3.006, P = 0.030† |           |
| actions promoting safety                   | B: Doctor/specialist/assistant| 507 | 3.65 | 0.92 | 3.57–3.73       |             |         |
|                                             | C: Other health workers       | 225 | 3.53 | 0.97 | 3.40–3.66       |             |         |
|                                             | D: Managers                   | 126 | 3.74 | 0.81 | 3.60–3.88       |             |         |
|                                             | Total                         | 2317| 3.58 | 0.94 | 3.54–3.62       |             |         |
| Teamwork within units                       | A: Nurse/registered nurse      | 1422| 3.66 | 0.87 | 3.62–3.71       | F(3.429) = 7.656, P = 0.001† | D         |
|                                             | B: Doctor/specialist/assistant| 498 | 3.66 | 0.89 | 3.58–3.74       |             |         |
|                                             | C: Other health workers       | 219 | 3.67 | 0.85 | 3.56–3.78       |             |         |
|                                             | D: Managers                   | 127 | 3.96 | 0.66 | 3.84–4.07       |             |         |
|                                             | Total                         | 2266| 3.68 | 0.86 | 3.64–3.72       |             |         |
| Communication openness and feedback         | A: Nurse/registered nurse      | 1391| 3.44 | 0.80 | 3.40–3.48       | F(3.2199) = 1.406, P = 0.239* |           |
| about error                                 | B: Doctor/specialist/assistant| 480 | 3.07 | 0.86 | 2.99–3.15       |             |         |
|                                             | C: Other health workers       | 214 | 3.01 | 0.88 | 2.89–3.13       |             |         |
|                                             | D: Managers                   | 114 | 3.26 | 0.78 | 3.11–3.40       |             |         |
|                                             | Total                         | 2203| 3.46 | 0.80 | 3.43–3.49       |             |         |
| Nonpunitive response to error               | A: Nurse/registered nurse      | 1369| 2.98 | 0.88 | 2.93–3.03       | F(3.2173) = 4.276, P = 0.005* | D         |
|                                             | B: Doctor/specialist/assistant| 480 | 3.07 | 0.86 | 2.99–3.15       |             |         |
|                                             | C: Other health workers       | 214 | 3.01 | 0.88 | 2.89–3.13       |             |         |
|                                             | D: Managers                   | 114 | 3.26 | 0.78 | 3.11–3.40       |             |         |
|                                             | Total                         | 2177| 3.02 | 0.87 | 2.98–3.05       |             |         |
| Hospital management support for             | A: Nurse/registered nurse      | 1442| 3.77 | 0.84 | 3.72–3.81       | F(3.431) = 7.009, P = 0.001† | D         |
| patient safety                              | B: Doctor/specialist/assistant| 503 | 3.73 | 0.89 | 3.65–3.81       |             |         |
|                                             | C: Other health workers       | 220 | 3.86 | 0.75 | 3.76–3.96       |             |         |
|                                             | D: Managers                   | 127 | 4.02 | 0.66 | 3.91–4.14       |             |         |
|                                             | Total                         | 2292| 3.78 | 0.84 | 3.75–3.81       |             |         |
| Teamwork across hospital units              | A: Nurse/registered nurse      | 1437| 3.58 | 0.76 | 3.54–3.62       | F(3.414) = 11.664, P = 0.001† | D         |
|                                             | B: Doctor/specialist/assistant| 500 | 3.40 | 0.86 | 3.32–3.48       |             |         |
|                                             | C: Other health workers       | 217 | 3.61 | 0.76 | 3.50–3.71       |             |         |
|                                             | D: Managers                   | 123 | 3.78 | 0.61 | 3.67–3.89       |             |         |
|                                             | Total                         | 2277| 3.55 | 0.78 | 3.52–3.59       |             |         |
| Hospital handoffs and transitions           | A: Nurse/registered nurse      | 1413| 3.87 | 0.67 | 3.83–3.90       | F(3.2224) = 4.075, P = 0.007* | A         |
|                                             | B: Doctor/specialist/assistant| 489 | 3.78 | 0.68 | 3.72–3.84       |             |         |
|                                             | C: Other health workers       | 207 | 3.73 | 0.66 | 3.64–3.82       |             |         |
|                                             | D: Managers                   | 119 | 3.87 | 0.64 | 3.75–3.99       |             |         |
|                                             | Total                         | 2228| 3.83 | 0.67 | 3.81–3.86       |             |         |
| Overall perceptions of safety and           | A: Nurse/registered nurse      | 1134| 3.71 | 0.65 | 3.68–3.75       | F(3.295) = 5.365, P = 0.001† |           |
| continuous improvement                      | B: Doctor/specialist/assistant| 426 | 3.57 | 0.74 | 3.50–3.64       |             |         |
|                                             | C: Other health workers       | 157 | 3.76 | 0.59 | 3.67–3.86       |             |         |
|                                             | D: Managers                   | 85  | 3.76 | 0.51 | 3.65–3.87       |             |         |
|                                             | Total                         | 1802| 3.69 | 0.67 | 3.66–3.72       |             |         |
| Frequency of event reporting                | A: Nurse/registered nurse      | 1400| 3.79 | 1.10 | 3.73–3.85       | F(3.2228) = 4.548, P = 0.003* | A         |
|                                             | B: Doctor/specialist/assistant| 501 | 3.60 | 1.11 | 3.50–3.70       |             |         |
|                                             | C: Other health workers       | 13  | 3.62 | 1.05 | 3.48–3.76       |             |         |
|                                             | D: Managers                   | 118 | 3.73 | 1.07 | 3.54–3.93       |             |         |
|                                             | Total                         | 2232| 3.73 | 1.10 | 3.68–3.77       |             |         |

Data in bold are total data for each factor.

*Equal variances assumed: 1-way ANOVA, Tukey HSD post hoc test.
†Equal variances not assumed: Welch test, Tamhane post hoc test.
‡Letters A, B, C, and D represent an independent group with a significantly higher mean value.
CI, confidence interval; M, mean; n, absolute frequencies; SD, standard deviations.
Approximately 70% of the participants did not report a single incident in the last 12 months, and only approximately 25% of the participants reported 1 or more incidents (Table 1). This warrants introducing simple and easily managed systems, appropriate management measures, and a nonpunitive environment for a well-functioning error reporting system.92

The factors Supervisor, manager expectations and actions promoting safety; Teamwork within units; Teamwork across hospital units; and Overall perceptions of safety and continuous improvement yielded average results and are comparable to those of Slovenia.75

The supervisor’s perceptions were rather negative as opposed to those of hospital management, potentially because of the middle management’s inconsistent implementation of safety guidelines. A key aspect when evaluating PSC is to test the consistency between the policies postulated at the organizational level and their implementation at all sublevels.76 This underlines the importance of regularly checking the implementation of all guidelines, ideally by a supervisor well versed in participative leadership and behavior (e.g., motivating employees). Participative leadership is positively correlated with staff perceptions of supervisory leadership support for patient safety64; it positively influences management success, employee performance, and employee satisfaction.73–79

Efforts to enhance Teamwork within and across units are immensely high on the agenda in health care80 as failures in this area account for 68% of adverse effects.81 To improve teamwork, many hospitals have introduced various training programs such as Crew Resource Management (CRM), Medical Team Training (MTT), and Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS). Several studies have revealed the positive changes in teamwork resulting from such programs.82–84

This study’s results act as a signal for the importance of introducing such programs and of implementing other tools such as handover reports, checklists, briefings, etc., as they have a positive influence on team communications85–87 and improve the overall treatment process.88

The low mean value of the outcome factor Overall perceptions of safety and continuous improvement reflects the overall PSC situation in BiH. The previously mentioned recommendations will have to be implemented along with error management training89 and debriefings90 to improve the results.

The factors Nonpunitive response to error and Communication openness and feedback about error score very low. A recent meta-analysis comparing many studies conducted worldwide revealed that the factor Nonpunitive response to error generally exhibits low values.91 A study conducted in Iran showed similar findings, whereby the factors regarding communication had the lowest scores.92

Norms of openness are characterized by a nonpunitive environment in which health professionals feel safe to voice their concerns. Open communication channels enable health professionals to share information and knowledge and ask for help.93 Studies have shown proof of the positive correlation between open communication and PSC.67,73,94 Norms of openness are conducive to a nonpunitive environment and open communication channels, leading to an improvement in PSC.95

Our results suggest the existence of a so-called blame culture in BiH, whereby the staff do not dare highlight flaws in the system. This is confirmed by the respondents’ commentaries, whereby “negative incidents were not reported for fear of sanctions.” These results call for focusing on system failures rather than blaming individuals to ultimately reduce the mortality rate and the number of adverse events and costs incurred.95

The findings obtained from inferential statistics indicated that all 9 factors correlate to some extent with the outcome variable Patient safety grade. All other variables, Number of events reported, Period in current hospital, Period worked in current unit, Hours worked per week, and Period in this profession barely correlate with the PSC factors. Above all, this shows that the number of reported events and employment duration do not influence communication, teamwork, handovers, etc. Other studies indicate a different phenomenon whereby PSC decreases with employment years in a specific unit.96 This might be because the more experienced healthcare professionals are, the less likely they are to be satisfied with hospital processes and systems.94

A comparison of professional groups yielded valuable findings in terms of developing PSC. The analysis results show that nurses and doctors significantly differ in only 2 factors (Hospital handoffs and transitions and Frequency of event reporting), whereby nurses perceived better handovers and higher rate of error reporting in the system. In comparison, managers responded with significantly better evaluations than doctors and nurses for Teamwork with units, Teamwork across hospital units, Hospital Management support for patient safety, and Nonpunitive response to error.

Limitations

This study was conducted in 9 hospitals only and cannot be considered a national study. Another limitation is that PSC was solely measured using a questionnaire. Comprehensive PSC measurement would call for using additional methods such as interviews or observations. Moreover, the study at hand presents but a snapshot of the PSC status in BiH and should ideally be conducted repeatedly across time. The results are comparable with international studies with unchanged factors only.

Implications of Findings

The study at hand raises awareness of PSC, which is no simple undertaking, as health professionals and patients in BiH are confronted with inconceivable problems in highly developed countries. The results present a sound basis for the Ministry of Health to develop further measures to improve healthcare sector performance. Each hospital surveyed is contacted to share the results, set their priorities accordingly, and implement the recommended course of action. All hospitals outside the scope of this survey can estimate their PSC status using the confidence intervals.

Future Research Directions

As a next step, this study should be repeated to enable longitudinal analysis. Then, health professionals should be interviewed to gain insights into the underlying causes of and possible explanations for the results obtained in both studies. Moreover, future studies might integrate other aspects influencing PSC (and the healthcare systems as a whole) into their research. For instance, 30 participants in the present study reported that BiH has yet to overcome considerable challenges in terms of its difficult political situation, poor infrastructure, corruption, brain drain, etc. Including these aspects might represent rewarding avenues for future research.

CONCLUSIONS

The PSC in BiH is on an average level and needs to be improved. We demonstrate that all 9 PSC factors have considerable potential to improve from a hospital, department, and outcome perspective. However, new measures are required to improve the PSC. The results presented in this study can act as a sound basis for such an endeavor.

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