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Patient safety culture in psychiatric hospitals in Slovenia from a viewpoint of psychiatrists and nurses: A cross-sectional study

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Summary

Background: *Patient safety is considered to be crucial to health care quality. The Hospital Survey on Patient Safety Culture is generally used to assess the safety culture in somatic hospitals and unit level. The present study investigates the correlation between physicians and nurse providers in patient safety culture in all Slovenian psychiatric hospitals.*

Subjects and methods: *A quantitative cross-sectional, non-experimental study was conducted between November 2017 and February 2018 involving 434 (89.00%) nurses and 55 (11.00%) physicians from six psychiatric hospitals in Slovenia. We used the Slovenian version of the questionnaire of the Hospital Survey on Patient Safety Culture of the US Agency for Healthcare Research and Quality.*

Results: *Exploratory factor analysis for Slovenian psychiatry has given ten dimensions with 40 items. Multivariate regression analysis revealed that four psychiatric hospitals have a poor opinion on the "Management Support for Patient Safety" ($F = 4.746$, $p < 0.005$). But depending on gender, women on average have a statistically significantly better opinion about the dimension "Management Support for Patient Safety" than men (t -1,995, p <0,047). There are also significant statistical differences between health care professionals who work in locked wards in regard to the two dimensions "Staff Overload and Response to Errors*" ($F = 6.557$, $p = 0.002$) and "Teamwork Between Organisational Units of the Hospital*" ($F = 5.681$, $p = 0.004$).*

Conclusion: *This is the first study on perception of patient safety culture in psychiatric hospitals in Slovenia. Significant statistical differences were identified in seven out of ten dimensions of patient safety culture perception.*

Keywords: *patient safety culture, mental health, organisational culture, safety management, HSOPSC*

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INTRODUCTION

The Latin expressions *Errare humanum est* (to err is human)*, preseverare diabolicum* (to persist in the error is diabolical) and *Primum non nocere* (first do no harm)*,* highlight the importance of avoiding repeating errors (Sola, 2016; Brborović et al., 2019) and confirm the essence of the concept of patient safety culture (PSC) (Robida, 2013a; WHO 2023).

The Institute of Medicine (IOM 2004) defines the PSC as based on communication, interpersonal relationships, technology, informatics and to the greatest extent the system in which the employees in the healthcare work. The commitment and main goal of healthcare professionals (physicians**,** nurses and others) are clear and common; uninjured patients, safe and quality treatment, but at the same time the good and coordinated interpersonal work of all involved (Robida, 2013c; Matziou et al., 2014; Bowles et al., 2016; Al-Surimi et al., 2022). Patients receive different types of medical care within the framework of various healthcare systems, which have major or minor deficiencies and which permit the possibility of error occurence (Helo & Moulton, 2017). The World Health Organization (WHO 2023) estimates that ten million patients worldwide endure disabling injuries or deaths each year that can be attributed directly to unsafe medical practice and care. According to the European Commission (EC 2014) it is estimated that 8-12% of patients admitted to hospitals in the European Union (EU) suffer from adverse events, such as healthcare-associated infections (which account for approximately 25% of adverse events), medication-related errors, surgical errors, medical device failures, and errors in diagnosis. The European Commission (2014) also reports that, on any given day, one in 18 patients in European hospitals has at least one healthcare-associated infection.

Every year an estimated 4.1 million patients acquire a healthcare-associated infection in the EU, and at least 37,000 die as a result, but they also note that 20-30% of healthcare-associated infections can be prevented by

intensive hygiene and control programmes (EC 2014). In addition, Nabhan and colleagues (2012), find that the three most prevalent preventable harms cited in the included studies were medication adverse events 26% (33/127 studies), central line infections 6% (7/127) and hospital-stay related venous thromboembolism 4% (5/127). Medication adverse events are defined as errors in prescribing, delivering or monitoring the effects of the medicine, which is different from regular side effects. PSC has important dimensions that affect the quality, safety and patient outcome of treatment in health systems (Danielsson et al., 2019; Waterson et al., 2019; Robida, 2013a; Robida, 2012). However, it is important and appropriate for hospitals to provide a variety of strategies to manage and resolve injuries related to errors and PSC.

One of the methods developed in recent decades is the Hospital Survey on Patient Safety Culture (HSOPSC) questionnaire. This can raise the awareness of healthcare employees about the PSC, the assessment of the current situation in the hospital and the identification of opportunities for improvement (Sorra & Nieva, 2004; Robida, 2013b; Sorra et al., 2016; Pokojová & Bártlová, 2018; Azyabi et al., 2021), even in psychiatric hospitals (Rašić, 2019; Nilsson et al., 2020). The important fact is that physicians and other healthcare professionals must be aware of their limitations (Helo & Moulton, 2017). Care for PSC in psychiatry (Amore et al., 2008; Mann et al., 2008; Mills et al., 2008; Soerensen et al., 2013; Johnson et al., 2017; True et al., 2017; Thibaut et al., 2019; Cuomo et al., 2020; Maina et al., 2021; Varpula et al., 2021; Svensson, 2022; Mikez, 2023) is also important as a comparison to other inpatient settings, but is essentially different, based on the risk management theme or some unsafe behaviors and similar risks such as medication adverse events, self-harm, violence, aggression, safety of the physical environment, and falls injuries, which are associated with mental health problems. It is right that all healthcare workers participate in the development of best practices and use various PSC strategies. The most important concepts of PSC are communication, teamwork, interpersonal relations and risk management (Kanerva et al., 2015; Friganović et al., 2019; Thibaut et al., 2019; Granel-Giménez et al., 2022).

The aim our research was to evaluate the perception of PSC among physicians and nurses at Slovenian psychiatric hospitals. Our research contributes to the understanding of psychiatric settings, which are generally under-represented in PSC research, and highlights differences between two numerical professional groups.

SUBJECTS AND METHODS

In the study we conducted a cross-sectional approach which based on a descriptive, non- experimental work method.

The questionnaire

To assess the perception of PSC among physicians and nurses in Slovenian psychiatric hospitals, we used a psychometrically tested Slovenian version of the HSOPSC questionnaire (Robida, 2013b), the Agency for Healthcare Research and Quality (AHRQ), (Sorra & Nieva, 2004). The HSOPSC questionnaire is based on a 12 PSC dimension (Table 1), encompassing a total of 42 items, with 3 or 4 items per dimension based on a 5 – point Likert scale type response scale of agreement, where 1 means Strongly Disagree and 5 means Strongly Agree or frequency where 1 means Never and 5 is Always. Additional items are in the section "Patient Safety Grade" which concerns the patient safety grade in the unit/area. In the section "Number of Events Reported", respondents could comment on the number of events reported in the last year. The HSOPSC questionnaire includes a collection of socio-demographic variables: sex, age, professional experience (years), work time (hours per week), work area (open, locked inpatient wards or other work area) and staff position (manager, registered nurses, enrolled nurses, and physicians). The last set of the HSOPSC questionnaire was intended to obtain qualitative data, and here respondents were able to describe in their own words their opinion regarding the PSC in their clinical environment. We decided first to measure the reliability of the entire questionnaire on our sample, where Cronbach's α coefficient was 0.890, which means that the questionnaire has good reliability (Crutzen & Peters, 2017). Three dimensions were found to be of poor reliability: 1.) Overall Perception of PSC, which had a poor Cronbach's α coefficient (0.52), 12.) Staffing, in which Cronbach's α coefficient was (0.56) and 9.) Handoffs & Transitions, in which Cronbach's α coefficient was (0.61), (Crutzen & Peters, 2017).

In the following, we decided to do a factor analysis (FA) on our sample with all 42 items. Exploratory FA, principal component method (PCA) identified 10 dimensions with an eigenvalue of more than 1, which together explain 47.30% of the variance in the participant responses. We eliminated two variables that have a poor explanation of the variability ("When one area in this unit gets really busy, others help out" and "Patient safety is never sacrificed to get more work done"). The rotation (oblique

Table 1. Internal Consistency evaluated with Cronbach α for the original 12 dimensions and 10 dimensions HSOPSC

		No. Item	α
Patient Safety Culture 12 Dimensions	Overall Perception of Patient Safety	4	0,52
	Frequency of Events Reported	3	0,84
	Supervisor/Manager Expectations & Actions Promoting Patient Safety	4	0,70
	Organizational Learning – Continuous Improvement	3	0,66
	Teamwork Within Units	4	0,74
	Communication Openness	3	0,69
	Feedback & Communication About Error	3	0,72
	Nonpunitive Response to Error	3	0,64
	Handoffs & Transitions	4	0,61
	Management Support for Patient Safety	3	0,78
	Teamwork Across Units	4	0,70
	Staffing	4	0,56
Patient Safety Culture 10 Dimensions	Feedback & Communication About Error	6	0.81
	Staff Overload and Failure Response*	9	0.77
	Frequency of Events Reported	3	0.84
	Teamwork Between Organizational of Hospital Units*	3	0.71
	Teamwork within Units*	3	0.82
	Handoffs and Transitions	4	0.72
	Supervisor/Manager Expectations and Action Promoting Patient Safety	2	0.66
	Organizational Learning-Continuous Improvement	4	0,70
	Management Department Support for Patient Safety*	2	0,83
	Management Support for Patient Safety	4	0,72

Note: * = The dimensions we called it differently, α = Internal consistency with Cronbach α

or perpendicular axes) is decided on the correlation between the factors. If the correlation is small or below 0.2, we repeat the analysis with a perpendicular rotation, otherwise we do an oblique rotation (Pallant, 2013). Therefore, in the following, we do an oblique rotation of the data (Direct Oblimin) with a fixed 10 dimensions, where we explain 59.14% of the total variation in the perception of Patient Safety Culture (Pallant, 2013; Yong & Pearce, 2013). Some dimensions have been differently named *(Rašić, 2019) is shown in Table 1.

Description of the research sample

The statistical target population included employed health professionals, all nurses and physicians in all six Slovenian psychiatric hospitals and those who work with patients daily. The subject of the research was the entire population. Personnel data of employees in psychiatric hospitals were obtained from the 2016 annual reports for each hospital separately, which are freely available on the internet. We distributed 824 paper-based questionnaires, of which 667 questionnaires were sent to nursing providers and 157 questionnaires to psychiatrists s. At the psychiatric hospital (PH) 3, physicians did not participate in the research because hospital management did not consent to participate. The final number of participants was 59.35% (n = 489). The sample consisted of 66.26% (n = 324) women and 33.74% (n = 165) male participants, of which 89.00% (n = 434) were nurses and 11.00 % (n = 55) were physicians (Table 2 and Table 3).

Description of the research procedure and data analysis

Data were collected using a questionnaire and collection took place over a period of three months from November 2017 to February 2018. Before we conducted the survey, we obtained all necessary consents from representatives of individual professional councils and other psychiatric hospital services, and permission from

Table 2. Sample representation of received questionnaires by hospital according to profession and by ward/unit

PH	1 n / %	2 n / %	3 n / %	4 n / %	5 n / %	6 n / %	Total n / %
Health care professionals							
Associate professional nurse	21 / 4,29	32 / 6,54	76 / 15,54	19 / 3,89	18 / 3,68	120 / 24,54	286 / 58,49
Registered nurse	11 / 2,25	14 / 2,86	31 / 6,34	21 / 4,29	11 / 2,25	60 / 12,27	148 / 30,26
Resident in Psychiatry	/	/	/	/	/	14 / 2,86	14 / 2,86
Psychiatrist	4 / 0,82	7 / 1,43	/	3 / 0,61	2 / 0,41	25 / 5,11	41 / 8,38
Total number of returned questionnaires	36 / 7,36	53 / 10,84	107 / 21,88	43 / 8,79	31 / 6,34	219 / 44,79	489 / 100
Ward / unit							
Locked	7 / 1,43	34 / 6,95	39 / 7,98	28 / 5,73	15 / 3,07	82 / 16,77	205 / 41,92
Open	27 / 5,52	14 / 2,86	66 / 13,50	15 / 3,07	15 / 3,07	131 / 26,79	268 / 54,81
Other	2 / 0,41	5 / 1,02	2 / 0,41	/	1 / 0,20	6 / 1,23	16 / 3,27
Total	36 / 7,36	53 / 10,84	107 / 21,88	43 / 8,79	31 / 6,34	219 / 44,79	489 / 100

Note: n=the number of units/respondents in the sample, %=quota in percent

the responsible person to use a Slovenian version of the questionnaire.

The research was also approved by the Angela Boskin Faculty of Health Care, Jesenice (Approval number: 88140081-31/SMD). We also obtained permission to conduct the research from hospital management. Participation in the survey was voluntary, and anonymity was ensured. Statistical analyses were performed using the Statistical Package for Social Sciences (IBM Corporation®) version 21.0.0.0. Descriptive statistical analysis included (percentages, ranges, arithmetic means (M), standard deviations (SD)), bivariate analysis (t-test and ANOVA) and multivariate analysis of variance (MANOVA). For the factor analysis rotation, we used a Direct Oblimin Principal Components Analysis with oblique rotation. Pearson correlation was used to test the association between the two variables. We defined the level of statistical significance as $P< 0.05$.

RESULTS

The demographics and sample of our research cover all six psychiatric hospitals in the Republic of Slovenia and is based on the 10-factor dimension model with 40 items and two sets: Patient Safety Grade and Number of Events Reported in the last 12 months. The final sample of questionnaires included in the research is n = 489. The largest share of returned questionnaires was received from PH6 (n = 219, 44.79%), and the smallest share from PH5 (n = 31, 6.34%). A more detailed description of the sample of returned questionnaires of hospitals by occupation is shown in Table 2.

Table 3. Basic characteristics of the sample

	n	%
Gender		
Female	324	66,26
Male	165	33,74
Health care profession		
Nurse	434	89,00
Physician	55	11,00
Years in hospital		
0 – 5 year	84	17,20
6 – 15 year	177	36,20
16 – 29 year	163	33,30
30 year and more	65	13,30
Years in current ward		
0 – 10 year	357	73,00
11 – 19 year	85	17,40
20 year and more	47	9,60
Hours per week work in hospital		
Less than 40 hour	13	2,70
40 hour	253	51,70
40 hour and more	223	45,60
Total	489	100

Note: n=the number of units/respondents in the sample, %=quota in percent

We received the largest number of returned questionnaires from the open wards (n = 268, 54.81%), with PH6 representing the largest sample (n = 131, 26.79%). We received the lowest number of questionnaires from »other« (n = 16, 3.27%). A more detailed description of the sample of returned questionnaires by ward/unit from all psychiatric hospitals is in Table 2. The majority of respondents had worked in the hospital for 6 – 15 years (n = 177, 36.2%), the lowest number had worked for 30 years or more (n = 65, 13.3%). For the statement "Seniority of work in the ward", the majority of respondents worked for 0 – 10 years (n = 357, 73.00%), while the lowest number had worked for 20 years or more. For a more detailed description, see Table 3.

Patient safety culture in Slovenian psychiatric hospitals

The overall score "Perception of PSC among psychiatrists and nurses in all psychiatric hospitals" shows the average of the participants' positive and negative responses across the 10 dimensions. In Figure 1 we can see how respondents explain their perception of PSC. An artificial limit in the display and explanation, meaning that if 50% or less of the answers given are poor or negative perceptions of an area of a dimension it is considered an opportunity for improvement. However, if 75% or more of the answers given are good or positive perceptions, the dimension area is considered satisfactory (Rockville et al., 2021). Among the positive responses, D5 "Teamwork Within Units" is the highest, with 82.00% positive responses. Respondents feel that the medical staff in the hospital unit/ward support each other, respect each other and work together as a good team. This is followed by D1 "Feedback & Communication About Error" with a 76.48% positive response (Figure 1).

Table 4 shows the t-test for independent samples, the multivariate analysis of variance (MANOVA) and the mean of the responses to the factors/dimensions. The mean values of the responses demonstrate, that the respondents agree with the dimension D3 "Frequency of Events Reported", which is related to errors. Respondents report them regularly and frequently (M = 4.113, SD = 0.903). However, this dimension shows a slightly higher deviation, which can be understood to indicate

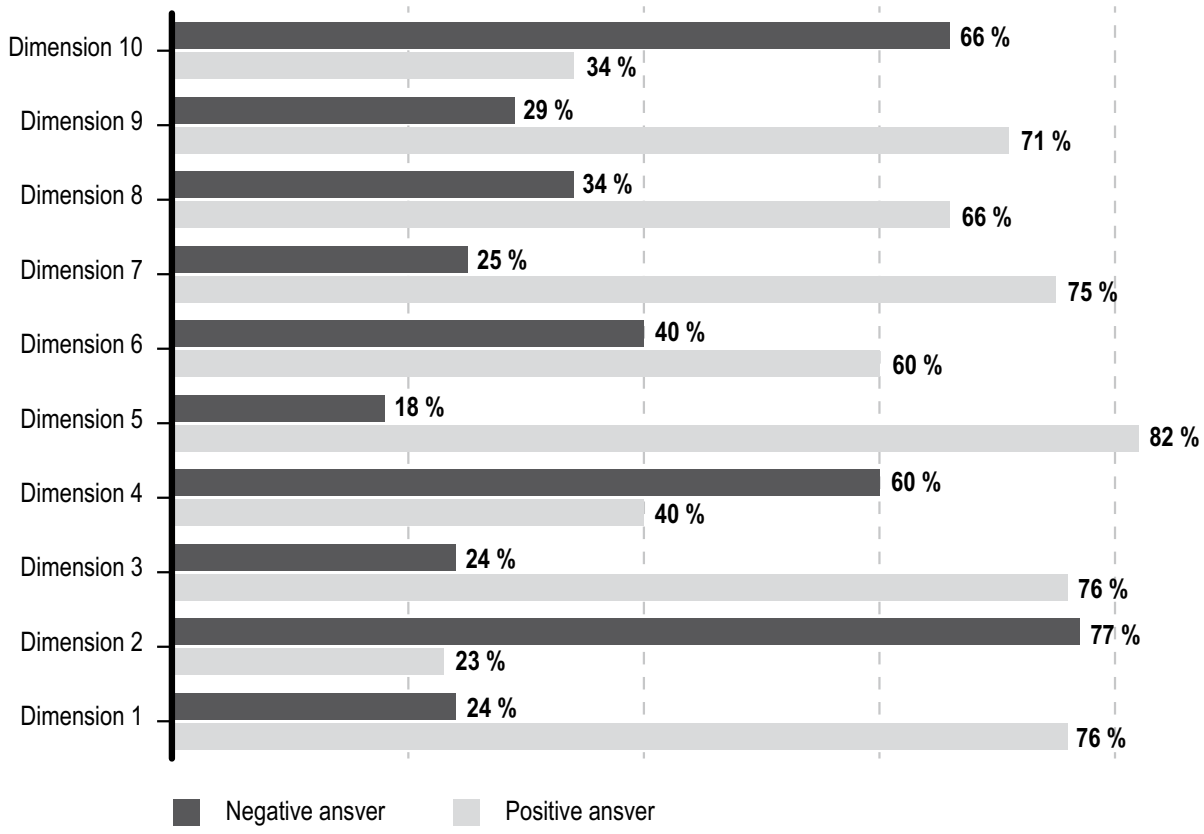

Figure 1: Overall PSC perception according to positive and negative ratings of dimension

"Patient Safety Rating", in which respondents rated the level of patient safety, shows interesting findings. As much as 47.65% of the respondents consider patient safety to be very good, while only 6.34% consider it to be fair (Figure 2).

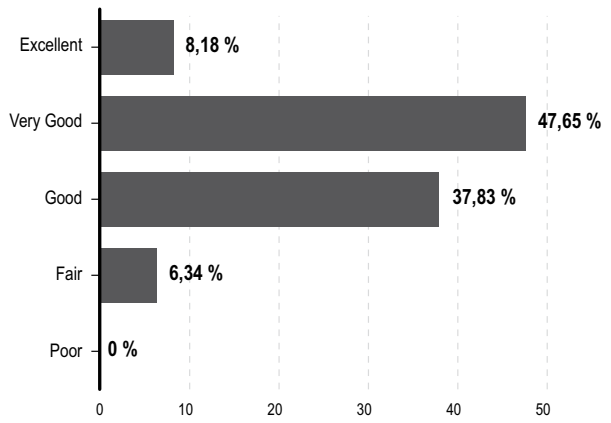

Figure 2: Patient safety rating

that respondent opinions were split. For dimension D10 "Management Support for Patient Safety", we observe that the respondents are undecided (M = 3.042, SD = 0.753) as opposed to the management that considers PSC as a top priority and cares about a positive work climate and promotes PSC. Significant statistical differences are especially notable between hospitals (PHs), (PH1, PH2, PH3, PH4, PH5 and PH6). Differences are also present for gender and between wards.

For gender, there is a correlation with dimension D10 "Management Support for Patient Safety", between wards there is also a correlation with D2 and D4. Between gender for dimension D10 "Management Support for Patient Safety", we conducted a t-test for independent samples, which tells that, on average, women have a statistically significantly better opinion of Management support for patient safety than men (t -1.995, $p < 0.047$). For the occupational group, statistical differences only occur for dimension D7 "Supervisor/Manager Expectations and Action Promoting Patient Safety". Associate professional nurses more often think that they must work quickly, take shortcuts, and that their supervisors ignore problems that arise all the time ($F = 5.260$, $p = 0.005$).

While registered nurses ($p < 0.01$) and psychiatrists ($p < 0.05$) disagree about this dimension. The higher the respondents' education level, the less agreement is found for dimension D7. There are statistical differences between wards, but this pertains the moste to healthcare workers in locked wards regarding dimension D2, "Staff Overload and Failure Response," and dimension D4, "Teamwork Between Organisational Hospital Units". Respondents working in a locked ward feel more "Staff Overload and Failure Response", and consider that they often work overtime, which could increase the possibility of errors occurring, and they fear that the errors that do occur are used against them and that they are blamed for what has been done ($F = 6.557$, $p = 0.002$), than that which is reported by respondents in the open ward and others. In addition, for dimension D4 "Teamwork Between Organisational Hospital Units", respondents who worked in locked wards have a lower opinion of the inter-organisational cooperation between hospital units. They also have a lower opinion that they could provide the best possible safe and quality care for patients ($F = 5.681$, $p = 0.004$) than those open wards and others. However, post hoc tests show that respondents who work in a locked ward also have a lower opinion on the D1 dimension "Feedback & Communication About Error".

For hospitals, significant statistical differences appear for almost all dimensions, except for D3 "Frequency of Events Reported", D7 "Supervisor/Manager Expectations and Action Promoting Patient Safety" and D9 "Management Department Support for Patient Safety". Of course, post hoc tests revealed that respondents also gave statistically significant different responses to D3 and D7. If we look more closely at the dimensions between psychiatric hospitals (PH1, PH2, PH3, PH4, PH5 and PH6), we perceive that for dimension D1 "Feedback & Communication About Error", respondents in PH4 are statistically less likely to report errors that occur on the ward/unit, and they are less actively involved in preventing recurrences ($F = 7.425$, $p < 0.01$) than those in PH1, PH2, PH3, PH5 and PH6. The dimension D2 "Staff Overload and Failure Response" indicates that respondents in PH5 are statistically more likely to work beyond their full-time hours, which increases the possibility of errors occurring, and fear all errors, and look for the culprit who committed the error rather than the problem in the organisation's work system ($F = 3.582$, $p = 0.03$), as perceived in PH2, PH3, PH4 and PH6. Also, the post hoc test for dimension D3 "Frequency of Events Reported" indicates that respondents in PH4 report events statistically less frequently than respondents in PH2, PH3 and PH6 ($p = 0.035$).

For dimension D4 "Teamwork Between Organisational Hospital Units", respondents in PH5 and PH6 have a statistically better opinion of teamwork and cooperation between hospital organisational units than do the respondents in PH4 and PH2 ($F = 4.007$, $p = 0.001$). Respondents in PH4 and PH2 have a statistically worse perception ($F = 9.529$, $p < 0.001$) of dimension D5 "Teamwork Within Units" than respondents in PH1, PH3, PH5 and PH6. Dimension D6 "Handoffs and Transitions" indicates a positive effect opinion within PH2, as respondents have significantly better opinions regarding patient handover and hospital transitions ($F = 2.984$, $p = 0.012$) than respondents in PH1, PH4, PH6 and PH3. The post hoc

Table 4. t-test for independent samples and MANOVA

Dimension / Factor	n	M	SD	Gender t/p	Profession F / p	Ward/Units F / p	Hospital F / p
D1	489	3,847	0,664	-0.980 / 0,328	1,044 / 0,353	2,178 / 0,114	**7,425 / 0,000***
D2	489	3,044	0,601	-1,269 / 0,205	0,178 / 0,837	**6,557 / 0,002***	**3,582 / 0,003***
D3	489	**4,113**	0,903	-0,7410 / 0,459	1,115 / 0,329	0,371 / 0,690	1,593 / 0,161
D4	489	3,306	0,672	-1,688 / 0,092	0,799 / 0,451	**5,681 / 0,004***	**4,077 / 0,001***
D5	489	4,060	0,673	1,342 / 0,180	0,431 / 0,571	0,402 / 0,669	**9,529 / 0,000***
D6	489	3,525	0,642	0,005 / 0,996	0,496 / 0,609	1,259 / 0,285	**2,984 / 0,012***
D7	489	3,751	0,805	0,593 / 0,533	5,260 / **0,005***	0,619 / 0,539	1,215 / 0,301
D8	489	3,575	0,583	-0,955 / 0,340	1,013 / 0,364	0,066 / 0,936	**3,352 / 0,005***
D9	489	3,618	0,856	-1,612 / 0,108	1,138 / 0,321	0,381 / 0,684	1,823 / 0,107
D10	489	**3,042**	0,753	**-1,995 / 0,047***	1,655 / 0,192	1,252 / 0,287	**4,746 / <0,000***

Note: D1=Feedback & Communication About Error, D2=Staff Overload and Failure Response*, D3=Frequency of Events Reported, D4=Teamwork Between Organizational of Hospital Units*, D5=Teamwork within Units*, D6=Handoffs and Transitions, D7=Supervisor/Manager Expectations and Action Promoting Patient Safety, D8=Organizational Learning-Continuous Improvement, D9=Management department Support for Patient Safety*, D10=Management Support for Patient Safety, n=the number of units/respondents in the sample, M=arithmetic mean, SD=standard deviation, t=t-test for independent samples, F=coefficient value, P=statistical significance < 0.005*, Gender (m=male, f=female), Profession (Associate professional nurse, Registered nurse, Resident in Psychiatry, Psychiatrist), Ward (open ward, locked ward/department under special supervision), psychiatric hospital (PH1, PH2, PH3, PH4, PH5, PH6)

test revealed that respondents in PH4 also have a statistically worse opinion regarding dimension D7 "Supervisor/Manager Expectations and Action Promoting Patient Safety" than PH5, ($p < 0.005$) and PH6 ($p < 0.005$).

For dimension D8 "Organisational Learning Continuous Improvement", respondents in PH4 and PH2 are statistically less likely to agree that it is necessary to learn from errors when they occur and to build a strong PSC which involves the system, healthcare professionals and patients ($F = 3.352$, $p = 0.005$) than respondents in PH3, PH5 and PH6. However, PH5 indicates a much better opinion on dimension D10 "Management Support for Patient Safety" than that reported by respondents in the other PH2, PH3, PH4 and PH6 ($F = 4,746$, $p < 0.005$). However, respondents in PH1 are neutral regarding dimension D10 "Management Support for Patient Safety".

The aim of our study is to research and evaluat the perception of PSC in Slovenian psychiatry. The results are based on 489 HSOPSC questionnaires completed by nurses and psychiatrists. In the following are the main highlight the main finding which is significant for our research. since 2004 by many hospitals worldwide (AHRQ 2023). The purpose of the study is to research and evaluat the perception of PSC in Slovenian psychiatry. The results are based on 489 HSOPSC questionnaires completed by nurses and psychiatrists.

Of the total score of PSC, out of ten dimensions, four were rated positively by respondents (Teamwork Within Units, Feedback & Communication About Error, Frequency of Events Reported, and Supervisor/Manager Expectations and Actions that Promote Patient Safety), with more than 75% positive answers given. Some studies (Mikušová et al., 2012; Kuosamanen et al., 2019; Azyabi et al., 2021; Camacho-Rodríguez et al., 2022) have found similar results for the dimensions assessed. However, it is generally agreed that by examining the results of the dimensions aspects of the PSC that need to be improved are identified (Azyabi, 2021). Regarding the assessment of Patient Safety rating in PHs, it was found that 55.83 % of respondents considered it excellent/very

good. Our results are confirmed by the Hamaideh study (2017), in which two-thirds of nurses also rate patient safety as excellent. The respondents in PHs differed in their perceptions of PSC. Of the ten dimensions listed, four PHs perceived "Management Support for Patient Safety" less highly. The same result for perceptions of "Management Support for Patient Safety" was found in two general hospitals out of three in Slovakia (Mikušová et al., 2012). International studies have shown (Chen & Li, 2010; Belegen et al., 2011; Braithwaite et al., 2017; Brás et al., 2023) that the more positive the organisational culture, the more positive the patient treatment outcomes. Our results show gender and departmental differences. The t-test for independent samples, disclosed that women have, on average, a statistically significantly better opinion of the D10 dimension than men.

Similar results were found in a much larger study sample by (El-Jardali et al., 2011). Most of the literature reviewed, including comparative studies (El-Jardali et al., 2011; Mikušová et al., 2012; Azyabi et al., 2021; Granel-Giménez, 2022), indicates that a higher proportion of female employees work in the healthcare sector. For instance, Jafree et al. (2016) found that married female nurses with families are more secure and reliable in the work environment and, therefore more trustworthy. Further, we expected to find a correlation comparison between physicians in the literature available to us, but without objective.

The psychiatric treatment hospital setting is more specific than settings in general hospitals. Our wards are divided between open and locked wards or departments under special supervision (Mental Health Act – ZDZdr. 2009). Statistical differences between health care staff who work in locked wards for the two dimensions D2 and D4 were demonstrated.

Furthermore, we have not found similar studies to be compared with our results, but (Nemec & Čuček Trifkovič, 2017; Ulrich et al., 2018; Mulfinger et al., 2019; Mikez, 2023) noted that working in a psychiatric ward is highly stressful, unpredictable, and exhausting, and physical aggression or violence often occurs. A statistical difference is also established in the perception of PSC in dimension D7. Associate professional nurses often perceived that they work quickly and take shortcuts and that their supervisors ignored problems that arised ($F = 5.260$, $p = 0.005$). While registered nurses ($p < 0.01$) and psychiatrists ($p < 0.05$) disagreed regarding dimension 7, ($F = 5.260$, $p = 0.005$) that supervisors/managers ignored problems. Our finding corresponds with the findings of Brás and colleagues (2023). They recognised that the supervisor/manager plays an essential role in promoting PSC. They concluded (Braithwaite et al., 2017; Brás et al., 2023) the organizational culture correlated with the leaders behaviours, values and beliefs in their employees.

Based on the described findings, we make the following recommendations:

- Responsibility of top management: it is important for management to provide a positive organisational culture which should be based on reciprocity, open communication, interpersonal relationships and teamwork rather than on a blame culture (Robida, 2012; Robida, 2013a; Robida, 2013b; Tereanu, 2018;, Kuosmanen et al., 2019).
- Healthcare professionals should be informed about adverse events/errors: To reduce adverse events/errors, it is important and essential to embed risk assessment into the hospital's patient safety culture. The concept of a hospital safety culture should be based on a safe and unharmed patient, together with healthcare professionals (Robida, 2013b; Slemon et al., 2017; Danielsson et al., 2019).
- Teamwork, communication, and interpersonal relations: communication should be based on equality, reciprocity, and feedback, resulting in teamwork and positive interpersonal relations. Employees should use the circle: plan, do, study, act (PDSA) and other models together with their supervisors to prevent errors. Using and analyzing the elements help to improve teamwork, interpersonal relations, and communication and contribute to equality (Taran, 2011; Krešić, 2013; Robida, 2013a; Zikhani, 2016).
- Perception of patient safety culture: The perception of a patient safety culture also relates to the physical, architectural, fire, and ergonomic safety of patients and healthcare professionals, which constitutes the overall safety of the hospital environment (Robida, 2013a; Robida, 2013b; Ulrich et al., 2018).

CONCLUSIONS

There are few studies regarding the perception of PSC in psychiatry as PSC in psychiatry is a complex area. It requires a lot of knowledge of the medical domain and much more, including awarness of working with patients and their relatives, and an understanding of the concept of PSC. In this context, employees are the vital agents of quality and safety and play a crucial role in risk management and the prevention of patient safety incidents. Our research is no different from other studies. It examines the dimensions of the perception of PSC from the perspective of psychiatrists and nurses in Slovenian psychiatric hospitals.The research has shown the levels of the

PSC in the Slovenian psychiatric hospitals and we can conclude that this is an area requiring some improvement. It would be reasonable to repeat the survey after the implantation of the improvement recommendations and compare results.

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References

Al-Surimi, K., Almuhayshir, A., Ghailan, K. Y., & Shaheen, N. A. (2022). Impact of Patient Safety Culture on Job Satisfaction and Intention to Leave Among Healthcare Workers: Evidence from Middle East Context. *Risk Management and Healthcare Policy*, *15*, 2435–2451. https://doi.org/10.2147/RMHP.S390021

Amore, M., Menchetti, M., Tonti, C., Scarlatti, F., Lundgren, E., Esposito, W., & Berardi, D. (2008). Predictors of violent behavior among acute psychiatric patients: clinical study. *Psychiatry and Clinical Neurosciences*, *62*(3), 247–255. https://doi.org/10.1111/j.1440-1819.2008.01790.x

Azyabi, A., Karwowski, W., & Davahli, M. R. (2021). Assessing Patient Safety Culture in Hospital Settings. *International Journal of Environmental Research and Public Health*, *18*(5), 2466. https://doi.org/10.3390/ijerph18052466

Blegen, M. A., Goode, C. J., Spetz, J., Vaughn, T., & Park, S. H. (2011). Nurse staffing effects on patient outcomes: safety-net and non-safety-net hospitals. *Medical Care*, *49*(4), 406–414. https://doi.org/10.1097/MLR.0b013e318202e129

Bowles, D., McIntosh, G., Hemrajani, R., Yen, M. S., Phillips, A., Schwartz, N., Tu, S. P., & Dow, A. W. (2016). Nurse-physician collaboration in an academic medical centre: The influence of organisational and individual factors. *Journal of Interprofessional Care*, *30*(5), 655–660. https://doi.org/10.1080/13561820.2016.1201464

Braithwaite, J., Herkes, J., Ludlow, K., Testa, L., & Lamprell, G. (2017). Association between organisational and workplace cultures, and patient outcomes: systematic review. *BMJ open*, *7*(11), e017708. https://doi.org/10.1136/bmjopen-2017-017708

Brás, C. P. D. C., Ferreira, M. M. C., Figueiredo, M. D. C. A. B., & Duarte, J. C. (2023). Patient safety culture in nurses' clinical practice. *Revista Latino-americana de Enfermagem*, *31*, e3837. https://doi.org/10.1590/1518-8345.6231.3837

Brborović, O., Brborović, H., Nola, I. A., & Milošević, M. (2019). Culture of Blame-An Ongoing Burden for Doctors and Patient Safety. *International Journal of Environmental Research and Public Health*, *16*(23), 4826. https://doi.org/10.3390/ijerph16234826

Camacho-Rodríguez, D. E., Carrasquilla-Baza, D. A., Dominguez-Cancino, K. A., & Palmieri, P. A. (2022). Patient Safety Culture in Latin American Hospitals: A Systematic Review with Meta-Analysis. *International Journal of Environmental Research and Public Health*, *19*(21), 14380. https://doi.org/10.3390/ijerph192114380

Chen, I. C., & Li, H. H. (2010). Measuring patient safety culture in Taiwan using the Hospital Survey on Patient Safety Culture (HSOPSC). *BMC Health Services Research*, *10*, 152. https://doi.org/10.1186/1472-6963-10-152

Crutzen, R., & Peters, G. Y. (2017). Scale quality: alpha is an inadequate estimate and factor- analytic evidence is needed first of all. *Health Psychology Review*, *11*(3), 242–247. https://doi.org/10.1080/17437199.2015.1124240

Cuomo, A., Koukouna, D., Macchiarini, L., & Fagiolini, A. (2020). Patient Safety and Risk Management in Mental Health. In L. Donaldson (Eds.) et. al., *Textbook of Patient Safety and Clinical Risk Management*. (pp. 287–298). Springer.

Danielsson, M., Nilsen, P., Rutberg, H., & Årestedt, K. (2019). A National Study of Patient Safety Culture in Hospitals in Sweden. *Journal of Patient Safety*, *15*(4), 328–333. https://doi.org/10.1097/PTS.0000000000000369

El-Jardali, F., Dimassi, H., Jamal, D., Jaafar, M., & Hemadeh, N. (2011). Predictors and outcomes of patient safety culture in hospitals. *BMC Health Services Research*, *11*, 45. https://doi.org/10.1186/1472-6963-11-45

European Commission (2014). *Directorate-General for Health and Consumers, Patient safety and quality of care : summary. European Commission*. https://www.eunetips.eu/fileadmin/pdf/spi.eu.eurobarometer.2014.pdf

Friganović, A., Selič, P., Ilić, B., & Sedić, B. (2019). Stress and burnout syndrome and their associations with coping and job satisfaction in critical care nurses: a literature review. *Psychiatria Danubina*, *31*(Suppl 1), 21–31.

Granel-Giménez, N., Palmieri, P. A., Watson-Badia, C. E., Gómez-Ibáñez, R., Leyva-Moral, J. M., & Bernabeu-Tamayo, M. D. (2022). Patient Safety Culture in European Hospitals: A Comparative Mixed Methods Study. *International Journal of Environmental Research and Public Health*, *19*(2), 939. https://doi.org/10.3390/ijerph19020939

Hamaideh S. H. (2017). Mental health nurses' perceptions of patient safety culture in psychiatric settings. *International Nursing Review*, *64*(4), 476–485. https://doi.org/10.1111/inr.12345

Helo, S., & Moulton, C. E. (2017). Complications: acknowledging, managing, and coping with human error. *Translational Andrology and Urology*, *6*(4), 773–782. https://doi.org/10.21037/tau.2017.06.28

Institute of Medicine (US) Committee on Data Standards for Patient Safety, Aspden, P., Corrigan, J. M., Wolcott, J., & Erickson, S. M. (Eds.). (2004). *Patient Safety: Achieving a New Standard for Care*. National Academies Press (US).

Jafree, S. R., Zakar, R., Zakar, M. Z., & Fischer, F. (2016). Nurse perceptions of organizational culture and its association with the culture of error reporting: a case of public sector hospitals in Pakistan. *BMC health services research*, *16*, 3. https://doi.org/10.1186/s12913-015-1252-y

Johnson, S., Goebel, A., Richey, R., Holmes, E., & Hughes, D. (2016). A randomised, patient-assessor blinded, sham-controlled trial of external non-invasive peripheral nerve stimulation for chronic neuropathic pain following peripheral nerve injury (EN-PENS trial): study protocol for a randomised controlled trial. *Trials*, *17*(1), 574. https://doi.org/10.1186/s13063-016-1709-2

Kanerva, A., Kivinen, T., & Lammintakanen, J. (2015). Communication elements supporting patient safety in psychiatric inpatient care. *Journal of psychiatric and mental health nursing*, *22*(5), 298–305. https://doi.org/10.1111/jpm.12187

Krešić, V. (2013). Komunikacija u sestrinstvu-međuljudski odnosi zdravstvenih djelatnika. *Sestrinski glasnik*, *18*(1), 41-43.

Kuosmanen, A., Tiihonen, J., Repo-Tiihonen, E., Eronen, M., & Turunen, H. (2019). Changes in patient safety culture: A patient safety intervention for Finnish forensic psychiatric hospital staff. *Journal of Nursing Management*, *27*(4), 848–857. https://doi.org/10.1111/jonm.12760

Maina, G., Bramante, S., Borsotti, A., Oliva, F., Rigardetto, S., & Albert, U. (2021). Adverse Events of Antipsychotics and Cytochrome Polymorphisms: A Case Series on 31 Patients. *Psychiatria Danubina*, *33*(4), 523–531. https://doi.org/10.24869/psyd.2021.523

Mann, K., Rothschild, J. M., Keohane, C. A., Chu, J. A., & Bates, D. W. (2008). Adverse drug events and medication errors in psychiatry: methodological issues regarding identification and classification. *The World Journal of Biological Psychiatry*, *9*(1), 24–33. https://doi.org/10.1080/15622970601178056

Marcus, S. C., Hermann, R. C., & Cullen, S. W. (2021). Defining Patient Safety Events in Inpatient Psychiatry. *Journal of Patient Safety*, *17*(8), e1452–e1457. https://doi.org/10.1097/PTS.0000000000000520

Matziou, V., Vlahioti, E., Perdikaris, P., Matziou, T., Megapanou, E., & Petsios, K. (2014). Physician and nursing perceptions concerning interprofessional communication and collaboration. *Journal of Interprofessional Care*, *28*(6), 526–533. https://doi.org/10.3109/13561820.2014.934338

Mills, P. D., DeRosier, J. M., Ballot, B. A., Shepherd, M., & Bagian, J. P. (2008). Inpatient suicide and suicide attempts in Veterans Affairs hospitals. *Joint Commission Journal on Quality and Patient Safety*, *34*(8), 482–488. https://doi.org/10.1016/s1553-7250(08)34061-6

Mikez, N. (2023). *Ocena in zaznavanje izgorelosti med zaposlenimi v zdravstveni negi na Univerzitetni psihiatrični kliniki Ljubljana – študija primera ene organizacije = Assessment and perception of mournout syndrom among members of the nursing team at University phychiatric clinics Ljubljana – case study by one organization* [[N. Mikez]]. http://datoteke.fzab.si/magistrskadela/2023/Mikez_Natasa.pdf

Mikušová, V., Rusnáková, V., Naďová, K., Boroňová, J., & Beťková, M. (2012). Patient safety assessment in Slovak hospitals. *Int J Collab Res Intern Med Public Health, 4*(6), 1236– 1244.

Mulfinger, N., Sander, A., Stuber, F., Brinster, R., Junne, F., Limprecht, R., Jarczok, M. N., Seifried-Dübon, T., Rieger, M. A., Zipfel, S., Peters, M., Stiawa, M., Maatouk, I., Helaß, M., Nikendei, C., Rothermund, E., Hander, N., Ziegenhain, U., Gulde, M., Genrich, M., … Gündel, H. (2019). Cluster-randomised trial evaluating a complex intervention to improve mental health and well-being of employees working in hospital – a protocol for the SEEGEN trial. *BMC Public Health*, *19*(1), 1694. https://doi.org/10.1186/s12889-019-7909-4

Nabhan, M., Elraiyah, T., Brown, D. R., Dilling, J., LeBlanc, A., Montori, V. M., Morgenthaler, T., Naessens, J., Prokop, L., Roger, V., Swensen, S., Thompson, R. L., & Murad, M. H. (2012). What is preventable harm in healthcare? A systematic review of definitions. *BMC Health Services Research*, *12*, 128. https://doi.org/10.1186/1472-6963-12-128

Nemec, U. & Čuček Trifkovič, K. (2017). Stress among employees in psychiatric nursing. *Obzornik zdravstvene nege, 51*(1), 9−23. https://dx.doi.org/10.14528/snr.2017.51.1.122

Nilsson, L., Borgstedt-Risberg, M., Brunner, C., Nyberg, U., Nylén, U., Ålenius, C., & Rutberg, H. (2020). Adverse events in psychiatry: a national cohort study in Sweden with a unique psychiatric trigger tool. *BMC Psychiatry*, *20*(1), 44. https://doi.org/10.1186/s12888-020-2447-2

Pallant, J. (2013). *SPSS survival manual* (6th ed.). London, UK McGraw-Hill Education. .

Pokojová, R., & Bártlová, S. (2018). The hospital survey on patient safety culture: use of the questionnaire in European hospitals. *Electronic Scientific Journal Nursing: Theory, Research, Education, 8*(1), 19–25.

Rašić, J. (2019). *Zaznavanje kulture varnosti pacientov med zdravniki in zaposlenimi v zdravstveni negi v psihiatričnih bolnišnicah = Perceptions of patient safety culture among physicians and nursing professionals in psychiatric hospitals* [[J. Rašić]]. http://datoteke.fzab.si/magistrskadela/2019/Rasic_Jure.pdf

Robida, A. (2012). Kriminalizacija človeških napak v zdravstvu: rešitev ali poguba za paciente. *Isis*, *21*(12), 17-23.

Robida, A. (2013). Zaznavanje kulture varnosti pacientov v slovenskih akutnih splosnih bolnisnicah. *Zdravniski Vestnik*, *82*(10).

Robida A. (2013b). Hospital Survey on Patient Safety Culture in Slovenia: a psychometric evaluation. *International Journal for Quality in Health Care*, *25*(4), 469–475. https://doi.org/10.1093/intqhc/mzt040

Robida, A. (2013c). *Napake pri zdravstveni obravnavi pacientov: sistematična analiza globljih vzrokov napak in njihovo preprečevanje: priročnik: z znanostjo do večje varnosti pacientov: Root cause analysis RCA* (1. izd., str. III, IV, 114). Center za izboljševanje kakovosti in varnosti zdravstvene obravnave, Prosunt.

Slemon, A., Jenkins, E., & Bungay, V. (2017). Safety in psychiatric inpatient care: The impact of risk management culture on mental health nursing practice. *Nursing Inquiry*, *24*(4), e12199. https://doi.org/10.1111/nin.12199

Soerensen, A. L., Lisby, M., Nielsen, L. P., Poulsen, B. K., & Mainz, J. (2013). The medication process in a psychiatric hospital: are errors a potential threat to patient safety?. *Risk Management and Healthcare Policy*, *6*, 23–31. https://doi.org/10.2147/RMHP.S47723

Sola, A. (2016). Beyond Neonatal Technology. Do We Respect the Rights of Sick Newborns?. *Pediatría (Asunción)*, *43*(3), 185-188.

Sorra, J., & Nieva, V. F. (2004). *Hospital survey on patient safety culture*. Agency for Healthcare Research and Quality.

Sorra, J. S., & Dye Sorra, J. S., & Dyer, N. (2010). Multilevel psychometric properties of the AHRQ hospital survey on patient safety culture. *BMC Health Services Research*, *10*, 199. https://doi.org/10.1186/1472-6963-10-199

Sorra, J., Gray, L., Streagle, S., Famolaro, T., Yount, N., & Behm, J. (2016). AHRQ Hospital survey on patient safety culture: User's guide. *Rockville, MD: Agency for Healthcare Research and Quality*.

Rockville, W., Sorra, J., Yount, N., Famolaro, T., & Gray, L. (2021). Hospital survey on patient safety culture version 2.0: user's guide. *Rockville: AHRQ Pub.*

Svensson J. (2022). Patient Safety Strategies in Psychiatry and How They Construct the Notion of Preventable Harm: A Scoping Review. *Journal of Patient Safety*, *18*(3), 245–252. https://doi.org/10.1097/PTS.0000000000000885

Taran S. (2011). An examination of the factors contributing to poor communication outside the physician-patient sphere. *McGill Journal of Medicine*, *13*(1), 86.

Tereanu, C., Sampietro, G., Sarnataro, F., Siscanu, D., Palaria, R., Savin, V., Cliscovscaia, T., Pislaru, V., Oglinda, V., Capmare, L., Ghelase, M. S., & Turcanu, T. (2018). Survey on patient safety culture in the Republic of Moldova: a baseline study in three healthcare settings. *Clujul medical (1957)*, *91*(1), 65–74. https://doi.org/10.15386/cjmed-869

Thibaut, B., Dewa, L. H., Ramtale, S. C., D'Lima, D., Adam, S., Ashrafian, H., Darzi, A., & Archer, S. (2019). Patient safety in inpatient mental health settings: a systematic review. *BMJ open*, *9*(12), e030230. https://doi.org/10.1136/bmjopen-2019-030230

True, G., Frasso, R., Cullen, S. W., Hermann, R. C., & Marcus, S. C. (2017). Adverse events in veterans affairs inpatient psychiatric units: Staff perspectives on contributing and protective factors. *General Hospital Psychiatry*, *48*, 65–71. https://doi.org/10.1016/j.genhosppsych.2017.07.001

Ulrich, R. S., Bogren, L., Gardiner, S. K., & Lundin, S. (2018). Psychiatric ward design can reduce aggressive behavior. *Journal of Environmental Psychology*, *57*, 53-66.

Varpula, J., Välimäki, M., Lantta, T., Berg, J., Soininen, P., & Lahti, M. (2022). Safety hazards in patient seclusion events in psychiatric care: A video observation study. *Journal of Psychiatric and Mental Health Nursing*, *29*(2), 359–373. https://doi.org/10.1111/jpm.12799

Waterson, P., Carman, E. M., Manser, T., & Hammer, A. (2019). Hospital Survey on Patient Safety Culture (HSPSC): a systematic review of the psychometric properties of 62 international studies. *BMJ open*, *9*(9), e026896. https://doi.org/10.1136/bmjopen-2018-026896

World Health Organization. (2023). *Patient safety*. https://www.who.int/news-room/fact-sheets/detail/patient-safety

Yong, A.G., & Pearce, S.C. (2013). A Beginner's Guide to Factor Analysis: Focusing on Exploratory Factor Analysis. *Tutorials in Quantitative Methods for Psychology. 9*(2), 79-94. hppts://dio.org/10.20982/tqmp.09.2.p079

Zakon o duševnem zdravju. (2008). *Uradni list RS, št. 77/08, 46/15 – odl. US, 44/19 – odl. US, 109/23 in 136/23 – ZI-UZDS*. https://pisrs.si/pregledPredpisa?id=ZAKO2157

Zikhani R. (2016). Seven-Step Pathway for Preventing Errors in Healthcare. *Journal of Healthcare Management*, *61*(4), 271–281.

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