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RESEARCH ARTICLE

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Awareness of the culture of patient safety among medical staff in neurosurgery departments from Moldova

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ABSTRACT

Introduction. To improve outcomes for patients and prevent avoidable surgical errors, neurosurgeons must change the culture of patient safety. The purpose of the study was to explore the perception of Patient Safety Culture (PSC) and the factors influencing it among the staff in the neurosurgical departments from Republic of Moldova.

Material and methods. A cross sectional study was conducted in neurosurgical departments using the Hospital Survey on Patient Safety Culture (HSOPSC). Descriptive statistics were carried out, comprised the Cronbach "α" coefficient, frequency of positive answers (PPRs), level of minimum and maximum of 95% confidential interval, F. Galton correlation coefficient, Kendall rank coefficient, Harrington scale.

Results. Medical staff from neurosurgical departments from five hospitals voluntarily participated in the study n=345. Most of the respondents rated the patient's safety grade as "excellent" and "very good". The value of the frequency of positive responses to the dimensions of the survey varies between 37.3% (CI 95% [34.8-39.9]) (staffing) and 85.0% (CI.95% [83.1-86.9]) (teamwork within units). The dimensions with the highest score of the PPRs stand out: „teamwork within units", „organizational learning- continuous improvement" and „supervisor/manager expectations and actions promoting patient safety". Analyzing the effect of the influence of patient safety culture factors on the degree of patient safety appreciated by the staff, we notice that the dimensions with the greatest influence are "Feedback and Communication About Error", "Teamwork Across Units", "Management Support for Patient Safety", "Handoffs and transitions", "Communication openness". We found significant correlations among patient safety culture composites with the degree of patient safety with differences in the strength of the correlation.

Conclusions. The results reflected the positive attitude of the staff towards most composites of the patient safety culture. The study made it possible to highlight the strong and vulnerable points of the patient safety culture and the factors influencing the patient safety degree in neurosurgical departments from Moldova.

Keywords: patient safety culture, neurosurgery, patient safety.

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Key messages

What is not yet known on the issue addressed in the submitted manuscript It is a lack of research in the field of patient safety culture in neurosurgery and the factors that influence patient safety in neurosurgical departments from Republic of Moldova.

The research hypothesis

Patient safety culture as important factor that influence the patient safety and patient treatment outcomes during the hospital care.

The novelty added by manuscript to the already published scientific literature. For the first time in the Republic of Moldova, the perception of patient safety culture in neurosurgery departments was studied, using an international instrument. The study outlined the strongest and most vulnerable aspects of the patient safety culture that influence the patient safety degree.

Introduction

The Fifty-fifth World Health Assembly in May 2002 adopted resolution WHA55.18. This resolution recognized "the need to promote patient safety as a fundamental principle of all health systems and urged to pay the closest possible attention to the problem of patient safety and to establish and strengthen science-based systems, necessary for improving patients' safety and the quality of health care, including the monitoring of drugs, medical equipment, and technology. It was requested to support the efforts of Member States to promote a culture of safety within health care organizations and to develop mechanisms, for example through accreditation or other means, in accordance with national conditions and requirements, to recognize the characteristics of health care providers that offer a benchmark for excellence in patient safety internationally" [1].

The 72nd World Health Assembly (WHA) May 2019 recognized Patient Safety as a "global health priority". Global Patient Safety Action Plan 2021–2030 highlighted the strategic objectives: policies for zero patient harm, high-reliability systems, safety of clinical processes, patient and family engagement, health worker education, skills and safety, information, research and risk management, synergy, partnership and solidarity [2].

„Patient safety is a framework of organized activities that creates cultures, processes, procedures, behaviors, technologies and environments in health care that consistently and sustainably lower risks, reduce the occurrence of avoidable harm, make errors less likely and reduce impact of harm when it does occur. Patient safety is a strategic priority for modern health care and developing a culture of safety is cardinal to any sustainable efforts towards patient safety improvement" [3].

According to AHRQ "patient safety culture is the extent to which an organization's culture supports and promotes patient safety. It refers to the values, beliefs, and norms that are shared by healthcare practitioners and other staff throughout the organization that influence their actions and behaviors. Patient safety culture can be measured by determining the values, beliefs, norms, and behaviors related to patient safety that are rewarded, supported, expected, and accepted in an organization" [4].

„Changing our culture to advance patient safety" served as the theme of the 81st Annual Meeting of the American Association of Neurological Surgeons. "The neurosurgeon of the future has to embrace the ideals of individualism and innovation while never giving up the art of medicine, prioritizing the doctor-patient relationship, and changing our culture to practice the science of medicine within systems that help us to understand and prevent errors from occurring" [5]. Leaders should be educated in the importance of safety culture, and they need tools to help create this culture [6].

The HSOPSC is one of the most common tools being used to assess the culture of safety in hospitals. Studies that utilize this tool usually report the 12 composite scores and the scores on the patient safety grade and the number of events reported [7]. The areas of patient safety culture assessed by the AHRQ SOPS surveys include "Communication About Error, Communication Openness, Organizational Learning - Continuous Improvement, Overall Rating on Patient Safety, Response to Error, Staffing, Supervisor and Management Support for Patient Safety, Teamwork, Work Pressure and Pace" [4].

As of September 2022, there are 56 known translations for the AHRQ Surveys on Patient Safety Culture™ (SOPS®) [8] and 107 known countries where the AHRQ Surveys on Patient Safety Culture™ (SOPS®) have been administered [11]. The European Network for Patient Safety (EUNetPas) has been an important promoter of the „Culture of Patient Safety" and of this tool in Europe [10].

The original US Hospital Survey on Patient Safety Culture (HSOPS), designed by the American Agency for Healthcare Research and Quality (AHRQ) in 2004 was translated in Romanian and the psychometric properties was studied. The study found that Psychometric properties of the Romanian version of the HSOPS was acceptable for nine composites with 31 items [11]. Later a cross-sectional study was conducted in Moldovan healthcare settings, using the Romanian translation of the US Hospital Survey on Patient Safety Culture HSOPSC [12].

Assessing the status of safety culture in healthcare organizations and identifying the dimensions of safety culture that are the most important predictors of patient safety, are the first steps to improving that culture and enhancing patient safety [13]. Exploring the association between the patient safety composite scores and the hospital and respondent characteristics with the patient safety culture outcomes are not common in the literature [7].

Currently, the Republic of Moldova does not have in use any tool to assess patient safety culture in hospital settings [12]. Therefore, the topicality of the problem is related to the lack of research in the field of patient safety culture in neurosurgery and the necessity for the identification of patient safety culture factors that influence patient safety in neurosurgical departments from Republic of Moldova.

The purpose of the study was to explore the perception of organizational factors of patient safety culture among the staff in neurosurgical departments from Republic of Moldova and to determine their influence on the degree of patient safety rated by the staff.

Material and methods

A cross sectional study was conducted in neurosurgical departments from Moldova using the Hospital Survey on Patient Safety Culture (HSOPSC) Romanian version, developed by the US Agency for Healthcare Research and Quality, created by Sorra et al. [14]. The research project was approved by the Research Ethics Committee of *Nicolae Testemitanu* State University of Medicine and Pharmacy, Republic of Moldova on 19.06.2018.

The paper form survey was distributed to 400 members of medical staff from January till September 2019 in neurosurgical departments from five hospitals from Republic of

Moldova. The questionnaire was anonymously completed. Overall, 345 completed questioners were returned, which constituted the 86% response rate. Completed surveys were collected and digitized using MS Excel and IBM SPSS Statistics 26. The survey contains forty-two questions and two output indicators: one question asks the respondents to appreciate the patient safety grade and another question asks about the number of events reported during the last 12 months. The survey questions used Likert scale of 5-point response options of degree of agreement: 1 point mean „strongly disagree", 5 points – „strongly agree", and the frequency 1 point mean „never", and 5 points mean „always". For negatively worded items, percentage of positive responses is the percentage of respondents who answered, „Strongly disagree" or „Disagree," or „Never" or „Rarely", because a negative answer on a negatively worded item indicates a positive response [14]. We recoded negatively worded items to calculate an item percent positive score. We averaged the percent of positive scores for each item included in the composite measure, to calculate score on a particular safety culture composite measure as described the AHRQ guide [14]. Descriptive statistics were carried out, comprised the Cronbach „α" coefficient, frequency of positive answers PPRs, variance, standard error, level of minimum and maximum of 95% confidential interval.

For us, it was interesting to study the organizational factors of the patient safety culture, which is why the nine dimensions of the HSOPSC survey that characterize this aspect of the patient safety culture were analyzed. We also studied the meaning and the relationship of dependence between the factors of the patient safety culture and the degree of patient safety appreciated by the medical staff, using the F. Galton correlation coefficient for this purpose. It gave us indications on the meaning and intensity of dependence between phenomena, without being able to specify, quantitatively, how much a phenomenon increases or decreases when the one with which it correlates increases or decreases by a certain amount [15].

In the study, the relationship between two types of variables was measured: independent variables- 32 questions of the questionnaire and the dependent variable which was the question: „Rate the degree of patient safety in your department from 1 to 10". The main task was to find out which of the 32 independent variables affect the dependent variable - the degree of patient safety. Since the experts' answers were expressed in the ordinal scale, the Kendall rank coefficient was used for non-parametric data, developed by the English statistician Maurice Kendall in 1938, being more precise than ρ Spearman's [16].

Results

We explored the staff perception about patient safety culture in neurosurgical departments from five hospitals providing in-patient hospital care. 345 persons from medical staff voluntarily participated in the study. From 345 respondents there were: doctors - 36.0%, nurses - 49.8%, residents - 14.2%. All of respondents were in direct interaction or contact with patients. Most of respondents 173 (50.1%; CI 95% [44.6-55.1]) were worked in neurosurgery units and 172 (49.9%; CI 95% [44.9-55.4]) were worked in anesthesiology and intensive care units where neurosurgical patients received medical care. The distribution of respondents by intervals of years of work experience in the hospital showed that a third of them have a work experience in the hospital 1-5 years-109 people (31.6%; CI 95% [27.0-36.5]), and another third had 21 and more years of work experience - 122 people (35.4%; CI 95% [30.1-40.6]). The distribution of respondents by intervals of years of work experience in the unit showed that: 1-5 years -38.6 % respondents, 6-10 years-18.6% respondents, 11-15 years- 10.7% respondents, 16-20 years- 9% respondents, > 20 years - 23.2 % respondents. The results showed that a half of respondents worked 40-49 hours per week- 49.9%, 20-39 hours- 20.9 %, 60-79 hours- 26.1%, less than 20 hours- 0.9% and more than 80 hours- 2.3%.

The frequency of adverse events reported in the last 12 months by respondents-output indicator, reflects that the most part of staff did not report any adverse events during the last 12 months- 90.7% (CI 95% [87.5-93.6]).

Most of the employees rated the patient's safety grade as "excellent"- 39.1 % and "very good" 43.8%. Table 1 reflects the staff perception of patient safety grade.

Table 1. Patient Safety Grade -output indicator

Patient Safety Grade -points	Frequency of responses			Patient Safety Grade
	Number of respondents	%	95% CI	
9-10	135	39.1	33.9-44.1	Excellent
7-8	151	43.8	38.6-48.0	Very good
5-6	44	12.8	9.3-16.5	Acceptable
3-4	11	3.2	1.4-5.2	Poor
1-2	4	1.2	0.3-2.3	Failing

Note: *CI* - level of minimum and maximum of 95% confidential interval

It was interesting for us to find out how the respondents assessed the safety of the patient depending on the position occupied. The results are reflected in the Table 2

Table 2. The comparisons of patient safety grade between different professionals

Nr.	Respondents Position	Number of respondents	Patient safety grade		Level of patient safety grade
			Score	CI 95%	
1	Residents	49	8.2	7.9-8.5	Very good
2	Doctors	124	7.8	7.6-8.0	Very good
3	Nurses	172	7.7	7.5-7.9	Very good
	Overall	345	7.8	7.6-8.0	Very good

Note: *CI* -level of minimum and maximum of 95% confidential interval.

The results obtained showed that the highest rating for patient safety was given by resident doctors. They gave 8.2 points out of 10 for patient safety, which corresponds to a "very good" level. The score given by doctors was lower (7.8 points out of 10), and the lowest score for patient safety was given by nurses (7.7 out of 10 points), which corresponds

to the "very good" level. The differences in the appreciation given by these three categories of respondents determined a significant statistical difference depending on the position of the participants (χ^2=20.056; gl=8; p=0.010)

Nine composites derived from the Agency for Healthcare Research and Quality's (AHRQ) Hospital Survey on Patient Safety Culture (HSOPSC) were used to investigate organizational aspect of patient safety culture. Table 2 express the item and composite positive scores for the patient safety culture with 95% confidence intervals.

Table 3. Item and Composite Percent Positive Scores for the Patient safety culture with 95 % confidence intervals

Code	Composites and items	Absolut number	%	95% CI
D I Teamwork within units		*1173*	*85.0*	*83.1- 86.9*
A1	People support one another in this unit	301	87.2	83.8- 90.7
A3	When a lot of work needs to be done quickly, we work together as a team to get the work done	310	89.9	86.7- 92.8
A4	In this unit, people treat each other with respect	292	84.6	80.9- 88.1
A11	When one area in this unit gets really busy, others help out	270	78.3	73.6- 82.9
D II Supervisor/manager Expectations and Actions Promoting Patient Safety		*1117*	*80.9*	*78.9- 83.0*
B1	My supervisor/manager says a good word when he/she sees a job done according to established patient safety procedures	311	90.1	87.0- 93.0
B2	My supervisor/manager seriously considers staff suggestions for improving patient safety	285	82.6	78.8- 86.7
B3r	Whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means taking shortcuts	220	63.8	58.8- 68.7
B4r	My supervisor/manager overlooks patient safety problems that happen over and over	301	87.2	83.8- 90.7
D III Organizational Learning-Continuous Improvement		*839*	*81.1*	*78.7- 83.4*
A6	We are actively doing things to improve patient safety	276	80.0	75.7- 84.3
A9	Mistakes have led to positive changes here	288	83.5	79.4- 87.2
A13	After we make changes to improve patient safety, we evaluate their effectiveness	275	79.7	75.7- 83.8
D IV Management Support for Patient Safety		*613*	*59.2*	*56.2- 62.2*
F1	Hospital management provides a work climate that promotes patient safety	228	66.1	60.9- 71.3
F8	The actions of hospital management show that patient safety is a top priority	228	66.1	60.9- 71.3
F9r	Hospital management seems interested in patient safety only after an adverse event happens	157	45.5	40.3- 50.8
D VI Feedback and Communication About Error		*792*	*76.5*	*73.9- 79.1*
C1	We are given feedback about changes put into place based on event reports	300	87.0	83.2- 90.1
C3	We are informed about errors that happen in this unit	220	63.8	58.6- 68.7
C5	In this unit, we discuss ways to prevent errors from happening again	272	78.8	74.2- 82.9
D VII Communication openness		*491*	*47.4*	*44.4- 50.5*
C2	Staff will freely speak up if they see something that may negatively affect patient care	225	65.2	60.3- 70.4
C4	Staff feel free to question the decisions or actions of those with more authority	144	41.7	36.5- 47.0
C6r	Staff are afraid to ask questions when something does not seem right	122	35.4	30.7- 40.3
D IX Teamwork Across Units		*719*	*52.1*	*49.5- 54.7*
F2r	Hospital units do not coordinate well with each other	122	35.4	30.4- 40.9
F4	There is good cooperation among hospital units that need to work together	212	61.4	56.2- 66.9
F6r	It is often unpleasant to work with staff from other hospital units	140	40.6	35.1- 46.1
F10	Hospital units work well together to provide the best care for patients	245	71.0	66.1- 75.9
D X Staffing		*515*	*37.3*	*34.8- 39.9*
A2	We have enough staff to handle the workload	135	39.1	33.9- 44.6
A5r	Staff in this unit work longer hours than is best for patient care	103	29.9	25.5- 35.1
A7r	We use more agency/temporary staff than is best for patient care	147	42.6	37.1- 47.8
A14r	We work in «crisis mode» trying to do too much, too quickly	130	37.7	32.5- 42.9
D XI Handoffs and transitions		*854*	*61.9*	*59.3- 64.4*
F3r	Things "fall between the cracks" when transferring patients from one unit to another	202	58.6	53.3- 63.2
F5r	Important patient care information is often lost during shift changes	238	69.0	63.5- 73.9
F7r	Problems often occur in the exchange of information across hospital units	192	55.7	50.4- 60.9
F11r	Shift changes are problematic for patients in this hospital	222	64.3	59.4- 69.3

Note: CI -level of minimum and maximum of 95% confidential interval;A1…F11 – the item number in the survey; DI…D XI-the composite number in the survey. An "r" associated to the item number indicates items that are negatively worded and reverse-scored when calculating percentage positive scores.

Prin urmare actualitatea problemei a fost asociată cu lipsa cercetării privind Cultura Siguranței Pacienților de profil Neurochirurgical în serviciul spitalicesc, riscurile înalte ale asistenței medicale la Pacienții cu maladii neurochirurgical

Table 4. Classification of the results of patient safety culture dimensions according to the Harrington scale

Grade	Frequency of positive responses %	Level of Harrington scale	Dimension	The total value of dimension %
I.	80- 100%	Very good (excellent)	Teamwork within units	85.0
			Organizational Learning-Continuous Improvement	81.1
			Supervisor/manager Expectations and Actions Promoting Patient Safety	80.9
II.	63- 79%	Good	Feedback and Communication About Error	76.5
III.	37- 62%	Satisfactory	Handoffs and transitions	61.9
			Management support for patient safety	59.2
			Teamwork Across Units	52.1
			Communication openness	47.4
			Staffing	37.3

Table 5. Kendall rank correlation coefficient with patient safety degree

Code	Composites and items	Keywords	The Correlation Coefficient with the degree of Patient Safety	„p" Predicted probability
D I Teamwork within units				
A1	People support one another in this unit	support	0.207	p < 0.05
A3	When a lot of work needs to be done quickly, we work together as a team to get the work done	team	0.241	p < 0.05
A4	In this unit, people treat each other with respect	respect	0.277	p < 0.01
A11	When one area in this unit gets really busy, others help out	help	0.309	p < 0.01
D II Supervisor/manager Expectations and Actions Promoting Patient Safety				
B1	My supervisor/manager says a good word when he/she sees a job done according to established patient safety procedures	appreciation	0.212	p < 0.05
B2	My supervisor/manager seriously considers staff suggestions for improving patient safety	suggestions	0.245	p < 0.05
B3r	Whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means taking shortcuts	faster	0.188	p>0.05
B4r	My supervisor/manager overlooks patient safety problems that happen over and over	overlook	0.234	p < 0.05
D III Organizational Learning-Continuous Improvement				
A6	We are actively doing things to improve patient safety	activities	0.253	p < 0.05
A9	Mistakes have led to positive changes here	changes	0.267	p < 0.01
A13	After we make changes to improve patient safety, we evaluate their effectiveness	evaluation	0.264	p < 0.01
D IV Management Support for Patient Safety				
F1	Hospital management provides a work climate that promotes patient safety	climate	0.268	p < 0.01
F8	The actions of hospital management show that patient safety is a top priority	actions	0.278	p < 0.01
F9r	Hospital management seems interested in patient safety only after an adverse event happens	adversity	0.312	p < 0.01
D VI Feedback and Communication About Error				
C1	We are given feedback about changes put into place based on event reports	feedback	0.262	p < 0.01
C3	We are informed about errors that happen in this unit	errors	0.335	p < 0.001
C5	In this unit, we discuss ways to prevent errors from happening again	discussions	0.343	p < 0.001
D VII Communication openness				
C2	Staff will freely speak up if they see something that may negatively affect patient care	free	0.302	p < 0.01
C4	Staff feel free to question the decisions or actions of those with more authority	question	0.254	p < 0.01
C6r	Staff are afraid to ask questions when something does not seem right	afraid	0.257	p < 0.01
D IX Teamwork Across Units				
F2r	Hospital units do not coordinate well with each other	uncoordinated	0.250	p < 0.05
F4	There is good cooperation among hospital units that need to work together	cooperation	0.317	p < 0.01
F6r	It is often unpleasant to work with staff from other hospital units	discomfort	0.179	p>0.05

F10	Hospital units work well together to provide the best care for patients	coordination	0.309	p < 0.01
D X Staffing				
A2	We have enough staff to handle the workload	workload	0.174	p>0.05
A5r	Staff in this unit work longer hours than is best for patient care	overtime	0.175	p>0.05
A7r	We use more agency/temporary staff than is best for patient care	temporary	0.201	p < 0.05
A14r	We work in «crisis mode» trying to do too much, too quickly	pressure	0.214	p < 0.05
D XI Handoffs and transitions				
F3r	Things "fall between the cracks" when transferring patients from one unit to another	things loss	0.280	p < 0.01
F5r	Important patient care information is often lost during shift changes	data loss	0.244	p < 0.05
F7r	Problems often occur in the exchange of information across hospital units	information exchange	0.314	p < 0.01
F11r	Shift changes are problematic for patients in this hospital	shift change	0.288	p < 0.01

Note: p - predicted probability*;* A1...F11 – the item number in the survey; DI...D XI-the composite number in the survey. An "r" associated to the item number indicates items that are negatively worded and reverse-scored when calculating percentage positive scores.

The above results made it possible to determine the composite rating by the effect on the degree of patient safety.

Table 6. Rating of dimensions according to the Effect on the Degree of Patient Safety

Composite number	Composites	The Correlation Coefficient with the degree of Patient Safety	Composite Rating
VI	Feedback and Communication About Error	0.313	1
IX	Teamwork Across Units	0.292	2
IV	Management Support for Patient Safety	0.286	3
XI	Handoffs and transitions	0.282	4
VII	Communication openness	0.271	5
III	Organizational Learning-Continuous Improvement	0.261	6
I	Teamwork within units	0.259	7
II	Supervisor/manager Expectations and Actions Promoting Patient Safety	0.230	8
X	Staffing	0.208	9

Note: VI -, IX – the composite number in the survey.

Discussions

The results express the attitude of the staff from the neurosurgery departments towards the organizational factors of patient safety culture. The value of the frequency of positive responses to the composites of the survey varies between 37.3% (staffing) and 85.0% (teamwork within units).

The mean value of patient safety grade was 7.8 points (CI 95% [7.6-8.0]) from 10 that correspond to „very good" level of patient safety grade. 39.1% of respondents appreciated as „excellent" the degree of patient safety, 43.8%- „very good", 12.8%- „acceptable", 3.2%- „poor" and 1.2%- „failing". The results reflected the high appreciation of the patient's safety degree by the medical staff in neurosurgical departments.

Our study highlighted the advantages of the dimensions „teamwork within units", „organizational learning and continuous improvement" and „supervisor/manager expectations and actions promoting patient safety" in neurosurgical departments where these dimensions were rated with the highest score of the frequency of positive answers. The composites with a lower score of the frequency of positive answers were „handoffs and transitions", „management support for patient safety", „teamwork across units", „communication openness" and „staffing".

Wang et al. (2017) described similar results in his study carried out in surgical departments where the PPRs for „teamwork within units" and „organizational learning and continuous improvement" were ≥75%, which denoted strengths, and the PPRs for „staffing" and „non-punitive response to errors" were ≤50%, which denoted weaknesses in surgical units and other units [17].

Like the data published by AHRQ in 2022, the composite with the highest score of positive answers in our study was the „teamwork within units"- 85% of PPRs. According to AHRQ the Highest Scoring Composite Measures „Teamwork" where 82% of respondents „strongly agreed" or „agreed" that "staff work together as an effective team, help each other during busy times, and are respectful" [18]. Nwosu et al. (2022) described in their study on patient safety culture in operating room that the „teamwork within units" had the highest average percentage positive score and was the only area of demonstrable strength (composite score >75%), with a score of 79.6% [19].

The second high rated composite was „Organizational Learning-Continuous Improvement". 81.1% of respondents „strongly agreed" or „agreed" that work processes are regularly reviewed, changes are made to keep mistakes from happening again, and changes are evaluated. Higher staff perceptions of the domain were associated with their positive perceptions of patient safety in one study (El-Jardali et al., 2011) [7].

Another high rated dimension in our study was "Supervisor/manager Expectations and Actions Promoting Patient Safety" where 80.9% of medical staff "strongly agreed" or "agreed" that managers promote patient safety. Similar results were reported by AHRQ in 2022 where 80% of respondents "strongly agreed" or "agreed" that supervisors, managers, or clinical leaders consider staff suggestions for improving patient safety, do not encourage shortcuts, and address patient

safety concerns [18]. Particularly positive assessments were found for the categories "nonpunitive response to errors", „teamwork within units", „supervisor/manager expectations and actions promoting patient safety" in hospital emergency departments from Switzerland [20].

The dimension „Staffing" was rated with the lowest score of positive responses overall. According to AHRQ database for 2022 the LOWEST scoring composite measures „Staffing and Work Pace" where 51% of respondents „strongly agreed" or „agreed" that there are enough staff to handle the workload, staff work appropriate hours and do not feel rushed, and there is appropriate reliance on temporary, float, or PRN staff [18]. The process of hiring, positioning, and overseeing employees in an organization, that is, staffing, is a well-known and important challenge for attaining a favorable patient safety culture [21]. Reis et al., (2018) explained that the staff felt overloaded by the unsuitability of personnel to their work activities, which can prejudice the quality of care provided [22]. Another reason of low score in Moldova could be the insufficient staff of both doctors and nurses, which is why they work more intensively and more hours per week.

„Communication Openness" is another low rated composite of patient safety culture. 47.4 % of respondents „strongly agreed" or "agreed" that staff speak up if they see something unsafe and feel comfortable asking questions. Communication is an essential part of the practice of medicine. It is also essential for patient safety. Communication is frequently a cause of, and a resource to prevent, threats to patient safety. The main areas for attention are communication with patients, within healthcare teams and across the various interfaces that occur within healthcare [24]. Han et al., (2015) said about the steep authority gradient that traditionally exists in many operating room settings [24].

Analyzing the effect of the influence of patient safety culture factors on the degree of patient safety appreciated by the staff, we notice that the dimensions with the greatest influence are „Feedback and Communication About Error", „Teamwork Across Units", „Management Support for Patient Safety", „Handoffs and transitions", „Communication openness". We found significant correlations among patient safety culture composites with patient safety degree with differences in the strength of the correlation. Evidence of relationships between patient safety culture and patient outcomes was related at the hospital and nursing unit level according to DiCuccio (2015) [25].

El-Jardali et al., (2011) identified that "patient safety culture predictors such as event reporting, proper communication, patient safety leadership and management, hospital size, and accreditation status are associated with the patient safety culture outcomes" [7].

He also observed significant correlations of the same variables against the frequency of events reported and the overall perception of safety [7]. Moreover, higher scores on hospital handoffs and transitions increased the likelihood of having a better perception of safety among respondents and the likelihood of respondents to report a higher patient safety grade [7]. Ito et al., (2018) has shown that the safety culture subdimensions show the relationship between Patient Safety Grade and one of the outcomes. However, not all safety culture subdimensions show a relationship with Number of Events Reported [26].

Wang et al. (2017) shown that six dimensions („teamwork within units", „organizational learning and continuous improvement", „staffing", „non-punitive response to errors", supervisor/manager expectations and actions promoting patient safety", and „hospital management support for patient safety") affected „overall perceptions of safety" with statistical significance. All these six dimensions had a positive correlation with the dimension „overall perceptions of safety" [17].

Conclusions

The study reflects the positive attitude of the staff from the neurosurgery departments towards most dimensions of the patient safety culture. The study made it possible to highlight the strong and vulnerable points of the patient safety culture in neurosurgical departments from Moldova and to determine which of them have the highest influence on patient safety. There is a room for improvement in patient safety in neurosurgical departments and a key to the quality puzzle is the continual need to assess the ever-changing landscape of patient safety in neurosurgery, as well as to track the impact that quality improvement interventions are having [24]. "At the root of this is the need to change the neurosurgical culture: to practice medicine with patient safety as a priority within systems that help clinicians understand, identify, and prevent errors in a systematic fashion, with a focus on solutions rooted in systems-based approaches" [24]. With regard to creating a culture of safety, considering everything that has been written, "it all really boils down to three main themes: teamwork training, better communication among surgical teams, not just during timeouts and debriefing; and getting rid of steep authority gradients that prevent people from speaking up when something is just not quite right" [5]. According to Han SJ et al., "all stakeholders and clinicians must change their culture to be more transparent and increase the reporting of outcomes, including adverse events and complications" [24].

As Berger MS et al., concluded in the presidential address at AANS 2013 "to improve outcomes for patients and prevent avoidable surgical errors, neurosurgeons must change the culture that currently exists in the operating room so that safety concerns are of the utmost importance and that each member of the care team has a personal sense of accountability. Doing this will involve implementing and consistently applying systems-based strategies to ensure an adequate level of safeguards; improving communication with all members of the care team and dismantling authority gradients; and maintaining a well-trained and well-rested workforce" [5].

Patient safety policies should ideally support a „learning health system" approach to safety, in which measurement on the front lines of care creates evidence for improvement.

Policy makers must promote knowledge sharing, such as through the creation of a national clearinghouse or coordinating center to promote rapid knowledge exchange among health systems [27].

Health system have to expand the patient safety capacity and infrastructure to meet the demands of safety issues [27].

Declaration of conflict of interest

Nothing to declare.

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