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PATIENT SAFETY CULTURE IN HEALTH CARE FACILITIES IN UKRAINE (report 1)

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Ключевые слова: *здравоохранение, культура безопасности пациентов, учреждения здравоохранения, коэффициент альфа Кронбаха*

Abstract. Patient safety culture in health care facilities in Ukraine (report 1). Yavorovsky A.P., Rygan M.M., Naumenko A.N., Skaletsky Yu.N., Gichka S.G., Ivanko A.V., Brukhno R.P., Gorval A.K. *Using a questionnaire from the United States Agency for Research and Quality in Health Care (AHRQ), the characteristics of patient safety (PS) culture in the staff of various health care facilities (HCF) in Ukraine were analyzed. In addition, the characteristics of PS culture were analyzed depending on the length of service and affiliation of the respondents to the medical or nursing staff, as well as the profile of therapeutic or surgical activities. It is established that the weakness of the PS culture of the staff of domestic HCF is "Reaction to errors" (less than 30% of positive responses), which indicates the predominance of culture of accusation (unfair culture) in Ukrainian HCF and as a consequence fears of the staff to disclose mistakes and accordingly, the lack of opportunity to learn from these mistakes."Staffing" is identified as a weakness of the PS culture (less than 50% of positive responses) in most comparison groups. It is worth noting such a characteristic of the culture of BP, as the "Frequency of reports about errors" (less than 70% of positive responses). The Cronbach's alpha coefficient in all groups of respondents ranged from 0.62 to 0.78, which indicates the truth of the results of the study.*

Реферат. Культура безопасности пациентов в отечественных учреждениях здравоохранения (сообщение 1). Яворовский А.П., Рыган М.М., Науменко А.Н., Скалецкий Ю.Н., Гичка С.Г., Иванько А.В., Брухно Р.П., Горваль А.К. *С использованием анкеты Агентства по научным исследованиям и качеству медицинской помощи США (AHRQ) проанализированы характеристики культуры безопасности пациентов (БП) у персонала различных учреждений здравоохранения (УЗ) в Украине. Кроме того, характеристики культуры БП анализировались в зависимости от стажа работы и принадлежности опрашиваемых к врачебному или медсестринскому составу, а также профиля терапевтической или хирургической деятельности.*

Установлено, что слабой стороной культуры БП персонала отечественных УЗ является характеристика «Реакция на ошибки» (менее 30% положительных ответов), что свидетельствует о преобладании в украинском УЗ культуры обвинения (несправедливой культуры) и, как следствие, опасения персонала обнародовать свои ошибки, неблагоприятные события и соответственно отсутствия возможности учиться на этих ошибках. «Кадровое обеспечение» идентифицировано как слабая сторона культуры БП (менее 50% положительных ответов) в большинстве групп сравнения. Заслуживает внимания и такая характеристика культуры БП, как «Частота сообщений об ошибках» (менее 70% положительных ответов). Коэффициент альфа Кронбаха во всех группах опрошенных лиц колебался в пределах от 0,62 до 0,78, что свидетельствует об истинности результатов проведенного исследования.

Today, the concept of safety culture, which was proposed in 1991 by the International Atomic Energy Agency [6] for the use of nuclear technologies, is considered to be an effective tool for preventing incidents, accidents and catastrophes. Subsequently, the International Labor Organization [5], the International Civil Aviation Organization [14], and other international organizations recognized their commitment to safety culture.

The WHO has also kept a close eye on the growing interest to the concept of safety culture. From the first (2002) [2] to the last (2019) [4] Declaration on Patient Safety, the WHO has high hopes for a safety culture in minimizing preventive harm to patients. Creating and maintaining a culture of openness and transparency that, instead of condemning and punishing for mistakes, promotes the necessary safety knowledge within the health care organization is considered one of the main objectives of the WHO Global Plan of Action for Patient Safety (PS) [3].

The EU is convinced that the first step towards safer health care should be to establish a culture of patient safety throughout the healthcare system [12].

Patient safety culture is a measure of how the beliefs, values and norms of behavior of medical staff support and promote patient safety. Patient safety culture can be measured by determining what is rewarded and maintained, what is expected and accepted in organizations regarding patient safety [8].

It is noted that health care organizations that do not set safety culture priorities run the risk of having the following adverse consequences: deteriorating safety measures and lack of progress, greater harm, psychoemotional burnout of health workers, which negatively affects patient safety and entails cost growth [10].

The analysis of publications on the results of the hospital survey of patient safety culture [13] revealed a particularly weak parameter "Response to errors". That is, in the vast majority of health care facilities (HCF) surveyed, staff members perceive that their mistakes and reports of adverse events may have a negative impact on them. The WHO also draws attention to this [11].

The purpose of our study was to assess the safety culture of the staff of domestic HCF to identify its weak characteristics.

MATERIALS AND METHODS OF RESEARCH

In three HCF in Kyiv and Kyiv region, 163 health workers were interviewed for their compliance with the safety culture, including 76 staff members of the departmental health care facility (DHCF), 55 staff members of the municipal clinical hospital (MCH) and 32 staff members of the central district hospital. (CDH). Separately questionnaires of DHCF staff were analyzed by surgical (DSHCF) and therapeutic (DTHCF) specialties (the latter included diagnostic specialists) – 31 and 36 respondents, respectively. In addition, the commitment to the patient safety culture was studied in medical staff depending on the length of service in the specialty (up to 10 years (n-47), up to 20 years (n-52) and more than 20 years (n-55), and separately in physicians (n-108) and nurses (n-34). Safety culture was assessed in HCF of Ukraine (HCFU) in general.

The study was conducted in accordance with the principles of bioethics set out in the Declaration of Helsinki on Ethical Principles for Human Health Research and the Universal Declaration on Bioethics and Human Rights (UNESCO).

The calculation of the minimum sample size to determine compliance to a safety culture was performed for the bilateral critical area (Fisher's exact test). Based on 50% of the expected commitment to safety culture, at 5% significance level and at 80% of power for the effect size Eff.size=0.25, the minimum sample size is 30 respondents. The G * Power 3.1/9/4 package (Erdfelder, Faul, and Buchner, 1992-2012) was used for the calculation [9].

The inquery of the staff was conducted according to a questionnaire developed by the US Agency for Research and Quality in Health Care (AHRQ) [8]. The questionnaire was designed in such a way that it is possible to assess both the quality of medical care and the conditions that in one or another way affect this process. The use of this questionnaire is aimed at identifying strengths and weaknesses in the culture of safety of the treatment environment for patients by studying the subjective opinion of the staff of the medical institution.

The questionnaire consists of 42 questions, divided into 9 sections, each contains from 3 to

18 questions that allow you to assess the quality and safety of health care. The content of the culture of safety of the medical environment according to the chosen method includes 12 characteristics, which are presented in Table 1.

For each characteristic in the questionnaire there are 3-4 questions, formulated both positively and negatively (marked *). In negatively worded questions, negative answers ("NO", "NEVER", "RARELY") are evaluated as positive and, conversely, positive answers ("YES", "OFTEN", "ALWAYS") are evaluated as negative. The answers "I DON'T KNOW", "SOMETIMES" are assessed as neutral.

Table 1

Characteristics and definition of culture of patient safety

No.	Characteristics of culture of PS	Definition of characteristics of culture of PS
1	Work in the team	Hospital units work together and coordinate with each other to provide better patient care
2	Management action on PS issues	The hospital management provides a working climate that is conducive to PS and shows that PS is a priority
3	Organizational learning	Errors have contributed to positive change through continuous staff improvement
4	Support of PS by leadership	Managers are positive about the suggestions from staff to improve the PS, assist staff in implementing procedures to improve safety, do not ignore the problems of PS
5	Reports about errors and feedback	Staff report errors that occur and discuss ways to prevent errors
6	Overall comprehension of PS	Error prevention procedures and systems are good and there are no problems with PS
7	Frequency of reports about errors	Errors have been reported that could have harmed the patient but did not
8	Openness of communication	Staff ise free to discuss processes that may adversely affect the patient, and do not hesitate to seek advice from more experienced colleagues
9	Work in the team within the framework of department	The staff supports each other, treats each other with respect, works together as one team
10	Staffing	There is enough staff to handle the workload and enough working time to provide the best patient care
11	Personnel flows within the hospital	Important information about patient care is exchanged between hospital units and during shifts
12	Reaction to errors	The staff feels that their mistakes and reports do not have a negative impact on them

The analysis of the received questionnaires was carried out at several stages. At the first stage, an electronic database of answers to the questionnaire was formed (Table 2). Then blocks of questions were formed in accordance with the characteristics of the safety culture with the determination of the average percentage of positive answers to the questions of a particular characteristic (Table 3).

Table 2

Database area of answers to the questionnaire

№ n/o	HCF	Unit of HCF	Sections					
			section 1		section 2		section 3	
			code of answer		code of answer		code of answer	
			1	16	1	4	1	5
3	DHCF	Therapeutic	yes	don't know	yes	no	always	often
23	DHCF	Therapeutic	yes	yes	yes	no	often	always
40	DHCF	Surgical	yes	yes	yes	no	always	always
44	DHCF	Diagnostic	no	no	yes	no	always	often
45	MCH	Therapeutic	yes	yes	yes	no	rarely	often
49	MCH	Diagnostic	yes	yes	don't know	no	always	sometimes
51	MCH	Therapeutic	yes	yes	yes	no	often	never
62	MCH	Surgical	yes	don't know	yes	no	always	often

The minimum threshold value of the average percentage of positive answers according to the method, the researcher chooses by himself. We have chosen a minimum threshold of 50%, i.e. if the average percentage of positive answers to a question of a certain characteristic is more than 50%, such a characteristic is a strong point of this HCF or other comparison group, if less than 40% – weak, and in the range of 40 % and 50% – relatively strong.

Table 3

Example of distribution of answers to the questions by blocks according to characteristic of culture of PS "Work in the team" of staff of therapeutic profile of DHCF

Block and code of question	Variants of answers, absolute value/percentage		
	positive (yes)	negative (no)	neutral (don't know)
Block 1			
A1[1]	31/86	1/3	4/ 11
A3[2]	34/94	2/b	0
A4[3]	35/97	1/3	0
A11[4]	33/92	3/8	0
Total	92	5	3

Notes: 1. Does everyone in the department support each other? 2. When a lot of work needs to be done quickly, do we work together as one team to get results? 3. Do people in this department treat each other with respect? 4. When there is a lot of work in the staff of the department, others come to help?

The reliability and internal consistency of the questions in the blocks of the safety culture questionnaire were determined by the Cronbach's alpha factor.

Table 3 shows that the average positive response rate is 92% with a 50%limit of acceptability of the characteristic, and therefore, this is a strong point of

the safety culture of the units of the therapeutic profile of the DHCF.

In this way, the average percentages of positive responses for other blocks (characteristics) of safety culture in all respondents were determined.

Statistical evaluation was performed according to generally accepted methods using Microsoft Excel (product number: 99409-777-4187945-65411 2007) [1].

The research was conducted as part of the work "Scientific substantiation of the optimal risk management system to ensure a safe hospital environment" (state registration number: 0120U101432), performed at the Department of Hygiene and Ecology No. 2 of O.O. Bogomolets NMU at the request of the Ministry of Health of Ukraine.

RESULTS AND DISCUSSION

Summary data on safety culture in HCFU, DHCF, DSHCF, DTHCF, MCH, CDH are presented in Table 4.

Based on the data in this table, it should be noted that the indicators of different characteristics in different HCF and in different groups of medical professionals are close in value and, as a rule, exceed 50%, i.e. are assessed as strong points of the safety culture in these groups. As conditionally strong point of the safety culture – "Staffing" (43.6±6.0%) at DHCF and even weak (35.4±7.9%) at DHCF as a whole. In the end, "Staffing" found relatively low levels of positive responses in all groups compared to other characteristics.

Table 4

Summarized data on characteristic of culture of staff safety of domestic HCF depending on activity profile, %, P±m

Characteristic of culture of PS	Domestic HCF depending on activity profile					
	HCFU	DHCF	DSHCF	DTHCF	MCH	CDH
Work in the team	82.8±5.8	83.4±7.9	66.4±10.2	89.1±7.1	92.3±4.5	70.6±9.2
Management action on PS issues	78.3±6.5	84.6±8.1	68.1±9.7	78.3±6.7	84.1±5.4	72.2±8.9
Organizational learning	91.5±5.1	93.8±6.1	89.3±7.0	89.6±6.0	94.7±3.3	88.5±6.1
Support of PS by leadership	80.6±5.4	71.4±5.2	74.2±9.0	83.2±5.5	84.3±5.2	81.7±7.6
Reports about errors and feedback	84.9±4.9	82.7±6.7	82.5±7.6	90.4±6.9	88.5±4.3	76.3±8.4
Overall comprehension of PS	71.1±6.3	70.6±7.2	67.3±9.2	73.9±6.9	73.2±6.1	72.1±8.9
Frequency of reports about errors	62.1±6.9	63.5±8.5	59.9±11.7	72.3±5.8	58.5±7.1	62.9±9.9
Openness of communication	82.8±6.1	87.2±6.1	76.4±9.1	87.4±5.8	88.8±4.7	71.5±9.1
Work in the team within the framework of department	82.4±6.3	67.8±8.2	74.5±9.1	76.6±6.6	73.4±6.6	67.4±9.9
Staffing	49.2±7.9	35.4±7.9	57.2±11.4	43.6±6.0	56.3±8.0	62.3±9.9
Personnel flows within the hospital	78.5±7.3	78.7±7.7	74.2±9.1	70.4±6.7	80.9±6.5	56.6±9.9
Reaction to errors	24.3±8.6	21.2±9.5	23.4±11.6	19.5±8.2	28.4±8.2	21.2±9.9

In contrast, against the background of other characteristics in all groups an extremely low level (less than 30%) of positive answers to the characteristic "Reaction to errors" is noted.

Specialists of the surgical profile at DHCF assessed the situation regarding the characteristics "Reaction to errors" (23.4±11.6%) somewhat better than specialists of the therapeutic profile (19.5±8.2%). Together at DHCF, the characteristic "Reaction to errors" received only 21.2±9.5% of positive responses from respondents. The same ratio in these groups was observed regarding the characteristic "Staffing": at DSHCF – 57.2±11.4% of positive responses (strong point of safety culture),

and at DTHCF – 43.6±6.0% of positive responses, i.e. conditionally weak point of safety culture.

In the combined group of respondents (HCFU) the characteristic "Reaction to errors" (24.3±8.6%) was a week point of safety culture, and relatively weak – "Staffing" (49.2±7.9%).

At DHCF and CDH indicators regarding the characteristic "Reaction to errors" were practically identical – (21.2±9.9%).

Most respondents gave positive answers regarding the characteristic "Reaction to errors" in MCH (28.4±8.2%), where a particularly high interest in patient safety was not observed.

Therefore, it is unexpected that the lowest response rates regarding most characteristics were found at DHCF, where, as we noted earlier [7], there is a purposeful systematic work to prevent defects in health care. And perhaps indicators at DHCF show the real state of patient safety culture in the domestic health care system.

As can be seen from Table 5, the weak point in the safety culture of both physicians and nurses is the “Reaction ot errors”. At the same time, the average percentage of positive responses to this characteristic in nurses was one third higher than in physicians – 30.6±10.9% and 21.4±10.3%, respectively. Also relatively weak points of safety culture of nurses were "Staffing" (47.2±9.3%) and "Frequency of error reports" (46.7±9.1%).

Table 5

Characteristic of culture of PS in physicians and nurses of domestic HCF, %, P±m

Characteristic of culture of PS	Category of medical staff	
	physicians	nurses
Work in the team	78.6±6.8	87.4±7.1
Management action on PS issues	75.5±7.2	67.8±7.9
Organizational learning	90.2±4.5	91.2±4.9
Support of PS by leadership	79.4±7.3	78.5±8.2
Reports about errors and feedback	83.7±6.3	86.1±5.9
Overall comprehension of PS	70.9±8.1	72.3±8.5
Frequency of reports about errors	65.5±8.4	46.7±9.1
Openness of communication	80.7±6.9	92.3±5.3
Work in the team within the framework of department	79.3±5.2	64.8±9.4
Staffing	50.1±8.1	47.2±9.3
Personnel flow within the hospital	65.8±7.9	75.5±8.1
Reaction to errors	21.4±10.3	30.6±10.9

Data on the average percentage of positive responses to the characteristics of safety culture, depending on the length of service of health professionals are given in Table 6.

Again, as in the previous analysis groups, in all groups, depending on the length of service, the weak point of safety culture was "Reaction to errors". At the same time, the longer the length of service in domestic HCF, the less medical staff members remain, who can unreservedly report their own mistakes and adverse events. If in the group with the length of service up to 10 years there are 38.0±10.9% of such specialists, then with the length of service of 10 to 20 years – already 24.9±9.1%, and in the group with more than 20 years of the length of service – only 22.1±9.0%.

Table 6

Summary data positive answers by characteristics of the safety culture of domestic medical staff depending on length of service %, P±m

Characteristics of culture of PS	Length of service of medical staff, years		
	up to 10	10-20	more than 20
Work in the team	82.0±5.9	84.0±5.2	86±4.9
Management action on PS issues	82.0±6.0	79.9±6.1	78±5.9
Organizational learning	86.6±5.4	93.3±3.9	93±3.4
Support of PS by leadership	74.6±7.1	80.5±5.8	85±5.0
Report about errors and feedback	82.8±5.7	84.4±5.4	88±4.3
Overall comprehension of PS	67.4±8.1	69.3±6.6	86±5.7
Frequency of reports about errors	60.2±8.2	66.9±8.1	63±7.9
Openness of communication	85.6±5.1	89.1±4.5	83±5.6
Work in the team within the framework of department	65.9±8.4	74.0±7.1	79±5.8
Staffing	42.5±9.4	64.6±7.3	53±7.9
Personnel flows within the hospital	70.9±7.2	74.7±6.8	71±6.8
Reaction to errors	38.0±10.9	24.9±9.1	22.1±9.0

The situation with the assessment of the safety culture of the respondents according to the characteristics "Staffing" has a feedback with the length of service in the specialty. Among the specialists with least length of service, only 42.5±9.4% believe that staffing is sufficient. In this group, the characteristic "Staffing" is a relatively weak point of the safety culture. In groups with work experience of 10 to 20 years and more than 20 years, 64.6±7.3% and 53±7.9% of specialists are satisfied with staffing, respectively.

Noteworthy is the characteristic "Frequency of reports about errors" the average percentage of positive responses to which does not reach 70% in any of these study groups.

Thus, there were no fundamental differences in the average percentage of positive responses in the groups of respondents and depending on the length of service in the specialty. As in previous groups analyzed, a weak component of the safety culture of domestic health workers, regardless of length of service is "Reaction to errors", the characteristic "Staffing" should be related to the relatively weak point of safety in the vast majority of groups, and the characteristic "Frequency of reports about errors" deserves definite attention.

The Cronbach's alpha coefficient in all groups of subjects ranged from 0.62 to 0.78, which indicates the reliability of the results of the study.

CONCLUSIONS

1. The concept of safety culture, aimed at mobilizing beliefs, values and norms of behavior and culture in general in the interests of safety, is becoming more widespread in the world not only in man-made spheres of economic activity, but also in medical practice.
2. The method of interviewing staff (employees) according to the questionnaire of the United States Agency for Research and Quality of Care (AHRQ) dominates among the methods of assessing the safety culture in the medical field.
3. Analysis of the characteristics of the culture of PS in the staff of various health care facilities in Ukraine, taking into account the profile, length of service and membership in the medical or nursing team showed that the weak point of the safety culture of health workers in all groups of comparison is the "Reaction to errors", which is widely considered to be a major factor in progress in building a safe hospital environment.

4. The characteristic "Staffing" is a conditionally weak point of patient safety in the vast majority of analysis groups and relatively low rates of average positive responses (mostly below 70%) to the characteristic "Frequency of reports about errors" are noteworthy.

5. It is expedient to introduce periodic surveys of medical staff on commitment to the safety culture into the practice of the HCF in order to identify trends in this area and timely take corrective measures.

6. Of considerable interest is the comparison of indicators of safety culture of domestic medical staff with similar indicators of medical staff of other countries and professionals in other spheres of activity.

Conflict of interests. The authors declare no conflict of interest.

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