

Family Doctors' Perception of Patient Safety Issues in Rural Versus Urban Primary Healthcare Facilities

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ABSTRACT: Background: The Republic of Moldova is an Eastern European country with the capital in Chisinau and 2,5 million inhabitants (57% rural areas). Aim: To identify differences between rural, urban and Chisinau family doctors' perception of patient safety culture and to benchmark the results. Methods: This cross-sectional study is based on 776 responses gathered with the AHRQ MOSOPSC in 2020. Percent of positive responses (PPRs) by item and administrative area were analyzed and benchmarked against other countries. Results: PPRs based on responses from Chisinau (45%), rural (33%) and urban (22%) primary healthcare facilities (PHFs) were $\geq 75\%$ for 80% items and $\leq 50\%$ for tree items: rush when taking care of patients, high ratio patient/personnel, inadequate capacity to handle everything effectively. Five items in urban areas had PPRs significantly lower than in the other areas: exchanging accurate, complete and timely information with hospitals (70%); level of disorganization in the office (64%); workflow problems in the office (60%), difficulty to voice disagreement (56%), insufficient staff to handle the patient load (36%). Conclusion: Significant differences were only found in urban PHFs. High shortage of resources in rural areas and free choice of family doctors by rural residents increase affluence to urban or Chisinau PHFs. Urban PHFs have less resources to cope with patient number and workflow than Chisinau and this is likely to lead to significant differences in the family doctors' perception of patient safety culture.

KEYWORDS: Patient safety culture, MOSOPSC, rural areas, urban areas, family doctors, Republic of Moldova.

Introduction

The Republic of Moldova is a former Soviet republic country, with an emerging upper-middle income economy and 2,5 million inhabitants, out of whom 57% live in rural areas.

Chisinau is the capital and the country is organized in administrative-territorial units (districts, cities and villages), with a continuous increase of disparities between rural-urban areas after the liberalization of the market [1].

Primary healthcare in the country is provided by family doctor offices and health centers in rural areas, while in urban areas, it is provided by larger family health centers.

Local government-owned family medicine centers and health centers are contracted by the National Health Insurance Company to provide primary care services, based on the choice of family doctors and financial autonomy of medical institutions.

Despite a significant increase in the number of primary healthcare facilities (PHF) from 67 (2008) to 268 (2020) [2], the number of family doctors per 10.000 population in 2020 was about half of the average in the WHO European Region (5.5 versus 10.3) [3].

Attracting and maintaining health workers in rural areas is challenging and approximately 45% of people bypass the primary care system and directly seek medical specialists or emergency services, especially in urban areas and the capital.

While most protocols for primary care delivery have been updated in recent years, their day-to-day utilization remains undocumented [5].

Evidence shows that half of primary care harm is avoidable in high income countries and 60% in low-income countries [6].

Regardless of a country's resources, to increase patient safety in primary healthcare, it is necessary to make visible failures in patient safety.

Besides taking into account structural and organizational aspects in PHFs, a great attention should be paid to the patient safety perception and cultural perspectives of the providers and all the other workers in these centers.

Furthermore, it is important to keep in mind that heterogeneity of PHFs within the same country is likely to influence the frequency of errors and adverse events as well as the impact of general rather than specific improvement measures that might be adopted.

The safety culture of a healthcare facility consists of individual and the group values, attitude, perceptions, competence and behaviors that contribute to the healthcare facility commitment to health, but also its style, competence and management [7].

Assessing the family doctors' perception of several patient safety issues in the PHFs across the rural, urban and capital area of the Republic of Moldova becomes of critical importance for preventing adverse events and providing more qualitative and safety medical services.

Since 2004, the United States Agency for Healthcare Research and Quality (AHRQ) has released several tools to assess patient safety culture in different types of healthcare organizations (hospitals, nursing homes, medical offices, pharmacies) which were translated and applied worldwide [8,9,10,11].

Medical Office Survey of Patient Safety Culture (MOSOPSC) is used to assess the perception of patient safety from the point of view of the Medical Office workers [12] and it has never been experimented in the Republic of Moldova until 2020, when its Romanian version was applied to family doctors and aggregated results were illustrated [13,14].

However, little is known at this date about the family doctors' perception of patient safety issues in PHFs located in rural areas versus urban areas and the capital of the country. The present study aims to fill this gap.

The first objective is to identify differences between rural, urban and Chisinau (capital) PHFs family doctors' perceptions based on data gathered in 2020 with the MOSOPSC and the second objective is to benchmark the results in the Republic of Moldova with the results from other countries that applied MOSOPSC in a similar period of time, at national or regional level.

Methods

Type of study

This is a cross-sectional study based on data collected from February to June 2020, on paper and online (during COVID-19 pandemic restrictions), using the Romanian version of the MOSOPSC.

Participants

The participants were recruited from PHFs across the country, from both urban and rural areas and from Chisinau area, as well.

They were provided with explicit instructions and were informed that their adherence to the

survey was voluntary and that their responses would remain confidential during data analysis and presentation of aggregated results.

A number of 780 out of 820 surveys distributed were completed and returned. Four surveys were excluded from the analyses, during the quality data check process.

Instrument

The MOSOPSC has been translated into Romanian, with the AHRQ permission.

The Romanian version has been pre-tested on a small group of family doctors, who suggested some minor adjustments.

The original U.S. MOSOPSC is composed of 58 items grouped in 7 sections: A) List of patient safety and quality issues (9 items); B) Information exchange with other settings (5 items); C) Working in the medical office (15 items); D) Communication and follow-up (12 items); E) Owner/managing partner/ leadership support (4 items to be replied by respondents with no responsibility for making financial decisions for the medical office); F) The medical office (7 items to be replied by respondents with responsibility for making financial decisions for the medical office); G) Overall ratings (6 items).

It also includes 3 background questions and there is room for written comments at the end of the survey.

Items are rated as follows: frequency scale with six points ("daily-weekly-monthly-several times in the past 12 months-once or twice in the past 12 months-not in the past 12 months" in sections A, and B; five points ("never-rarely-sometime-most of the time-always") in section D; agreement scale with five points ("strongly disagree-disagree-neither agree nor disagree-agree-strongly agree" in sections C, E, and F qualitative scale ("poor-fair-good-very good-excellent") in section G. Sections from A to F have also the option "does not apply or don't know".

Most items are positively worded, but there are also 15 negatively worded items. Responding "disagree/strongly disagree" or "never/rarely" to a negatively worded item indicates a positive response. Negatively worded items are identified in the Table 3, 4, 5 with "r".

Data Analysis

Four records were excluded after preliminary quality check of the dataset.

Based on 776 records, the percentage of "does not apply or don't know" and missing responses was 4,9% and ranged from a minimum of zero

(for 7 items) to a maximum of 27.7 (for item E1r: “They aren’t investing enough resources to improve the quality of care in this office”).

These responses were excluded when displaying percentages of response to the survey.

“Percent positive responses” (PPRs) were computed combining the responses “not in the past 12 month”/“once or twice in the past 12 months”/“several times in the past 12 months” for items in section A and B (Table 2), the two first (“never/rarely” or “strongly disagree”/“disagree”) and the two last response categories on the scale used (“most of the times”/“always” or “strongly agree”/“agree”) for items in sections C, D, E and F (Table 3,4,5).

PPRs consider the category “most of the times”/“always” or strongly “agree”/“agree” for positively worded items and “never”/“rarely” or “strongly disagree”/“disagree” for negatively worded items (which were reverse scored). Thus, higher the PPRs, higher the level of patient safety culture.

For internal benchmarking, we computed descriptive analysis by item, by rural, urban and capital areas of the PHFs which the respondents worked in.

We tested the statistical significance of the PPRs difference between groups using a CHI2 test. The CHI2 test is used to test if the observed values are close to the expected ones (alpha=5%). The Stata software was used.

External benchmarking is based on data in three countries: U.S. (national level) [15], Greece (based on Attica region) [16] and Kuwait (national level) [17].

Results

The response rate was 98.5% for paper surveys and 90.3% for online surveys.

Table 1 resumes the characteristics of 776 respondents included in the study from PHFs located in Chisinau (45%), rural area (33%) and urban area (22%).

In Chisinau, the proportion of resident physicians who responded is significantly higher (13.7%) than in other areas.

In rural areas, the percentage of practitioner physicians (80.6%) is significantly higher and the percentage of physicians responsible for management (18.6%) is significantly lower.

Most respondents in rural areas have no responsibility for making financial decisions (82.6%).

In urban areas, there is a significantly higher percentage of respondents who have been working in their current medical office for 4-11 years (37.9%) and a significantly lower percentage of respondents with 12 or more years in the current office (44.8%) compared to other areas.

Additionally, there is a significantly higher percentage of respondents working more than 41 hours per week (64.4%) and a significantly lower percentage working 33-40 hours per week (29.3%).

No other significant statistical differences by area were observed.

Table 1. Distribution of the characteristics of the respondents, by geographic area.

Characteristic related to the current medical office	Rural area		Urban area		Chisinau area		National	
	N	%	N	%	N	%	N	%
Physician’s position								
Management *	47	18.6*	53	30.5	127	36.4	227	29.2
Practitioner *	204	80.6*	121	69.5	174	49.9	499	64.3
Resident *	2	0.8	0	0.0	48	13.7*	50	6.4
Overall	253	100	174	100	349	100	776	100
Responsibility for making financial decision								
Yes	44	17.4	59	33.9	111	31.8	214	27.6
No*	209	82.6*	115	66.1	238	68.2	562	72.4
Overall	253	100	174	100	349	100	776	100
Years worked								
3 years or less	47	18.6	30	17.2	72	20.6	149	19.2
Between 4 to 11 years*	43	18.0	66	37.9*	51	14.6	160	20.6
12 years or more*	163	64.4	78	44.8*	226	64.8	467	60.2
Overall	253	100	174	100	349	100	776	100
Hours per week worked								
5 to 32 h/week	13	5.2	11	6.3	47	13.5	71	9.2
Between 33 to 40 h/week*	114	45.4	51	29.3*	147	42.1	391	40.3
41 h or more/week*	124	49.4	112	64.4*	155	44.4	312	50.5
Overall	251	100	174	100	349	100	774	100

*Significant statistical difference

Table 2 shows percent positive responses (PPRs) for items related to patient safety and quality issues and to information exchange with other settings.

Items in this section have high PPRs ($\geq 75\%$) and no significant statistical differences are observed between the Republic of Moldova

areas, except for the item B4 related to the exchange between PHFs and hospitals in urban area (70%).

Benchmark countries also exhibit high PPRs ($\geq 75\%$), except for the item A6 related to unclear or incorrect medical office prescriptions needing correction from the pharmacies (60% in U.S.).

Table 2. Patient safety and quality issues (section A) and information exchange with other settings (section B): PPRs based on “not in the past 12 month”/“once or twice in the past 12 months”/“several times in the past 12 months” responses [15,17].

Items by section	Republic of Moldova				U.S.	Kuwait
	Rural	Urban	Chisinau	National	National	National
<i>A. Patient safety and quality issues</i>						
Patient Identification						
The wrong chart/medical record was used for a patient (A2)	100	100	100	100	90	85
Charts/Medical Records						
A patient's chart/medical record was not available when needed (A3)	100	95	100	99	93	80
Medical Equipment						
Medical equipment was not working properly or was in need of repair or replacement (A5)	100	99	99	99	90	76
Medication						
A pharmacy contacted our office to clarify or correct a prescription (A6)	100	100	100	100	60	76
A patient's medication list was not updated during his or her visit (A7)	100	99	100	100	79	80
Diagnostics & Tests						
The results from a lab or imaging test were not available when needed (A8)	100	100	100	100	81	80
Medical information was filed, scanned, or entered into the wrong patient's chart/medical record (A4)	99	99	100	100	97	86
A critical abnormal result from a lab or imaging test was not followed up within 1 business day (A9)	99	99	100	100	94	88
Access to Care						
A patient was unable to get an appointment within 48 hours for an acute/serious problem (A1)	95	99	100	98	74	80
<i>B. Exchanging accurate, complete, and timely information issues with:</i>						
Outside labs/imaging centers (B1)	100	86	100	97	78	78/85
Other medical offices/outside physicians (B2)	99	86	100	97	77	82
Pharmacies (B3)	97	100	100	99	77	88
Hospitals (B4)*	92	70*	100	91	84	83

*significant statistical difference in an administrative area within the Rep. of Moldova; PPRs = percent positive responses

Table 3 shows PPRs of items describing working in the primary care office.

At national level in the Republic Moldova, PPRs are high ($\geq 75\%$) for ten and low ($\leq 50\%$) for three out of fifteen items.

These low PPR items include feeling rushed when caring for patients (C3r), the appropriate number of patients for effective care (C14r), and the patient-to-provider ratio in the office (C6r).

Significant statistical differences exist between Moldovan areas for three items, with

lower PPRs in urban areas (C8r: 64%, C12r: 60%, C11: 36%) and higher PPRs in Chisinau (C14r: 45%, C6r: 44%), yet still $\leq 50\%$.

Benchmark countries show high PPRs ($\geq 75\%$) for fewer items (five in Greece and eight in Kuwait).

Low PPR items ($\leq 50\%$) include two in Greece, three in U.S. and four in Kuwait and two of these (C3r and C6r) are common to all countries.

Table 3. Working in the primary care office (section C): PPRs based on “agree/strongly agree” (or “disagree/strongly disagree” for r-items) responses [15,16,17].

Items by section	Republic of Moldova				U.S.	Greece	Kuwait
	Rural	Urban	Chisinau	National	National	Regional	National
In this office, there is a good working relationship between staff and providers (C2)	99	100	100	100	89	84	88
In this office, we treat each other with respect (C5)	98	100	100	99	85	83	92
This office makes sure staff get the on-the-job training they need (C7)	97	97	80	94	77	70	78
When someone in this office gets really busy, others help out (C1)	91	99	93	94	85	78	87
Staff in this office follow standardized processes to get tasks done (C15)	90	94	94	92	82	54	75
This office emphasizes teamwork in taking care of patients (C13)	89	90	81	86	85	82	84
We have good procedures for checking that work in this office was done correctly (C9)	88	90	81	85	73	67	79
This office trains staff when new processes are put into place (C4)	86	90	94	90	77	69	81
This office is more disorganized than it should be (C8r*)	82	64*	92	82	68	51	60
Staff in this office are asked to do tasks they haven't been trained to do (C10r)	76	78	80	78	72	71	58
We have problems with workflow in this office (C12r*)	69	60*	68	65	55	75	48
We have enough staff to handle our patient load (C11*)	66	36*	58	56	47	56	51
In this office, we often feel rushed when taking care of patients (C3r)	35	34	39	36	40	27	20
This office has too many patients to be able to handle everything effectively (C14r*)	29	35	45*	37	60	68	31
We have too many patients for the number of providers in this office (C6r*)	24	30	44*	35	48	34	12

* significant statistical difference; r = negatively worded items; PPRs = percent positive responses

Table 4 shows PPRs for items related to the respondents’ perception on communication and follow-up.

At national level in the Republic of Moldova, PPRs are high ($\geq 75\%$) for eight out of twelve items in this section and no item has low PPR ($\leq 50\%$).

The item D10r, related to difficulty to voice disagreement in the office, has a significantly

lower PPR (56%) in urban area, when compared with the other areas within the country.

Among the benchmark countries U.S. also exhibit high PPRs ($\geq 75\%$) for eight items, Greece for five items and Kuwait for two items only.

In this latter country, the item D7r, related to staff feeling like their mistakes are held against them, has a PPR $\leq 50\%$ (33%).

Table 4. Communication and follow-up (section D): PPRs based on “most of the time”/“always” (or “never/rarely” for r-items) responses [15,16,17].

Items by section	Republic of Moldova				U.S.	Greece	Kuwait
	Rural	Urban	Chisinau	National	National	Regional	National
This office follows up with patients who need monitoring (D9)	98	99	89	94	91	86	81
This office documents how well our chronic-care patients follow their treatment plans (D5)	96	98	94	96	82	73	77
This office reminds patients when they need to schedule an appointment for preventive or routine care (D3)	94	99	83	90	90	86	73
In this office, we discuss ways to prevent errors from happening again (D11)	89	87	94	91	84	63	72

Staff are willing to report mistakes they observe in this office (D12)	86	94	75	83	80	63	68
Our office follows up when we do not receive a report we are expecting from an outside provider (D6)	82	75	78	79	87	76	51
Providers in this office are open to staff ideas about how to improve office processes (D1)	79	85	81	81	75	64	59
Staff are encouraged to express alternative viewpoints in this office (D2)	75	79	71	74	74	79	52
It is difficult to voice disagreement in this office (D10r*)	75	56*	82	74	61	82	52
Providers and staff talk openly about office problems (D8)	74	92	83	82	65	63	57
Staff are afraid to ask questions when something does not seem right (D4r)	65	62	72	67	76	53	54
Staff feel like their mistakes are held against them (D7r)	66	78	69	70	66	68	33

*significant statistical difference; r = negatively worded items; PPRs = percent positive responses

Table 5 shows PPRs for items related to the respondents' perception on owners/managing partners/leadership support for patient safety.

At national level in the Republic of Moldova, PPRs are $\geq 75\%$ for two out of four items in section E, according to the opinion of respondents without responsibility for making financial decision, and for all seven items of section F, according to opinion of the decision makers.

In rural area, PPR is $\leq 50\%$ for item E4r, related to the owners/managing partners/leaders' decisions made too often based on what is best for the office rather than what is best for patients, as far as the opinion the respondents without responsibility for making financial decision is concerned (47%).

Nonetheless, no significant statistical differences are seen between the analysed areas of the country.

U.S. and Greece also exhibit high PPRs ($\geq 75\%$) for most items of sections E-F, while Kuwait shows four items with PPR $\leq 50\%$: three in section E (E1r, related to the investment of resources to improve the quality of care in the office: 38%; E4r, related to decisions too often based on what is best for the office rather than what is best for patients: 46% and E2r, related to overlooking patient care mistakes that happen over and over: 50%) and two in section F (F6r, related to the fact that getting more work done is more important than quality of care: 44% and F4r, related to the fact that more mistakes that affect the patients are not made just by chance: 43%).

Table 5. Owners/managing partners/leadership support (sections E and F): PPRs based on "agree"/"strongly agree" (or "disagree/strongly disagree" for r-items) responses [15,16,17].

Items by section	Republic of Moldova				U.S.	Greece	Kuwait
	Rural	Urban	Chisinau	National	National	Regional	National
<i>E. Opinion of respondents without responsibility for making financial decision about owners/managing partners/leadership support</i>							
They place a high priority on improving patient care processes (E3)	95	99	90	94	81	79	81
They overlook patient care mistakes that happen over and over (E2r)	86	99	98	94	82	64	50
They aren't investing enough resources to improve the quality of care in this office (E1r)	69	65	61	64	49	61	38
They make decisions too often based on what is best for the office rather than what is best for patients (E4r)	47	68	64	58	62	77	46
<i>F. Financial decision makers' opinion about owners/managing partners /leadership support</i>							

This office is good at changing office processes to make sure the same problems don't happen again (F5)	99	100	95	98	82	83	78
When there is a problem in our office, we see if we need to change the way we do things (F1)	98	100	100	100	84	76	81
Mistakes happen more than they should in this office (F3r)	98	88	92	93	81	77	66
After this office makes changes to improve the patient care process, we check to see if the changes worked (F7)	96	99	93	95	76	80	77
Our office processes are good at preventing mistakes that could affect patients (F2)	89	86	81	85	87	81	77
It is just by chance that we don't make more mistakes that affect our patients (F4r)	88	86	85	86	79	76	43
In this office, getting more work done is more important than quality of care (F6r)	84	93	84	86	74	75	44

* significant statistical difference; r = negatively worded items; PPRs = percent positive responses

Table 6 shows the respondents' opinion about five areas of healthcare quality (G1) and about systems and clinical processes in place to prevent, catch and correct patient safety issues (G2).

"Very good/excellent" overall ratings of quality and safety are higher (min: 55% in Chisinau; max: 61% in rural area) than for safety ratings (min: 33% in Chisinau; max: 44% in rural area) with no significant statistical differences observed between areas in the Republic of Moldova.

Among the benchmark countries, "very good/excellent" overall rates for quality (US: 69%, Greece: 73%, Kuwait: 55%) are very close to the safety ratings (U.S.: 68%, Greece: 70%, Kuwait: 60%).

With respect to the Republic of Moldova, they are higher in U.S. and Greece and lower in Kuwait. Equitability is better rated than the other five quality aspects, in all four countries.

Table 6. Overall ratings of the primary care office (section G) based on "very good/excellent" responses [15,16,17].

Items by section	Republic of Moldova				U.S.	Greece	Kuwait
	Rural	Urban	Chisinau	National	National	Regional	National
<i>G1 Overall ratings of quality and safety</i>	61	57	55	58	69	73	55
a) patient centered	55	47	50	51	71	75	52
b) effective	65	60	49	57	71	75	54
c) timely	47	52	51	50	56	65	53
d) efficient	61	53	52	55	62	63	53
e) equitable	79	71	75	75	84	85	61
<i>G2 Systems and clinical processes in place to prevent, catch and correct patient safety issues that have the potential to affect patients</i>	44	39	33	38	68	70	60

Discussion

This cross-sectional study analysed responses from 776 family doctors across the Republic of Moldova to the Romanian version of the vMOSOPSC, completed voluntarily and confidentially (either on paper or online during the COVID-19 pandemic) in 2020.

It examined the percent of positive responses (PPRs) by item, overall and by PHF administrative area (rural, urban, and capital), comparing them with other countries to identify

differences in patient safety culture and aid decision-making for targeted improvements.

Generally, Moldova shows a high patient safety culture, with about 80% of all items receiving PPRs $\geq 75\%$ across all areas.

However, three items with PPRs $\leq 50\%$ across all areas highlight significant concerns: personnel rushing patient care (C3r), too many patients for the available staff (C6r) and staff capacity overwhelmed by patient numbers (C14r).

Interventions should focus on better staff-to-patient ratio adjustments either by increasing staff numbers or reducing patient loads.

Quality of care was rated as “very good or excellent” by half of the respondents, while less than half rated the systems and clinical processes for preventing, catching, and correcting safety issues as “very good or excellent”.

Despite general uniformity in results, notable statistical differences exist across PHFs in different administrative areas.

In urban areas, five items show significantly lower PPRs than in Chisinau and rural areas: accuracy and timeliness of hospital communication (B4); office disorganization (C8r); inadequate staff for patient volume (C11); workflow issues (C12r); difficulty in voicing disagreement (D10r).

These differences align with distinct actuarial profiles of urban area PHF staff, including fewer experienced personnel (44.8% with over 12 years of service) and more staff working over 41 hours per week (64.4%) compared to their counterparts in Chisinau and rural areas.

Less experienced family doctors find it harder to voice disagreements than their more experienced colleagues.

There is evidence that PHFs in rural areas are highly understaffed [18,19] and obsolete and therefore patients directly address prevalently to PHFs located in urban areas or in the capital of the country.

While the PHFs in the capital are provided with more modern equipment and working conditions and more personnel than elsewhere in the country (including resident physicians, who support current personnel), even with high numbers of patients than elsewhere, they might have better ratio providers/patients to handle everything more effectively (e.g. patient load, work flow, office organization, etc.).

This might be not the case of urban PHFs, which appear seriously under pressure and highly understaffed with respect to the number of patients and the providers' workload.

International comparison is interesting although it should be cautiously interpreted. Benchmark countries surveys include not only family doctors but also other PHFs workers (specialist doctors, nurse practitioners, physicians assistants, nurses, clinical support staff and clerical staff, etc.). Several studies found that generally physicians are more positive than other professionals [11,20].

The U.S. follow-up study is based on a convenience sample of 18,396 respondents in 1,475 PHFs at national level (2020) [15], the Greece baseline study used a random sample of 459 respondents in 12 PHFs located in a

metropolitan region (Attica) with decentralized administration in Greece (2020) [16] and the Kuwait baseline study used a random sample of 6,602 respondents in 100 PHFs in five regions of the country (2018) [17].

Most PPRs in our study are closer to those in the U.S. and higher than in Greece and Kuwait.

A U.S. study showed a significant improvement of patient safety culture after applying quality improvement programs. It was associated with a significant decrease of preventable harm, severe adverse events, and hospital mortality [21].

The Kuwait study, mainly based on urban PHFs responses (82%), exhibited lower PPRs for a series of items related to working in the PHFs, to communication and to owners/managing partners/leadership support.

The Republic of Moldova and Kuwait share quite similar results concerning poor overall ratings of quality and the systems and clinical processes in place to prevent, catch and correct patient safety issues that have the potential to affect patients, much lower than U.S. and Greece ratings, which is of serious concern.

Although the Republic of Moldova and Kuwait are both small countries, similar for the country surface, the population number and prevalence of public healthcare system, Kuwait is a high-income country with less extensive rural area and higher ratio of general practitioners/population (23/10.000) [22].

Kuwait study authors highlight that general clinics, small PHFs and rural areas reported the highest PSC percentage, and that work experience and worked hours weekly are predictors for several patient safety culture items [17].

Other studies also pointed out correlation between patient safety culture and size and center location (urban versus rural) as well as with the gender of the participants in the study [23].

This is the first time when an assessment of family doctors' patient safety culture in Moldova has been carried out using MOSOPSC, with a focus on urban versus rural PHFs.

Moldovan and Romanian researchers collaborated to translate and adapt the Romanian version of the MOSOPSC, which is the common language of both countries, after obtaining permission from AHRQ and the authors of the original U.S. version.

Despite a mixed survey application (paper and online), the response rate was high.

However, our study has limitations.

Firstly, it relies on a convenience sample consisting only of family and resident doctors who voluntarily participated.

The survey did not reach specialist doctors or other PHF personnel such as nurses or clerical staff, whose perceptions also influence overall patient safety.

Specialist doctors are required to use more complex procedures, devices and equipment than family doctors, so they might be more sensitive to clinical risk management.

Some participants may not have been objective due to lack of confidence or fear of identification.

Additionally, participants from Transnistria were not included, as it has a separate organization and structure for family medicine.

Conclusion

Previous research with the MOSOPSC in the Republic of Moldova [14] showed some differences between the capital of the country and the rest of it.

In addition, the present study points out that these differences are likely to concentrate in the PHFs located in urban areas rather than in those located in rural areas.

No significant statistical differences were found for any patient safety item in rural areas with respect to the overall country results.

Medical desertification means continuous and increasing limitation of the timely and relevant access to health services of a given population and it is an important issue in rural areas in the Republic of Moldova [18].

This is an important risk for quality and safety of patients, leading to higher pressure on urban area facilities, and therefore it should be urgently addressed.

Future research should focus on assessing patient safety perception by job position in the Moldovan PHFs and on correlation of patient safety culture of PHFs with health outcomes.

Effectiveness of the interventions required to improve the poorest scored aspects of patient safety culture highlighted in the present study should be monitored through periodic follow-up to avoid events that could harm patients.

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Author Contributions

Conceptualization, C.T. and G.B.; Methodology, C.T. and G.B.; Investigation: G.B.; Data analysis, E.U.; Manuscript writing and initial draft preparation, C.T.; Manuscript review and editing, C.T., E.U. and G.B.; Supervision, C.T. All authors read and approved the final manuscript.

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Conflicts of interest

The authors declare no competing interests.

Institutional Review Board

The study was conducted according to the guidelines of the Declaration of Helsinki and has been approved by the Department of Family Medicine of “Nicolae Testemitanu” University of Medicine and Pharmacy in Chisinau.

Consent Statement

All human subjects involved in this study provided an informed consent prior to participation, including the consent of publishing their anonymized data.

Data availability

All data presented in the manuscript are available from the authors upon request.

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