










RESEARCH ARTICLE



Patient's satisfaction level with community pharmacies services in Romania: a questionnaire-based study

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ABSTRACT

Introduction: The patient satisfaction questionnaires in literature are according to the community pharmacies services in the authors' countries and not all have psychometric reports to support the results. We designed a questionnaire specific to the services of community pharmacies in Romania to evaluate the level of patient satisfaction.

Methods: We carried out a cross-sectional study on voluntary patients. The questionnaire consisted of 22 items, grouped into three domains corresponding to patient satisfaction with pharmacies, pharmaceutical staff and medication availability, and four subdomains related to pharmaceutical staff skills. The 5-point Likert scale was used. Statistical analysis was done in SPSS 27.0.

Results: The Cronbach's Alpha was 0.861. The Inter-rater Agreement was 72.0%, the Item Content Validity was 97.6% and the completeness index was 100%. The factor analysis indicated 6 factors (Eigen values >1.0). The 809 patients had a median of overall satisfaction score of 3.77; the median was 4.0 regarding satisfaction score with pharmaceutical staff skills. Respondents characteristics varied the patient's satisfaction level ($p \leq 0.05$).

Conclusions: The reliability and validity of the questionnaire have been demonstrated. Overall patient satisfaction with community pharmacy services had a moderate level, but the attitude and confidence in the pharmacist had a high level of satisfaction.

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Introduction

Community pharmacies offer easily accessible pharmaceutical care services to patients by providing medicines or other health products, medicine preparation and counselling, called essential services. Community pharmacy services have developed greatly since the introduction of Hepler and Strand's (1990) concept of 'pharmaceutical care'. Thus, a number of advanced services have emerged, patient-centred and treatment outcome-oriented, such as, reproductive health services, mental health, oral healthcare services, chronic patients' management, polypharmacy monitoring and counselling on smoking cessation (Eldooma et al., 2023; Sepp et al., 2021; Zuckerman et al., 2022). Also, advanced services have extended from the measurement of biological parameters and vital functions (blood pressure, cholesterol and glucose), to diagnostic screening (rapid testing) and vaccination in the pharmacy (PGEU, 2019). Over time, the pharmacist's responsibilities have become wider through the pharmaceutical care of the patient, requiring the building of a stronger relationship between the pharmacist and the patient (Alghurair et al., 2012; Cipolle et al., 2012). The International Pharmaceutical Federation (FIP) recommends prescribing, dispensing, administering and reviewing medicines to achieve the professional standards of pharmacists in community pharmacies by the year 2025 (FIP, 2020).

The public health system in Romania is organised on three levels of healthcare: primary care (community and family health care), secondary care (hospital care) and tertiary care (hospital care in specialised medical institutions) (The Parliament of Romania, 2015a). The Romanian Constitution guarantees the right to health for all citizens (The Romanian Constitution, 2024). The central administrative authority of the public health system is the Ministry of Health, under which there are other institutions and specialised structures at a national, regional, county and local level (The Government of Romania, 2018). Romania is not among the countries in the world with the best public health care systems (Johnson, 2023). The pyramid of medical assistance services in the public health system (community, family, specialist and hospital) is reversed (Vladescu et al., 2016), there is an oversizing and overloading of hospital services compared to community medical assistance services. The financing of the public health system in Romania is done through social and private health insurance, based on the Bismarck model (based on state social insurance budget financing) and the Beveridge model (based on financing from the payment of taxes and fees) (Cichon & Normand, 1994). Almost 80% of the total health funds in Romania come from public sources: 64.5% from the National Health Insurance Fund and 13.5% from government sources (Pop et al., 2020). 6.5%

are health expenses as a share of the gross national product, lower than the European Union average (11%). 44% of all health funding goes to hospital services. A quarter of the direct expenditure fund (21% out-of-pocket expenditure) is intended for medicines (The European Commission, 2023). The National Health Quality Management Authority standardises and evaluates health services, monitors health facilities and grants qualifications in order to continuously improve the quality of health services and to ensure patient safety (The Parliament of Romania, 2017), following the recommendations of international forums (The International Organization for Standardization, 2015; The International Society for Quality in Health Care, 2015; The World Health Organization, 2018).

Pharmaceutical assistance in Romania is regulated by the pharmacy law (The Parliament of Romania, 2015b) and is carried out in community pharmacies, hospital pharmacies and drugstores in the public and private system (The Parliament of Romania, 2020; The Romanian Ministry of Health, 2019), authorised annually by the territorial Association of Pharmacists through a certificate attesting specific, efficient and patient-oriented pharmaceutical services (The Romanian Pharmacists Association, 2021). Pharmaceutical practice is carried out according to the rules of 'Good pharmaceutical practice' in Romania (The Romanian Ministry of Health, 2010), recommended by the FIP (FIP, 1997, 2011), being authorised annually by a certificate of free practice from the Romanian Pharmacists Association, for pharmacists who have accumulated 40 points of continuous pharmaceutical education (The Romanian Pharmacists Association, 2019) and from the Order of General Medical Assistants, Midwives and Medical Assistants from Romania for pharmacy nurses who have achieved 30 points of continuous pharmaceutical education (MediJobs, 2024). The National Agency for Medicines and Medical Devices, subordinate to the Ministry of Health, authorises medicines for human use, supervises production units (manufacturing, control, clinical and toxicological testing), import, wholesale and retail distribution of medicines in Romania, inspects the activity from community pharmacies, controls pharmacovigilance activity, drug advertising and updates the Nomenclature of authorised human medicines (The National Agency of Medicines and Medical Devices from Romania, 2024; The Romanian Ministry of Health, 2022).

In Romania, the main activities of the pharmaceutical staff in the community pharmacies are the supply of medicines (generic and over-the-counter) or other health products, informing and advising patients, measuring some biological parameters, performing diagnostic tests and administering vaccines (The Parliament of Romania, 2015b, 2020). The notion of 'pharmaceutical services' appeared quite late, only in 2021, three essential (the service of dispensing medicines based on medical prescription; the service of preparing master and official medicines or other health products; the service of supporting and conducting public health campaigns) and eleven advanced services being allowed. These advanced pharmaceutical services can be provided by qualified pharmacists

(graduates of courses and training for each advanced service) in authorised facilities (The Romanian Ministry of Health, 2021). During the Covid-19 pandemic, the diagnostic screening (rapid testing) and the vaccination services in the pharmacy were implemented. Later, the authorised advanced services expanded in some community pharmacies, so that from 2023, the flu vaccination started. Also, from May 2023, a pilot project was initiated to assess the risk of type 2 diabetes, contributing to the prevention and early detection of this condition (Hancu, 2023). The concept of 'pharmaceutical care' is limited in Romania, because it is the decision of the managers of the community pharmacies, mostly private, to make special rooms for consultations, to bring pharmacists with adequate training and to remunerate them additionally.

The quality of pharmaceutical services perceived by patients focuses in particular on accessibility, costs and qualifications of pharmaceutical staff. If in developed countries patient's satisfaction is an indicator of quality, in developing countries the interest is growing regarding the evaluation of community pharmacy services (Alanazi et al., 2023). The best information about the quality of pharmaceutical services is obtained from patients, through questionnaires and interviews. Among the first standardised questionnaires used are the Donabedian model of healthcare service evaluation, with three components of quality (organisational structure, process indicators and outcome measures) (Donabedian, 1988) and 'ServQual' model from the marketing literature, structured on five quality attributes (tangibility, reliability, responsiveness, assurance and empathy) (Parasuraman et al., 1985).

Patient satisfaction with community pharmacy services is a multidimensional concept, a performance indicator and a complex issue, being influenced by personal characteristics, health status, and health systems (Traverso & MacKeigan, 2005). The countries with advanced pharmaceutical services report many studies assessing patient satisfaction with community pharmacy services using validated multidimensional questionnaires (Carpenter et al., 2021; Hindi et al., 2019; Policarpo et al., 2019). In low-and middle-income countries, there are few studies that have developed and validated patient satisfaction questionnaires and have been applied in primary healthcare settings (Huang et al., 2023), among which is Romania (Birsan et al., 2023; Druica et al., 2021).

The aim of this study is to evaluate patient satisfaction with Romanian pharmaceutical services, based on a questionnaire designed starting from the specifics of community pharmacy services provided to the Romanian population.

Material and methods

Study design

This study was carried out in two phases: (1) the development and validation of the questionnaire and (2) the evaluation of the level of satisfaction of

patients with community pharmacy services. In the first phase, an exploratory-sequential study using mixed method (qualitative-quantitative) was carried out to validate the questionnaire designed, between July and December 2022. In the second phase, an observational cross-sectional study using a qualitative-descriptive approach was carried out. This study was conducted in Romania between January and June 2023, using the online questionnaire entered in Google Form to collect patient responses.

Study population and sampling method

The sample consisted of patients who visited community pharmacies to purchase medication, aged 18 years or older, through convenience and snowball sampling. The questionnaire was distributed via e-mail and WhatsApp deliberately to 1530 potential participants using convenience sampling, which is a simple and effective way of recruiting participants, saving time and resources, but by which the subsequent results of the study cannot be generalised to the entire population. Participants who completed the questionnaire selected themselves into the study group. To increase the diversity and representativeness of the participants, each participant distributed the questionnaire link to other accessible participants (snowball sampling), in order to attract more participants from the entire territory of Romania, which were difficult to identify and access directly. The recruitment period of the participants coincided with the Covid-19 pandemic that took place between 2020 and 2023 (The National Emergency Committee for Emergency Situations, 2023; The President of Romania, 2020) and the state of epidemiological alert in Romania from January 2023 and June 2023 (The Romanian Ministry of Health, 2023), when there were certain restrictions imposed on the population and health facilities to prevent the spread of the coronavirus SARS-CoV-2 and influenza. Sampling ended when no new data were recorded on Google Form, being an information redundancy approach to snowball sampling saturation. The questionnaire was completed by 809 eligible participants, being sufficient to provide information necessary for the studied phenomenon. The minimum size of a representative sample for the population of Romania is 385 participants, in an adult population of 15,100,047 in the year 2022 (The National Institute of Statistics, 2024) for a confidence interval of 95% and an error of 5%.

Study tool

The new study instrument was designed because no reliable and valid questionnaire was found that was in agreement with the services provided by community pharmacies in Romania after a review of previous literature (Aziz et al., 2018; Ismail et al., 2020; Larson & MacKeigan, 1994).

The questionnaire in Romanian consisted of 22 simple, short, closed-ended and positive items, structured on three domains corresponding to patient

satisfaction with (A) community pharmacies (6 items), (B) pharmaceutical staff (13 items) and (C) medication availability (3 items) and four subdomains for the skills of the pharmaceutical staff regarding (1) overall satisfaction, (2) pharmacist's attitude, (3) confidence in the pharmacist, and (4) counselling. The content validity of the questionnaire was carried out through a pre-test with a panel of 25 evaluators consisting of teachers, experienced pharmacists and pharmacy assistants, public health specialists and doctors. The standard validity form was designed with several components for clarity, relevance and completeness, with a 4-point response scale for professional judgment of the items. The own conception questionnaire in Romanian did not need forward and backward translation of the items.

The feasibility of using the questionnaire, its reliability and factor analysis was carried out through a pilot test with 29 conveniently selected patients, aged over 18, who had experiences related to community pharmacies and gave their verbal consent for participation. The pilot sample size was determined using a subject-to-item ratio of 1.3:1. Most researchers reported factor analyses on small samples and subject-to-item ratios of only 2:1 or less. Rules for pilot sample size do not exist in literature. But the more uniform the factor analysis data performed on small samples was, the more accurate the analysis was (Costello & Osborne, 2005). Therefore, we consider the pilot group to be representative of the study group and the results of the pilot study can be validated.

The 5-point Likert scale was used. The level of patient satisfaction was measured according to the median values of the calculated scores, using a scale from 1 to 5, to quantify dissatisfaction (1 = strongly disagree and 2 = disagree), moderate satisfaction (3 = neutral) and high satisfaction (4 = agree and 5 = strongly agree).

The last section of the questionnaire included the respondents' socio-demographic features (gender, age, urban/rural areas, regions, education, marital status, occupation and income), their self-reported health status (member of a patient association, chronic patient and patient with co-morbidities), the visited pharmacies and the purchased medicines (frequency of visits, type of pharmacy and the way of purchase) and if they have ever responded before to a satisfaction questionnaire.

Statistical analysis

Patient responses were downloaded from Google Docs as a Microsoft Excel file and transferred to the Statistical Package for the Social Sciences (SPSS) version 27.0 (SPSS Inc., Chicago, IL, USA) for statistical analysis.

The reliability of the questionnaire was assessed using the alpha-Cronbach coefficient. The questionnaire was validated by calculating the content validity items for clarity, relevance (Inter-rater Agreement – IRA, Item Content

Validity – ICV, Scale Content Validity – SCV) and completeness. The factor analysis used the ‘Principal axis factoring’ method.

The descriptive statistics parameters of item scores were calculated: mean, standard deviation (SD), standard error of the mean (SEM), minimum, maximum, median and interquartile range (IQR). Statistically significant differences between median scores according to the characteristics of the respondents were calculated by the non-parametric Mann–Whitney and Kruskal–Wallis tests, because by applying the Kolmogorov–Smirnov fitting test the distributions of the calculated scores did not follow the normal distribution law. Statistically significant results were considered for values of the coefficient of significance $p \leq 0.05$.

Ethical considerations

The study received approval from the Ethics Commission of U.M.F. ‘Grigore T. Popa’ Iași (No. 237/19.11.2022). On the Google Form, before the questionnaire there was ‘the informed consent’, where all participants were invited to participate in this study and were informed about the purpose of the study, the procedure, the time to complete it, the voluntary participation, the non-granting of material benefits in exchange for their participation and about the anonymity of their identity and responses. All participants gave their consent before answering the online questionnaire, to enrol in this study.

Results

The first phase of the study

Questionnaire development and validation

The participants of the pilot test positively evaluated the items regarding the feasibility of the questionnaire and the group of evaluators revised 7 items that were not clear to the respondents, keeping the 22 items of the questionnaire. The time required to answer the questionnaire items was approximately 10 min.

The Cronbach’s alpha is 0.861, indicating a good internal consistency of the questionnaire.

IRA and ICV have an acceptable level. SCV for clarity is 97.6% and for relevance 96.2%, which represent very good values (Table 1). IRA is acceptable, being 72.0%. The completeness index of 100% is very good. The questionnaire is validated after this statistical analysis.

Bartlett’s test of sphericity is 476.077 with 231 degrees of freedom and significant statistically at p -value of 0.000, which shows that the questionnaire items are correlated with each other. The Kaiser-Meyer-Olkin statistic of 0.601 close to 1 is adequate for factor analysis.

Initial communalities indicate increased values, showing that the items are well correlated, with one exception (item 4). The extracted communalities indicate increased values of more than 50%, which shows that items are covered by the factorial solution; the only items that do not correlate very well with the others are items 17, 20 and 22.

The factor analysis reveals 6 factors (with Eigen values >1.0) responsible for 79.1% of the variation of the 22 investigated items, which represents a good percentage. The variance explained by the extracted factors drops to 71.1% after their rotation, recording a loss of approx. 8% which is due to unique latent factors and is not covered by the model (Table 2).

The presence of these 6 factors is visible in Figure 1. The highlighted factors constituted three important domains and four subdomains related to the context of the domain, and the items with weaker correlations (below 0.2) were grouped according to the relevance of the context.

The second phase of the study

Characteristics of respondents

809 respondents are enrolled in this study, of which 190 (23.5%) men and 619 (76.5%) women, aged between 18 and 20 years 57 (7.0%) respondents, between 21 and 30 years 301 (37.2) respondents, between 31 and 40 years 188 (23.2) respondents, between 41 and 50 years 147 (18.2%) respondents, between 51 and 60 years 73 (9.0%) respondents and over 60 years 43

Table 1. The validity of questionnaire's content.

Items	Clarity			Relevance		
	IRA (%)	ICV (%)	SCV (%)	IRA (%)	ICV (%)	SCV (%)
Item 1	80.0	96.0	97.6	80.0	96.0	96.2
Item 2	80.0	100.0		80.0	100.0	
Item 3	80.0	96.0		80.0	96.0	
Item 4	84.0	96.0		92.0	96.0	
Item 5	76.0	100.0		92.0	100.0	
Item 6	80.0	100.0		72.0	92.0	
Item 7	88.0	96.0		76.0	92.0	
Item 8	92.0	100.0		84.0	96.0	
Item 9	88.0	100.0		84.0	100.0	
Item10	88.0	96.0		76.0	92.0	
Item 11	80.0	96.0		80.0	96.0	
Item 12	92.0	96.0		96.0	96.0	
Item 13	88.0	100.0		84.0	96.0	
Item 14	88.0	96.0		84.0	92.0	
Item 15	88.0	100.0		76.0	92.0	
Item 16	88.0	100.0		80.0	100.0	
Item 17	92.0	100.0		84.0	100.0	
Item 18	80.0	96.0		80.0	96.0	
Item 19	80.0	96.0		84.0	96.0	
Item 20	68.0	100.0		64.0	96.0	
Item 21	76.0	92.0		72.0	96.0	
Item 22	72.0	96.0		80.0	100.0	

Table 2. Total variance explained by the factors.

Factor	Initial Eigenvalues		Extraction Sums of Squared Loadings		Rotation Sums of Squared Loadings	
	Total	% of Variance	Total	% of Variance	Total	% of Variance
1	7.278	33.084	7.020	31.908	4.141	18.822
2	4.057	18.439	3.875	17.612	3.860	17.546
3	2.133	9.697	1.921	8.730	3.443	15.651
4	1.538	6.989	1.113	5.061	1.717	7.806
5	1.323	6.014	0.914	4.156	1.493	6.787
6	1.076	4.891	0.813	3.694	1.001	4.548
7	0.919	4.175				
8	0.765	3.475				
9	0.671	3.052				
10	0.546	2.481				
11	0.358	1.626				
12	0.302	1.372				
13	0.228	1.035				
14	0.187	0.852				
15	0.157	0.716				
16	0.124	0.562				
17	0.101	0.461				
18	0.079	0.361				
19	0.069	0.312				
20	0.045	0.204				
21	0.027	0.125				
22	0.017	0.079				
Extraction Method: Principal Axis Factoring.						
		Cumulative %	Total	% of Variance	Cumulative %	Cumulative %
		33.084	7.020	31.908	31.908	18.822
		51.523	3.875	17.612	49.520	36.368
		61.220	1.921	8.730	58.250	52.020
		68.209	1.113	5.061	63.311	59.826
		74.223	0.914	4.156	67.467	66.613
		79.114	0.813	3.694	71.161	71.161

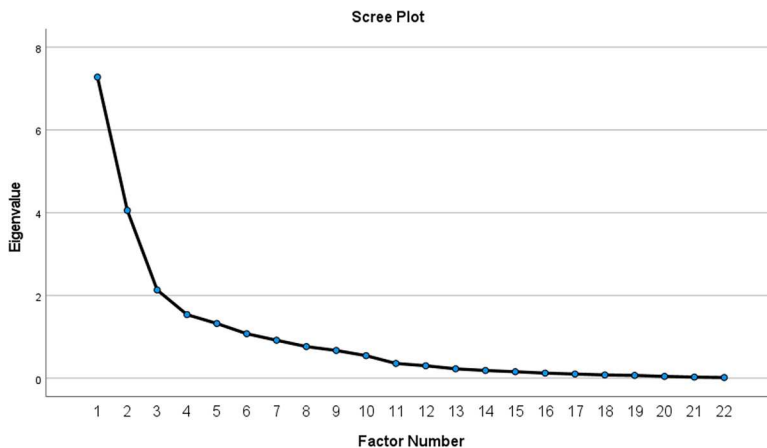


Figure 1. Scree plot of the investigated factors.

(5.3%) respondents. 629 (77.8%) respondents live in urban areas and 625 (77.3%) respondents in the north-eastern region of Romania. 165 (20.4%) respondents have secondary education, 435 (53.8%) respondents have undergraduate education and 209 (25.8%) respondents have postgraduate education. 374 (46.2%) respondents are married, 380 (47.8%) are unmarried respondents, 37 (4.6%) are divorced respondents, and 18 (2.2%) are widowed respondents. 531 (65.6%) respondents are employed, 213 (26.3%) are students respondents, 49 (6.1%) are retired respondents and 16 (2.0%) are unemployed respondents. 172 (21.3%) respondents have no income, 92 (11.4%) respondents have a minimal income (under 4254 RON \approx 856 EUR), 351 (43.4%) respondents have a medium income (4254 RON \approx 856 EUR) and 194 (24.0%) respondents have an above average income (over 4254 RON \approx 856 EUR) (The National Institute of Statistics, 2023).

695 (85.9%) respondents are not members of a patient association, 567 (70.1%) respondents did not self-report chronically ill and 565 (69.8%) respondents did not self-report with co-morbidities.

61 (7.5%) respondents go to the pharmacy weekly, 247 (30.5%) respondents go to the pharmacy monthly, and 501 (61.9%) respondents visit the pharmacy occasionally. 588 (72.7%) respondents go to the pharmacy closest to their home, 196 (24.2%) respondents go to the corporate pharmacy, and 25 (3.1%) respondents go to the pharmacy in large shopping centres. Purchased medicines were paid for by 417 (51.5%) respondents, compensated to 27 (3.3%) respondents, and 365 (45.1%) respondents used both payment methods.

626 (77.4) respondents completed a satisfaction questionnaire for community pharmacy services for the first time.

Satisfaction with community pharmacy services

Patient satisfaction with community pharmacy services is measured with the 22 items distributed across three domains regarding location, staff and medication availability. Median scores of the overall patient satisfaction is 3.77 with IQR 3.45÷4.13, indicating a moderate level of satisfaction with the services received in the community pharmacy. Also, the median scores of the domains are relatively the same, reflecting the same moderate level of patient satisfaction with pharmacies (median of 3.83 and IQR 3.33÷4.16), pharmaceutical staff (median of 3.84 and IQR 3.46÷4.23) and medication availability (median of 3.66 and IQR 3.00÷4.00) (Table 3).

The level of satisfaction according to the characteristics of the respondents

The comparative analysis between the median scores shows statistical significant differences according to the age groups, urban/rural area, education level, marital status, occupation, income, and the way medicines are purchased ($p \leq 0.05$). No statistically significant differences were found between the median scores according to gender, regions, self-reported health status and the frequency and type of pharmacy visited (Table 4).

Satisfaction with pharmaceutical staff

Patients self-reports a high level of general satisfaction with the pharmaceutical staff, the median scores being 4.0 with IQR 4.00÷5.00; satisfaction about the pharmacist's attitude shows median scores of 4.0 with IQR 4.00÷4.33; and satisfaction about trusting the pharmacist indicate median scores of 4.0 with IQR 3.50÷4.50. The median scores of 3.71 with IQR 3.28÷4.14 indicate a moderate level of satisfaction regarding the received counselling (Table 3).

Discussion

In this study, the level of patient satisfaction with the services of the community pharmacy in Romania was identified, through a questionnaire in Romanian language, designed and validated, composed of domains corresponding to the organisational aspects, the pharmaceutical staff skills (with four subfields) and the availability of medicines. Our questionnaire is multidimensional, developed on the first two components of the Donabedian model, structure (the space in which the activity with patients is carried out) and

Table 3. Descriptive statistics parameters of the questionnaire scores.

Domains and subdomains	Mean	SD	SEM	Minim	Maxim	Median	IQR
Overall satisfaction	3.7895	0.54641	0.01921	1.41	5.00	3.7727	3.4545÷4.1364
Satisfaction about pharmacies	3.7701	0.58164	0.02045	1.50	5.00	3.8333	3.3333÷4.1667
Satisfaction about pharmaceutical staff	3.8613	0.62943	0.02213	1.15	5.00	3.8462	3.4615÷4.2308
<i>General satisfaction</i>	4.2002	0.67446	0.02371	1.00	5.00	4.0000	4.0000÷5.0000
<i>Satisfaction about the pharmacist's attitude</i>	4.1026	0.61989	0.02179	1.00	5.00	4.0000	4.0000÷4.3333
<i>Satisfaction about trusting the pharmacist</i>	3.8659	0.74312	0.02613	1.00	5.00	4.0000	3.5000÷4.5000
<i>Patient satisfaction with counselling</i>	3.7081	0.72932	0.02564	1.00	5.00	3.7143	3.2857÷4.1429
Satisfaction about the medication's availability	3.5175	0.77040	0.02709	1.00	5.00	3.6667	3.0000÷4.0000

Table 4. The satisfaction scores comparative study according to the patients' general features.

Patients' characteristics	General satisfaction score		Satisfaction score with pharmacies		Satisfaction score with pharmaceutical staff		Satisfaction score with medication availability	
	Median (IQR)	p-value	Median (IQR)	p-value	Median (IQR)	p-value	Median (IQR)	p-value
Gender		0.064		0.123		0.132		0.076
Male	3.72 (3.40-4.00)		3.83 (3.16-4.00)		3.84 (3.38-4.15)		3.66 (3.00-4.00)	
Female	3.77 (3.45-4.13)		3.83 (3.50-4.16)		3.84 (3.46-4.23)		3.66 (3.00-4.00)	
Age group		0.002*		0.000*		0.021*		0.000*
18-20 years	3.68 (3.31-4.02)		3.66 (3.16-4.00)		3.84 (3.34-4.15)		3.83 (3.33-4.33)	
21-30 years	3.68 (3.40-4.04)		3.83 (3.33-4.00)		3.76 (3.38-4.15)		4.00 (3.33-4.33)	
31-40 years	3.81 (3.45-4.12)		4.00 (3.50-4.16)		3.84 (3.46-4.28)		4.00 (3.66-4.66)	
41-50 years	3.81 (3.50-4.13)		3.83 (3.50-4.16)		3.92 (3.53-4.23)		4.00 (3.66-4.33)	
51-60 years	3.95 (3.68-4.40)		3.83 (3.50-4.25)		4.00 (3.61-4.57)		4.33 (4.00-4.53)	
Over 60 years	3.86 (3.63-4.22)		4.00 (3.50-4.16)		4.00 (3.61-4.38)		4.00 (3.66-4.33)	
Environment		0.801		0.001*		0.083		0.243
Urban	3.77 (3.45-4.09)		3.83 (3.50-4.16)		3.84 (3.38-4.23)		3.66 (3.00-4.00)	
Rural	3.75 (3.45-4.21)		3.66 (3.16-4.00)		3.92 (3.53-4.36)		3.66 (3.00-4.00)	
Regions		0.820		0.091		0.634		0.657
North-east	3.77 (3.45-4.13)		3.83 (3.50-4.16)		3.84 (3.46-4.23)		3.66 (3.00-4.00)	
The rest of the country	3.77 (4.5-4.13)		3.66 (3.33-4.00)		3.84 (3.46-4.23)		3.66 (3.00-4.00)	
Education		0.053		0.335		0.010*		0.052
Secondary	3.86 (3.50-4.22)		3.83 (3.33-4.16)		4.00 (3.53-4.38)		3.66 (3.00-4.00)	
Undergraduate	3.72 (3.40-4.09)		3.83 (3.33-4.16)		3.84 (3.38-4.23)		3.66 (3.00-4.00)	
Postgraduate	3.77 (3.45-4.13)		3.83 (3.50-4.16)		3.76 (3.38-4.23)		3.66 (3.00-4.00)	
Marital status		0.019*		0.054		0.077		0.017*
Married	3.86 (3.50-4.18)		3.83 (3.50-4.16)		3.92 (3.46-4.30)		3.66 (3.00-4.00)	
Unmarried	3.72 (3.40-4.00)		3.83 (3.33-4.16)		3.76 (3.46-4.13)		3.33 (3.00-4.00)	
Divorced	3.81 (3.47-4.25)		3.83 (3.58-4.16)		3.76 (3.50-4.42)		3.66 (3.33-4.00)	
Widowed	3.81 (3.53-4.21)		3.91 (3.33-4.08)		4.19 (3.44-4.50)		3.33 (3.25-4.33)	
Occupation		0.000*		0.001*		0.001*		0.000*
Employed	3.81 (3.50-4.18)		3.83 (3.50-4.16)		3.92 (3.46-4.30)		3.66 (3.00-4.00)	

(Continued)



Table 4. Continued.

Patients' characteristics	General satisfaction score		Satisfaction score with pharmacies		Satisfaction score with pharmaceutical staff		Satisfaction score with medication availability		p-value
	Median (IQR)	p-value	Median (IQR)	p-value	Median (IQR)	p-value	Median (IQR)	p-value	
Student	3.63 (3.31-4.00)		3.66 (3.33-4.00)		3.76 (3.38-4.00)		3.33 (2.66-4.00)		
Retired	3.90 (3.70-4.15)		4.00 (3.50-4.00)		4.00 (3.69-4.38)		3.66 (3.33-4.00)		
Unemployed	3.88 (3.60-4.00)	0.001*	4.00 (3.33-4.00)	0.005*	3.88 (3.55-4.17)	0.005*	3.66 (3.00-4.00)	0.004*	
Income									
No income	3.65 (3.36-3.95)		3.66 (3.33-4.00)		3.76 (3.38-4.00)		3.33 (2.66-4.00)		
Minimal income	3.77 (3.42-4.12)		3.83 (3.33-4.12)		3.88 (3.55-4.36)		3.66 (3.00-4.00)		
Medium income	3.86 (3.54-4.18)		3.83 (3.50-4.16)		3.92 (3.53-4.30)		3.66 (3.33-4.00)		
Above average income	3.75 (3.40-4.13)		3.83 (3.50-4.04)		3.84 (3.38-4.30)		3.66 (3.00-4.00)		
Patient associations		0.482		0.162		0.861		0.199	
Yes	3.86 (3.45-4.10)		3.83 (3.50-4.16)		3.92 (3.33-4.25)		3.66 (3.25-4.00)		
No	3.77 (3.45-4.13)		3.83 (3.33-4.16)		3.84 (3.46-4.23)		3.66 (3.00-4.00)		
Chronic patient		0.605		0.418		0.590		0.478	
Yes	3.77 (3.40-4.13)		3.83 (3.33-4.16)		3.84 (3.38-4.30)		3.66 (3.00-4.00)		
No	3.77 (3.45-4.13)		3.83 (3.50-4.16)		3.84 (3.46-4.23)		3.66 (3.00-4.00)		
Co-morbidities patient		0.596		0.426		0.578		0.515	
Yes	3.77 (3.40-4.13)		3.83 (3.33-4.16)		3.84 (3.38-4.30)		3.66 (3.00-4.00)		
No	3.77 (3.45-4.13)		3.83 (3.50-4.16)		3.84 (3.46-4.23)		3.66 (3.00-4.00)		
Pharmacy visiting		0.114		0.234		0.117		0.376	
Weekly	3.86 (3.52-4.40)		4.00 (3.41-4.33)		4.00 (3.46-4.61)		3.66 (3.33-4.00)		
Monthly	3.81 (3.40-4.13)		3.83 (3.33-4.16)		3.84 (3.38-4.30)		3.66 (3.00-4.00)		
Occasionally	3.77 (3.45-4.06)		3.83 (3.33-4.16)		3.84 (3.46-4.23)		3.66 (3.00-4.00)		
Go to the pharmacy		0.539		0.613		0.548		0.191	
Near the house	3.77 (3.45-4.13)		3.83 (3.50-4.16)		3.84 (3.46-4.23)		3.66 (3.00-4.00)		
Corporate	3.72 (3.40-4.12)		3.66 (3.33-4.16)		3.84 (3.38-4.23)		3.66 (3.00-4.00)		
In large shopping centres	3.81 (3.61-4.22)		3.83 (3.50-4.08)		3.84 (3.61-4.34)		3.66 (3.33-4.00)		
Purchase of medicines		0.000*		0.009*		0.000*		0.000*	
Paid	3.72 (3.40-4.00)		3.83 (3.33-4.00)		3.76 (3.38-4.07)		3.33 (3.00-4.00)		
Compensated	3.63 (3.27-4.00)		3.50 (3.16-4.00)		3.76 (3.15-4.07)		3.33 (3.00-4.00)		
Both	3.86 (3.50-4.27)		3.83 (3.50-4.16)		3.92 (3.53-4.46)		3.66 (3.33-4.00)		

Mann-Whitney and Kruskal-Wallis tests.

*Significant level for differences at ($p \leq 0.05$).

process (pharmaceutical care, interactions with patients and drugs) (Donabedian, 1988).

The previous literature and the competent institutions in Romania have not yet provided a standardised tool to measure patient satisfaction with the quality of community pharmacy services. In literature there are satisfaction questionnaires specific to pharmaceutical services from different countries, such as the 'Community Pharmacy Patient Questionnaire' (CPPQ). The Pharmacy Center, 2023) in United Kingdom and the 'Quality Index Consumer Questionnaire (CQI) Pharmaceutical Care' (Koster et al., 2016) in Netherlands. But, most of the questionnaires are in English, such as the 'Public Health Care Patient Satisfaction Questionnaire' (PHC-PSQ (Figshare, 2022)), 'Patient Satisfaction Questionnaire Satisfaction with Pharmacist Services Questionnaire' (PSPSQ 2.0) (Shrestha et al., 2020) and 'Pharmacy Encounter Survey' (PES) (Briesacher & Corer, 1997). The lack of questionnaires appropriate to pharmaceutical services in different countries in their own language is a problem for researchers in terms of translation and linguistic and cultural suitability. The Romanian language is spoken by 28 million people in the world, of which 24 million people speak it as their mother tongue (Wikipedia, 2022).

In our study, patients' expectations from pharmaceutical services of the community pharmacy were higher, general satisfaction being moderate and the level of satisfaction was influenced by some socio-demographic characteristics (age, urban/rural area, education level, marital status, occupation and income) and method of medicines acquisition.

Other studies conducted in other countries report varying levels of satisfaction from dissatisfaction to very high satisfaction (Alhomoud et al., 2016; Alomi et al., 2016; Larasanty et al., 2019; Naser & Sbeat, 2022). Naser and Sbeat (2022) explored Jordanian patient satisfaction with community pharmacies and the services provided by pharmacy staff through a questionnaire and found moderate overall satisfaction, which varied by age, marital status, employment status and history of chronic diseases. Larasanty et al. (2019) conducted a survey of satisfaction at primary and secondary health facilities in Indonesia's health system through a questionnaire and found out that patient satisfaction ranged from high to very high with pharmaceutical care services at primary level, while satisfaction with pharmaceutical care services at secondary level ranged from low to very high. Alhomoud et al. (2016) assessed patient satisfaction with essential services provided by community pharmacies in the United Arab Emirates through a questionnaire and showed that satisfaction was good regarding the quality of the service and communication quality. Alomi et al. (2016) examined patient satisfaction with pharmaceutical care in Saudi Arabia and found that satisfaction was very good with drug availability, patient counselling and pharmacist-patient relationships in primary care center pharmacies and also satisfaction

was less good with pharmacy communication and medication reconciliation. Most studies reported positive patient's expectations of community pharmacy services, especially in countries with advanced services (Bishop et al., 2015; Melton & Lai, 2017). Also, the studies have shown that socio-demographic variables, cost and availability of medicines affect patient satisfaction level (Alotaibi et al., 2021; Ismail et al., 2020; Saffaei et al., 2021).

In the present study, patients were not fully satisfied with some administrative aspects of community pharmacies, such as location, opening hours, time and waiting area. These aspects can influence patients' confidence and loyalty towards the visited pharmacy (Dhital et al., 2022). The most satisfied with the administrative aspects of pharmacies were patients in the 31–40 and over 60 age groups, pensioners and unemployed patients, who bought medicine weekly. The other categories of patients were less satisfied with these aspects of community pharmacies. The level of satisfaction was not affected by the gender of the participants, residence in developing regions, self-reported health status, frequency and visited pharmacy.

In Romania, the number of community pharmacies increased from year to year reaching 9885 pharmacies in 2022. Their territorial distribution is uneven, most community pharmacies being found in the urban environment and in the north-eastern region of Romania where the population is larger (The National Institute of Statistics, 2024). In order to satisfy all patients, it would be necessary for the decision-makers to achieve a uniform territorial distribution of community pharmacies and in areas far from urban or communal centres. Also, pharmacy managers should be responsive to patients' wishes regarding opening hours, time and waiting area and improve these aspects.

In our study, patient satisfaction with the services provided by the pharmaceutical staff was moderate, but it is noted that the pharmaceutical staff in community pharmacies had an important role in promoting the health of patients. Thus, patients were satisfied with the advice given and the attitude of the pharmacists, and they trusted the recommendations and information received about the medicines. However, patients had higher expectations regarding counselling about the importance and administration of their medications, adverse effects, and drug-food interactions. The most satisfied with the services provided by the pharmaceutical staff were patients over 50 years old, with a secondary level of education, pensioners and widowed patients, who bought medicines weekly, in contrast to the other categories of less satisfied patients. Gender, urban/rural environment, and region of residence, marital status, self-reported health status, frequency and the visited pharmacy did not affect patient satisfaction.

The results of the studies are controversial. Some results are in agreement with ours, others report a lack of confidence in the qualification and professionalism of pharmacists and in the confidentiality of counselling (Ali et al., 2019; Chen et al., 2018). Multiple time-consuming professional activities of

pharmacists lead to insufficient counselling of patients, and therefore the pharmacy assistant helps the pharmacist in all his activities (Bradley et al., 2016). This is also true in Romania, because in community pharmacies there is a pharmacist on each shift, which is not enough for the counselling part, as a pharmaceutical service.

In Romania, the number of community pharmacists increased, reaching 22,661 pharmacists in 2022. The ratio of pharmacists per population is average compared to European countries, with one pharmacist providing medicines to 840 inhabitants (The National Institute of Statistics, 2023). During the Covid-19 pandemic, there was an overload of community pharmacists, due to the increased requests for medicines from the population. Patient-centred pharmacy practice requires sufficient time for counselling regarding the administration of purchased medications, so pharmacy managers should supplement the number of pharmacists in community pharmacies to increase patient satisfaction. The introduction of advanced services in community pharmacies would improve the public perception of pharmacists, if managers would create the appropriate spaces and separate them from the rest of the pharmacy, facilitate the professional development of pharmacists and regulate the reimbursement of these services.

In our study, patients' accessibility to medicines was moderate, in terms of finding medicines, substituting them with other cheaper products or ordering them from warehouses by pharmacists. The most satisfied patients with the availability of medicines were patients aged between 51 and 60 years, who bought medicines weekly, the other categories of patients being less satisfied. Patient satisfaction was not influenced by gender, residence, level of education and self-reported health status.

Supplying community pharmacies with medicines is done rhythmically and constantly in Romania, if found at the medicines suppliers. Discontinuity in the supply of medicines is not a new phenomenon in our country, but it is a big problem for patients who need health care. It seems that there is a problem with the availability of medicines, as a number of generic medicines have been withdrawn from the Romanian market (The Romanian Ministry of Health, 2017). A more effective collaboration between the Romanian Ministry of Health and the European Medicines Agency would solve this discontinuity in the supply of medicines to the population, which represents a significant risk to public health. Also, there is another problem with the financial accessibility of patients, due to the different indexation of the prices of medicines (Pana, 2022). Although many of the medicines are almost fully covered by the social health insurance system and others only partially, 12% of Romanians were not insured in 2022. Although two-thirds of the adult population declared themselves to be healthy (73.3%) in 2022, far exceeding the European average (68%), the average life expectancy at birth in Romania was 75.3 years, being the third lowest in the European Union. The authority of

the public health system in Romania in collaboration with other competent institutions should solve these undesirable situations.

In our questionnaire, an item was introduced to the general characteristics of patients about the past completion of such a questionnaire sent by community pharmacies, to identify if there is a feed-back between the pharmacists' perceptions of the services provided to the population and the patients' expectations of the services received and we found out that most of the patients in our study did not complete such a questionnaire. Therefore there is no feed-back between pharmacists' perceptions and patients' expectations, which is counterproductive to the improvement of the quality of pharmaceutical services (Mehralian et al., 2014).

Our study has practical applicability in identifying aspects that should be improved in community pharmacies, in accordance with patient expectations. In the future, strategies should be introduced to optimise the roles of pharmacists in community pharmacies through health system reforms, so that the quality of pharmaceutical care meets the increasing health needs of patients.

Our study has several limitations. Our results require cautious interpretations, as they may not be transferable to another study population or pharmaceutical system. Firstly, the recruitment and sampling of participants was conditioned by the context of pandemic population restrictions, which meant that only people with online skills enrolled in this study. The most available participants were women, aged between 21 and 40 years, which represent a limit of the structure of the studied group. Secondly, the questionnaire items reflected the essential services provided by most of our pharmacies, while the other validated questionnaires also included advanced services, but self-reported responses based on participants' past experiences of pharmacy visits may have been overestimated or underestimated, which represents some limitations. Thirdly, we quantified the level of satisfaction of patients according to the median values of the calculated scores, whereas previous studies used quantitative (percentage) or qualitative (arithmetic mean of score) assessments.

Conclusions

The patient satisfaction questionnaire towards pharmaceutical services in community pharmacies in Romania was developed and validated. Overall patient satisfaction with pharmaceutical services in community pharmacies was moderate, as well as satisfaction with pharmacies, pharmaceutical staff and medicines availability. The level of satisfaction was influenced by age groups, urban/rural environment, level of education, marital status, occupation, income and the method of purchasing medicines. Patients were satisfied with the attitude of the pharmaceutical staff. Patients trusted the recommendations they received, but they were less satisfied with the

advice they received regarding the administration and side effects of the purchased medicines.

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Data availability statement

The datasets used and analysed during the current study are available from the corresponding author on reasonable request. The questionnaire may be available after the defence of the doctoral thesis.

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