

## Pharmacy specialists' attitudes toward pharmaceutical service quality at community pharmacies

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**Key words:** pharmaceutical services; service quality; pharmacy specialists' attitudes; community pharmacy.

**Summary.** *Objective.* The main objective of this study was to analyze pharmacy specialists' attitudes toward the quality of pharmaceutical services at Lithuanian community pharmacies.

*Material and methods.* Between April and June 2009, a total of 471 Lithuanian community pharmacy specialists completed a questionnaire designed to evaluate their attitudes toward the quality of pharmaceutical services at community pharmacies. The main dimensions of pharmaceutical service quality were extracted by principal component analysis.

*Results.* Two main dimensions of pharmaceutical service quality were extracted: pharmacotherapeutic aspects (provision of information about drug therapy, possible side effects, health promotion, the amount of time spent with a patient, and the ascertainment that a patient understood the provided information) and socioeconomic aspects (considering patient's needs and financial capabilities, making a patient confident with the services provided). Pharmacy specialists evaluated the quality of both dimensions positively, but the quality of the first dimension was rated significantly worse than that of the second dimension. The attitudes of pharmacy specialists working at independent pharmacies were more positive toward pharmacotherapeutic aspects as compared to the specialists working at chain or state pharmacies. Pharmacotherapeutic aspects were rated better by pharmacy specialists, aged  $\geq 55$  years, than those younger than 45 years. Moreover, the attitudes of 45–54-year-old pharmacy specialists toward the socioeconomic aspects were more positive as compared with those of 35–44-year olds. Pharmacists rated the socioeconomic aspects of pharmaceutical service quality worse as compared with pharmacy technicians. The attitudes of pharmacy specialists working at pharmacies with 6–9 specialists were more negative toward pharmacotherapeutic aspects than those of the pharmacies with 1–2 specialists. Pharmacy specialists working at pharmacies with  $\geq 10$  specialists reported lower scores of socioeconomic aspects as compared to those working at pharmacies with fewer specialists. Men evaluated both pharmacotherapeutic and socioeconomic aspects worse than women. The evaluation of pharmaceutical service quality did not differ by pharmacy location.

*Conclusions.* Two dimensions of pharmaceutical service quality were determined. According to Lithuanian pharmacy specialists, the quality of pharmacotherapeutic aspects at community pharmacies was worse than that of socioeconomic aspects. The evaluation of the quality of pharmaceutical service significantly differed according to the specialists' sex, age, qualification, and type and size of pharmacies.

### Introduction

Today's pharmacies like other health care sectors are in transition from product-oriented to patient-oriented practice, based on shared responsibility between a pharmacist and a patient. In this changing environment, an important role is dedicated to pharmaceutical services, because a pharmacist as a medication expert is considered the most accessible member of patients' health care team in Lithuania

(1). In the National Policy of Lithuania on Pharmaceuticals (2), it is emphasized that to ensure individual and public needs for medications, the state undertakes obligation to ensure the ability to obtain territorially and economically accessible, effective, and safe drugs and to receive pharmaceutical services of appropriate quality. According to the Law of the Republic of Lithuania on Pharmacy (3), pharmaceutical services are defined as pharmacist's prac-

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tice at a pharmacy consisting of prescription evaluation and control, selection of over-the-counter medicines, provision of pharmaceutical information to population, health care professionals, and other pharmacy specialists. The guidelines of good pharmacy practice state that "the mission of pharmacy practice is to provide medications and other health care products and services and to help people and society to make the best use of them" (4, 5). For that reason "practicing pharmacists are obliged to ensure that the service they provide to every patient is of appropriate quality" (4, 5).

At community pharmacies, patients must get all the necessary information about their medication. If pharmaceutical services are of not appropriate quality, patients get improper and unsafe advice and may risk their health. The relevance of the problem was demonstrated by the study in the United Kingdom, where it was determined that a third of pharmacies provided improper and unsafe advice about drug usage (6). For that reason, a pharmacist is obliged to provide fully comprehensive and precise information about drug usage (1, 5). Even if a patient is informed about medication, he/she may not adhere to it. A study by Daukšienė and Radžiūnas showed that more than one-third of Lithuanian patients were nonadherent to their medications (7). Thus, a pharmacist should not only provide a comprehensive advice, but also ascertain that a patient understands it and is willing to follow the instructions. Thus, the quality of pharmaceutical services is closely related with health and safety of an individual as well as society.

Along with increasing consumerism and competition in health care sector, patient satisfaction is regarded to be the main criterion of service quality (8–10). However, not all aspects of pharmaceutical service quality are obvious to a patient, and it might be difficult to perceive the real quality of pharmaceutical services received. Patients usually are competent to evaluate only conspicuous or tangible aspects, while there are various less perceivable aspects that can be evaluated only by persons with proper competence (11, 12). Pharmacy specialists' attitudes might be very helpful to improve the quality of pharmaceutical services and care (13), because they, as providers of pharmaceutical services, know best what "should be" and "what is" provided at the pharmacy. For that reason, the main object of our study was not the receivers (patients), but the providers (pharmacy specialists) of pharmaceutical services. Considering that the demands for the quality of pharmaceutical services will increase in the near future (14, 15), it is important to take into consideration not only the patient satisfaction with perceived pharmaceutical service quality, but also the attitudes of pharmaceutical service providers in

order to find the best solution of increasing challenges in contemporary health care.

The main objective of this study was to analyze the attitudes of Lithuanian pharmacy specialists toward the quality of pharmaceutical services at community pharmacies by identifying the main dimensions of service quality and comparing the quality of these dimensions according to the sociodemographic characteristics of respondents.

### Material and methods

The survey was conducted in Lithuania during the period of April to June 2009. The study population comprised pharmacy specialists working at Lithuanian community pharmacies. A total of 520 questionnaires were given to the respondents who arrived at scientific-practical conferences organized by the Lithuanian University of Health Sciences (former Kaunas University of Medicine) in 5 largest Lithuanian cities; 471 questionnaires were completed correctly (response rate, 90.58%).

By analyzing the literature concerning patient satisfaction with the quality of pharmaceutical services (8–10), a questionnaire of 10 statements was developed and adapted to evaluate pharmacy specialists' attitudes toward pharmaceutical service quality. During the survey respondents were asked to evaluate the quality of pharmaceutical services at their pharmacy. To reduce subjectivity, the respondents were asked to evaluate the overall service quality at their pharmacy, not the quality of services they provided themselves. The respondents were asked to rate the statements on a 5-point Likert scale ranging from "strongly disagree" to "strongly agree."

The internal consistency of the scale was assessed by Cronbach  $\alpha$  coefficient. The Cronbach  $\alpha$  coefficient of the scale was 0.81. The reproducibility of the questionnaire was evaluated in the group of 12 pharmacy specialists who completed the questionnaire repeatedly after a mean of seven days. The reproducibility of the scale was assessed by the Spearman-Brown test-retest reliability test (Spearman-Brown coefficient, 0.96).

The received data were coded and analyzed by statistical program SPSS for Windows 15.0. To determine the structure of the attitudes toward the quality of pharmaceutical services, the principal component analysis with the Varimax rotation method was applied. The Mann-Whitney  $U$  test was used to examine the differences between two independent groups. To examine the differences among more than two independent groups, the Kruskal-Wallis test and Bonferroni-Dunn nonparametric post hoc test were used. Two related samples were compared by the Wilcoxon signed rank test. The level of significance was established at  $P < 0.05$ .

## Results

There were 96.6% of women and 3.4% of men participating in the study. The respondents were classified into four age groups: respondents younger than 35 years (12.1%), 35 to 44 years (22.7%), 45 to 54 years (41.2%), and older than 54 years (24%). More than half (55%) of the respondents were pharmacists and 45% of them were pharmacy technicians. Women accounted for 53.4% of the pharmacists and 100% of the pharmacy technicians. Most of the respondents (70.9%) worked at chain pharmacies, 21.7% at independent pharmacies, and 7.4% at state pharmacies. Most of the respondents (52.4%) worked at city, 29.5% at district center, 16.6% at town, and 1.5% at village pharmacies.

Pharmacy specialists' attitudes were analyzed by the principal component analysis. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (KMO=0.84) and the Bartlett's test of sphericity ( $\chi^2=1220.65$ ,  $df=276$ ,  $P<0.001$ ) indicated the appropriateness to proceed with the analysis. The Kaiser rule (eigenvalue greater than one) was used to determine the number of factors. The Varimax rotation method was used to obtain orthogonal factors. Using this method, a two-factor structure was obtained explaining 50.94% of the total variance. Table 1 shows the matrix of correlation coefficients between the obtained factors and the indicators of pharmaceutical service quality.

The first factor was named as "pharmacotherapeutic aspects," as it was related to the provision of information about drug therapy, possible side effects, health promotion, the amount of time spent

with a patient, and the ascertainment that a patient understood the provided information. The second factor was named as "socioeconomic aspects," because it included such aspects as considering patient's needs and financial capabilities, striving that a patient would be satisfied with the services provided. There was a moderate correlation between the factors (Spearman  $r=0.45$ ;  $P<0.01$ ).

The mean factor scores were computed and compared with each other by the Wilcoxon signed rank test. Results showed that the factor scores significantly differed ( $z=17.64$ ;  $P<0.001$ ): the scores of pharmacotherapeutic aspects of pharmaceutical service quality were significantly lower than those of socioeconomic aspects (Table 2).

The obtained factor scores were analyzed using the Mann-Whitney and Kruskal-Wallis tests for the differences among the groups (Table 3). Men rated both pharmacotherapeutic ( $z=3.146$ ;  $P=0.002$ ) and socioeconomic aspects ( $z=3.129$ ;  $P=0.002$ ) of service quality worse than women. In addition, there were statistically significant differences in the scores of both pharmacotherapeutic ( $\chi^2=20.96$ ,  $df=3$ ,  $P<0.001$ ) and socioeconomic aspects ( $\chi^2=10.57$ ,  $df=3$ ,  $P=0.014$ ) among different age groups. Multiple comparisons with the Bonferroni-Dunn test showed that the attitudes of pharmacy specialists, aged  $\geq 55$  years, toward pharmacotherapeutic aspects were more positive than those of the specialists younger than 45 years ( $P<0.001$ ). Moreover, the attitudes of 45–54-year-old pharmacy specialists toward the socioeconomic aspects were more positive as compared with those of 35–44-year olds ( $P<0.001$ ).

Table 1. Rotated component matrix

Indicator	Factor (dimension)	
	1	2
Each patient is always informed about possible side effects of a drug or its interaction with other drugs, food	<b>0.74</b>	0.18
Each patient is fully informed about drug therapy at a pharmacy	<b>0.71</b>	0.11
Enough time is spent for each patient's high-quality services at a pharmacy	<b>0.71</b>	0.12
While informing about drug therapy, it is always ascertained that a patient understands the information	<b>0.69</b>	0.24
Each patient at a pharmacy is informed about his/her healthy lifestyle	<b>0.63</b>	0.15
Patient's financial capabilities are always taken into consideration while selecting a drug/product	0.09	<b>0.74</b>
Pharmacy staff strives to get a patient to come back to a pharmacy	0.08	<b>0.71</b>
Patient's needs are always taken into consideration while selecting a drug/product	0.11	<b>0.67</b>
Endeavor is made to make a patient confident with the quality of pharmaceutical services at a pharmacy	0.29	<b>0.65</b>
Pharmacy staff is always helpful to each patient	0.36	<b>0.62</b>
	Cronbach $\alpha$	0.76

Factor (dimension) 1, pharmacotherapeutic aspects; factor (dimension) 2, socioeconomic aspects.

Table 2. Comparison of dimensions of pharmaceutical service quality

Aspects	n	Mean	SD	Min	Max	P
Pharmacotherapeutic	471	3.58	0.78	1.00	5.00	<0.001
Socioeconomic	471	4.52	0.55	1.00	5.00	

Table 3. Comparison of dimensions of pharmaceutical service quality according to sociodemographic and pharmacy characteristics

Characteristic	n	Pharmacotherapeutic aspects		Socioeconomic aspects	
		Mean rank	<i>P</i>	Mean rank	<i>P</i>
Gender					
Male	455	239.69	0.002	239.61	0.002
Female	16	131.16		133.31	
Age					
≤34	57	192.18	<0.001	207.15	0.014
35–44	107	211.81		209.80	
45–54	194	236.90		252.99	
≥55	113	279.46		246.20	
Qualification					
Pharmacy technician	212	242.18	>0.05	258.15	0.001
Pharmacist	259	230.94		217.87	
Pharmacy type					
Independent	102	275.87	0.001	252.91	>0.05
State	35	194.94		214.37	
Chain	334	228.13		233.10	
Number of specialists at a pharmacy					
1–2	127	257.13	0.011	257.12	0.002
3–5	245	240.37		235.02	
6–9	72	197.75		234.49	
≥10	27	199.00		149.57	
Pharmacy location					
City	247	226.05	>0.05	227.47	>0.05
District center	139	241.82		247.70	
Town	78	248.24		232.42	
Village	7	335.07		344.57	

There were no statistically significant differences in the scores of pharmacotherapeutic aspects between pharmacy technicians and pharmacists ( $P>0.05$ ), but the attitudes of pharmacists were significantly more negative toward the socioeconomic aspects of pharmaceutical service quality ( $z=3.26$ ;  $P=0.001$ ) as compared to attitudes of pharmacy technicians.

The scores of the dimensions of pharmaceutical service quality statistically significantly differed according to different types of pharmacies ( $\chi^2=13.14$ ,  $df=2$ ,  $P=0.001$ ). The attitudes of pharmacy specialists working at independent pharmacies were more positive toward pharmacotherapeutic aspects as compared to the specialists working at chain or state pharmacies ( $P=0.002$ ). Different attitudes were determined among the pharmacies of different size toward both pharmacotherapeutic ( $\chi^2=11.70$ ,  $df=3$ ,  $P=0.011$ ) and socioeconomic ( $\chi^2=14.50$ ,  $df=3$ ,  $P=0.002$ ) aspects. Pharmacy specialists working at pharmacies with 6–9 specialists evaluated pharmacotherapeutic aspects worse than those working at pharmacies with 1–2 specialists ( $P=0.003$ ). Pharmacy specialists working at pharmacies with  $\geq 10$  specialists reported lower scores of socioeconomic aspects as compared to those working at the pharmacies with fewer specialists ( $P<0.01$ ). There were no statistically significant differences in the attitudes of pharmacy specialists by to pharmacy location: respondents working at city,

district center, town, or village pharmacies evaluated both dimensions of pharmaceutical service quality similarly ( $P>0.05$ ).

### Discussion

The principal component analysis showed that our questionnaire allowed extracting and evaluating two main dimensions: pharmacotherapeutic and socioeconomic aspects of pharmaceutical service quality. The dimension of pharmacotherapeutic aspects included variables such as patient consultation, explanation about drug usage and side effects, promotion of good health, time spent with a pharmacist, ascertaining that a patient understood the information. This dimension allowed evaluating the content of pharmaceutical service quality – what was provided to a patient. The dimension of socioeconomic aspects included variables such as friendly and prompt service, treatment with respect and courtesy, attention to patient's needs and financial capabilities. This dimension allowed evaluating the formal aspects of pharmaceutical service quality, i.e., how pharmaceutical services were provided to a patient. A similar structure was found by the researchers analyzing patient satisfaction with pharmaceutical services. Holford and Schulz extracted “technical” and “functional” factors of pharmaceutical service quality (11). Larson et al. also extracted two semantically similar dimensions: “managing

therapy” and “friendly explanation” (8). Similar results were obtained in Spanish-speaking countries, where three factors of pharmaceutical service quality were identified: “managing therapy,” “interpersonal relationship,” and “general satisfaction.” The first two dimensions were emphasized as the essential components of pharmaceutical care that have a strong impact on patient’s health and quality of life (16). It is worth to mention that independently of who evaluates the quality of pharmaceutical services (pharmacy specialists or patients), two main aspects – content (what is provided to a patient) and form (how it is provided to a patient) – are predominant. Thus, according to the results of our study, it is recommended to consider a two-dimensional model of pharmaceutical service quality by distinguishing pharmacotherapeutic (content) and socioeconomic (formal) aspects of pharmaceutical services.

Holford and Shulz determined that the “functional quality” of pharmaceutical services had a greater impact on patient satisfaction than the “technical quality” (11). Our results show that in pharmacy specialists’ opinion, the socioeconomic aspects were of better quality as compared with the pharmacotherapeutic aspects. This means that more attention was paid to the more evident aspects of pharmaceutical services, while less noticeable aspects were paid less attention.

Some statistically significant differences were found according to respondents’ sociodemographic characteristics. Men evaluated both dimensions of pharmaceutical service quality worse than women. Pharmacy specialists younger than 45 years were more critical toward pharmacotherapeutic aspects of pharmaceutical service quality as compared with the oldest ones (55 years and older). Specialists aged 45–54 years had more positive attitudes toward the socioeconomic aspects as compared with 35–44-year-old respondents. According to the professional qualification, pharmacists rated the socioeconomic aspects of pharmaceutical service quality worse as compared with pharmacy technicians.

Statistically significant differences were determined comparing the evaluation of service quality by the characteristics of the pharmacies they were working at. Pharmacy type had a significant impact on the evaluation of the dimension of pharmacotherapeutic aspects: specialists working at independent pharmacies evaluated the quality by higher scores as compared with those working at chain or state pharmacies. Contradictory results were found by other researchers. For example, Raisch (17) found that pharmacists working at chain pharmacies provided consultations

more frequently as compared with those working at independent pharmacies. In the United Kingdom, it has been determined that the situation at independent pharmacies is particularly bad: half of the consultations provided at these pharmacies were improper and potentially dangerous to health (6). Different results were obtained by Paluck et al. (18), who determined that pharmacists more actively participated in health promotion programs at independent pharmacies than chain pharmacies. Briesacher and Corey (19) found that pharmaceutical service quality at independent pharmacies was better, compared to chain pharmacies. Our results show that the dimension of pharmacotherapeutic aspects, covering patient consultation, health promotion, and time spent with a patient, was evaluated significantly better by the pharmacists at independent pharmacies as compared with those working at chain or state pharmacies.

The hypothesis that pharmacists at city pharmacies should provide better-quality consultation as compared with country pharmacies because of higher educational qualification was denied in New Zealand (20). It proved that patients were consulted similarly at both city and country pharmacies. Our research also denied the mentioned hypothesis – no significant differences in the evaluation of pharmaceutical service quality were found according to pharmacy location. In Lithuania, qualification improvement is mandatory to each pharmacy specialist (21), so it can be said that pharmacy specialists’ professional competence to evaluate the quality of pharmaceutical services was similar independently of pharmacy location.

Pharmacy size also had a significant impact on pharmacists’ attitudes toward pharmaceutical service quality. At pharmacies with 10 or more pharmacy specialists, socioeconomic aspects of pharmaceutical service quality were evaluated worse compared to pharmacies with fewer specialists. That means that larger pharmacies consider patients’ needs less than the smaller ones.

## Conclusions

Two dimensions of pharmaceutical service quality were determined during the investigation. In pharmacy specialists’ opinion, less attention was paid to the quality of pharmacotherapeutic aspects as compared to the quality of the socioeconomic aspects of pharmaceutical services.

The evaluation of pharmaceutical service quality differed according to pharmacists’ gender, age, qualification, and type and size of pharmacies. Pharmacy location had no significant impact on the evaluation of pharmaceutical service quality.

## Farmacijos specialistų požiūris į farmacinės paslaugos kokybę visuomenės vaistinėse

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**Raktažodžiai:** farmacinė paslauga, paslaugos kokybė, farmacijos specialistų požiūris, visuomenės vaistinė.

**Santrauka.** *Tyrimo tikslas.* Išanalizuoti Lietuvos farmacijos specialistų požiūrį į visuomenės vaistinėje teikiamos farmacinės paslaugos kokybę pagal respondentų socialines ir demografines bei darbo vietos charakteristikas.

*Tyrimo medžiaga ir metodai.* 2009 m. balandžio–birželio mėn. apklaustas 471 farmacijos specialistas. Respondentų apklausai taikyta uždarojo tipo anoniminė anketa-klausimynas. Faktorinės analizės metodu išskirtos pagrindinės farmacinės paslaugos kokybės dimensijos.

*Rezultatai.* Pagrindinių komponentų analizės būdu išskirtos ir įvardytos dvi farmacinės paslaugos kokybės dimensijos: farmakoterapiniai aspektai (paciento konsultavimas, informavimas apie sveiką gyvenseną, vaistų šalutinį poveikį, sąveiką su kitais vaistais arba maistu, įsitikinimas, ar pacientas suprato pateiktą informaciją) ir socioekonominiai aspektai (atsižvelgimas į paciento finansines galimybes ir norus, paslaugumas bei pasitikėjimo įgijimas). Nustatyta, kad abiejų farmacinės paslaugos kokybės dimensijų teikimas vaistinėje buvo vertinamas teigiamai, tačiau nevienodai – farmakoterapiniams farmacinės paslaugos kokybės aspektams, farmacijos specialistų nuomone, buvo skiriamas mažesnis dėmesys nei socialiniams ir ekonominiams aspektams. Taip pat nustatyta, kad privačioje (vaistinių tinklui nepriklausančioje) vaistinėje dirbantys specialistai farmakoterapinių aspektų dimensiją vertino palankiau nei dirbantieji valstybinėje arba tinklo vaistinėje. 55 metų ir vyresni specialistai farmakoterapinius aspektus vertino palankiau palyginus su jaunesniais nei 45 metų. Socialinius ir ekonominius aspektus 45–54 metų farmacijos specialistai vertino palankiau nei 35–44 metų. Vaistininko išsilavinimą turintys respondentai socialinius ir ekonominius aspektus vertino prasčiau už farmakotechnikus. Dirbantieji 6–9 darbuotojų kolektyve farmakoterapinius aspektus vertino prasčiau už 1–2 darbuotojų kolektyve dirbančius specialistus. Socialinius ir ekonominius aspektus dirbantieji 10 ir daugiau darbuotojų kolektyve vertino prasčiau nei dirbantieji mažesniame kolektyve. Moterys abi farmacinės paslaugos kokybės dimensijas vertino palankiau nei vyrai. Vaistinės vieta farmacijos specialistų vertinimui reikšmingos įtakos neturėjo.

*Išvados.* Identifikuoti farmakoterapiniai, socialiniai ir ekonominiai farmacinės paslaugos kokybės aspektai. Nors šie aspektai buvo vertinami teigiamai, pastarajam, farmacijos specialistų nuomone, vaistinėse teikiamas didesnis prioritetas. Farmacijos specialistų požiūris į farmacinės paslaugos kokybę vaistinėje išsiskyrė priklausomai nuo lyties, amžiaus, specialybės, vaistinės tipo ir dydžio, tačiau nepriklausė nuo vaistinės vietos.

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