

VILNIUS UNIVERSITY

Rima
KAVALNIENĖ

Evaluation of the Factors that Affect Patients' Satisfaction with Primary Health Care Services

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Biomedical Sciences
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LIST OF ABBREVIATIONS

PHC	Primary Healthcare
HC	Healthcare
PSQ-18	Patients Satisfaction Questionnaire, Short Form
HADS	Hospital Anxiety and Depression Scale
HADS-A	Anxiety Subscale of Hospital Anxiety and Depression Scale
HADS-D	Depression Subscale of Hospital Anxiety and Depression Scale
VAS	Visual Analog Scale
WHO	World Health Organization
GP	General Practitioner
r	Correlation Coefficient
vs.	Versus
CI	Confidence Interval

1. INTRODUCTION

1.1. Researched problem and its relevance

The satisfaction of a patient is the cognitive assessment and emotional reaction to their experience of health care services¹. Their outlook is influenced by various social, demographic factors, illnesses and their own expectations. The Lithuanian health program for 2014 – 2025, which was prepared in accordance with the health policy document of the World Health Organization in the European region “Health 2020: a European policy framework supporting action across government and society for Health and well-being”, emphasizes four goals. One of the goals is to ensure effective and quality health care services oriented to the needs of the residents². In order to achieve a patient-oriented healthcare system, the health infrastructure will be developed, and their quality, security and availability will be improved. A general strategic goal is to have healthier residents, to prolong their life expectancy, to improve their health, and to reduce health inequalities by 2025. Therefore, the improvement of residents’ health depends on the development of the healthcare and the quality of PHC services. The increased satisfaction with the received services is important as the patients who are satisfied with the consultations are more likely to follow the treatment plan, take a better care of their health, and follow a healthy lifestyle. That conditions better results of the treatment³.

1.2. Research goal

To identify the factors determining patients satisfaction with primary healthcare services.

1.3. Research objectives

1. To study the relationship between the patients’ sociodemographic factors and the satisfaction with PHC services.

2. To determine the link between patients' satisfaction and the features of chronic diseases, depression and anxiety.
3. To assess the importance of doctor and healthcare institution to patients' satisfaction with the services.

1.4. Thesis statements

1. Patients' satisfaction with the PHC services is influenced by the sociodemographic factors.
2. The symptoms of depression and anxiety, and the features of chronic diseases affect the patients' satisfaction with the services.
3. The level of patients' satisfaction is modified by age and gender of family doctor, and the type of PHC institution.

1.5. The novelty of the study and its significance

This research is directly related to earlier studies in Lithuania by other scientists. In 2002, E. Žiebiienė et al. researched the connection between the patients' expectations of the medical consultation, and social and demographic characteristics of patients' in primary health institutions in Lithuania⁴. Later, R. Aranauskas defended master thesis in M. Romeris University; he investigated the correspondence between the effectiveness of Vilnius University Santaros Clinics family medicine center and patients' expectations. In our study, both the satisfaction (PSQ-18), and the depression and anxiety (HADS) scales were used to research the primary link of health. Moreover, the multivariate analysis of satisfaction with the PHC services for the first time evaluates the factors of three important groups: patient (social and demographic characteristics, emotional and physical condition), doctor (certain demographic characteristics), and institution (through the evaluation of its type).

With the aid of this research, the correspondence between the expectations of the depressed, anxious, ill and other investigated patients' is evaluated, i.e. the satisfaction with the services received.

Following the evaluation and the analysis of the results, the major flaws of the provided services are expected to be revealed of the provided services are expected to be relieved; their correction would allow to improve the quality of the services.

2. DATA & METHODS

The research was approved by “Vilnius Regional Biomedical Research Ethics Committee” in Lithuania (no. 15800-15-795-313).

2.1. Subjects

The patient survey was carried out in PHC institutions from September 2015 to August 2017. The survey took place in 24 PHC institutions in Vilnius, Lithuania. Patients, who visited PHC centers for various reasons and agreed to participate in the study, were asked to fill out an anonymous questionnaire. The main criteria for the participation were age (subjects must be over 18 years old) and the ability to adequately understand and fill out the questionnaire.

2.2. Methods

The patients' satisfaction with the PHC services was evaluated according to the short version of the patients' satisfaction survey with the PHC services (Patient Satisfaction Questionnaire, PSQ-18, Marshall & Hays). The eighteen-statement survey evaluates the medical services according to seven main factors: General Satisfaction, Technical Quality, Interpersonal Manner, Communication, Financial Aspects, Time Spent with Doctor, Accessibility and Convenience. The translation of the PSQ-18 questionnaire from English to Lithuanian was done according to the official recommendations.

The Hospital Anxiety and Depression scale (HADS, Zigmont and Snaith) was used to select the symptoms of anxiety and depression, and to determine the level of their severity.

The respondents were also asked to indicate their gender, age, place of residence (City, District Center, Village), education (Primary, Basic, Secondary, Secondary Special, Higher or Other education), nationality (Lithuanian, Russian, Polish, other), the name of the institution they visit, the gender of their doctor, the approximate age of their doctor (25-35, 36-50, more than 50), their expectations towards the gender and the age of a doctor, to describe their illnesses, to mark their pain level in the visual analog scale (VAS).

The stages of research and the number of subjects are described in Table No. 1. The questionnaire was provided in Lithuanian.

2.3. Statistical Analysis

The descriptive statistics, Chi quadrant (χ^2) method and contingency tables were used in the analysis of the results; the correlations were calculated, the T-test with two independent samples and single-factor dispersion analysis “One Way ANOVA” test, post hoc multiple comparison procedure were applied.

Table 1. The stages of research and the number of subjects

First stage (pilot study): n=598	Second stage: n=887
Questionnaire: <ul style="list-style-type: none"> • The short version of the patient satisfaction questionnaire (PSQ-18); • The sociodemographic characteristics of patients. 	Questionnaire: <ul style="list-style-type: none"> • The short version of the patient satisfaction questionnaire (PSQ-18); • The sociodemographic characteristics of patients; + The Hospital Anxiety and Depression scale (<i>HADS</i>); + The list of chronic illnesses according to the Charlson Comorbidity Index’s list of chronic diseases; + Pain Assessment Scale (VAS); + Doctors’ age and gender (indicated by 581 patients); + A type of PHC institution.

The polynomial logistic regression was used in order to analyze in what way patients' satisfaction is influenced by different researched factors and how they are distributed among each other, i.e. how they influence each other. The significance level in all cases was 0.05.

The reliability of internal compatibility of each PSQ-18 and HADS subscale was calculated with Cronbach's alpha coefficient. During the second stage, the general PSQ-18 score Cronbach's alpha coefficient was **0.96**; the internal Cronbach's alpha coefficient of separate seven subscales varied **from 0.69 to 0.87**. These ratios were assessed as good.

3. RESULTS

3.1. First stage

3.1.1. General evaluation of the provided services

The majority of the patients (55.5 %) evaluated the services as mediocre; 34 % of the patients evaluated the services as good; the minority (i.e. 10.5 %) evaluated the PHC services as poor. The respondents evaluated the Accessibility and Convenience, and Time Spent with Doctor the poorest; the Interpersonal Manner, and Communication were evaluated the best (Table 2).

Table 2. The estimates of PSQ-18 subscales and their arrangement (rating) (n=598)

PSQ categories	Mean estimates and their statutory deviation	Ascending order of estimates
Time Spent with Doctor	2,83 (0,89)	1
Accessibility and Convenience	3,05 (0,89)	2
Financial Aspects	3,17 (1,00)	3
General Satisfaction	3,31 (0,96)	4
Technical Quality	3,37 (0,78)	5
Communication	3,54 (0,89)	6
Interpersonal Manner	3,57 (0,90)	7

3.1.2. *The link between the sociodemographic factors and patients' satisfaction*

Gender of the patient. The mean of the general PSQ-18 scores between different genders of the respondents did not differ ($p=0.105$). Meanwhile, the gender of the patient influences the evaluation of the Interpersonal Manner, the Communication; women evaluated these factors better than men (Table 3).

Table 3. PSQ-18 estimates according to gender (n=598)

Scale	Gender of patients	Mean	Statutory deviation	95% mean CI		p
				Upper limit	Lower limit	
Interpersonal Manner	Male	3,47	0,92	3,35	3,60	0,035
	Female	3,63	0,89	3,55	3,72	
Communication	Male	3,42	0,92	3,30	3,55	0,023
	Female	3,60	0,87	3,51	3,69	

Age of the patient. The connection between the age of the patient and the satisfaction with the PHC services has not been found; statistically significant correlations have not been established neither with the PSQ-18 scale ($p=0.769$), neither with the subscales of the questionnaire (the credibility mark is in the diapason from $p = 0.183$ to $p=0.96$).

Place of residence. The residents of the district center were the least satisfied with the provided services (the general PSQ-18 score average was 59,99(12,81) in the city, 50,81(13,05) in the district center, and 52,57(11,78) in the village; $p<0.001$). Inhabitants of different places evaluate the services differently in almost every subscale, except for the Financial Aspects subscale (Table 4).

In nearly every case, the differences were noticed between the estimates of the residents of the city and the residents of the village, and the residents of the city and the residents of the district center. The inhabitants of the city have the greatest estimates, whereas the inhabitants of the city and the district center have the poorest.

Statistically significant differences have not been noticed between the residents of the district center and the residents of the village (Table 5).

Table 4. PSQ-18 estimates according to the place of residence (n=598)

Scale	Place of residence	Mean	Statutory deviation	95% mean CI		p
				Upper limit	Lower limit	
General Satisfaction	City	3,41	0,95	3,32	3,49	0,000
	District center	2,89	0,80	2,57	3,21	
	Village	2,90	0,91	2,70	3,10	
Technical Quality	City	3,46	0,75	3,39	3,52	0,000
	District center	2,86	0,84	2,53	3,20	
	Village	3,06	0,79	2,88	3,23	
Interpersonal Manner	City	3,66	0,89	3,58	3,74	0,000
	District center	3,15	0,89	2,80	3,50	
	Village	3,21	0,86	3,02	3,40	
Communication	City	3,65	0,86	3,57	3,72	0,000
	District center	2,85	0,85	2,51	3,19	
	Village	3,10	0,87	2,91	3,29	
Time Spent with Doctor	City	2,89	0,88	2,81	2,97	0,000
	District center	2,91	0,84	2,57	3,24	
	Village	2,46	0,83	2,28	2,64	
Accessibility and Convenience	City	3,13	0,89	3,05	3,21	0,000
	District center	2,46	0,98	2,07	2,85	
	Village	2,77	0,70	2,62	2,93	

Table 5. Pairwise comparison of PSQ-18 means according to place of residence (n=598)

Scale	p value		
		Village	District center
General PSQ-18 score	City	0,000	0,004
	District center	0,809	
General Satisfaction	City	0,000	0,008
	District center	0,999	
Technical Quality	City	0,000	0,004
	District center	0,540	
Interpersonal Manner	City	0,000	0,017
	District center	0,951	
Communication	City	0,000	0,000
	District center	0,408	
Time Spent with Doctor	City	0,000	0,993
	District center	0,051	
Accessibility and Convenience	City	0,000	0,005
	District center	0,292	

Education. The mean of the PSQ scale is the highest among the persons with the higher education (Secondary education or 57,06(13,352), Secondary special 55,66(13,417), Higher education 61,60(11,908); $p < 0.001$). The differences depending on the education were identified in six out of seven subscales (Table 6). In all cases, patients with higher education evaluated the statements the best, whereas those with special secondary education evaluated them the poorest. The difference between patients with special secondary education and those with secondary education has not been identified (Table 7).

Nationality. The connection between the nationality and the general PSQ-18 score estimates has not been established ($p = 0.345$). The influence of the nationality on the separate subscales has not been confirmed as well (the credibility mark is in the diapason from $p = 0.108$ to $p = 0.721$).

Table 6. PSQ-18 estimates according to education (n=598)

Scale	Education	Mean	Statutory deviation	95% mean CI		p
				Upper limit	Lower limit	
General Satisfaction	Secondary and lower	3,25	0,95	3,12	3,39	0,001
	Secondary special	3,13	0,98	2,98	3,29	
	Higher	3,48	0,93	3,36	3,60	
Technical Quality	Secondary and lower	3,26	0,82	3,15	3,38	0,000
	Secondary special	3,20	0,79	3,08	3,32	
	Higher	3,57	0,69	3,48	3,66	
Interpersonal Manner	Secondary and lower	3,49	0,91	3,36	3,62	0,000
	Secondary special	3,36	0,93	3,21	3,50	
	Higher	3,79	0,83	3,68	3,90	
Communication	Secondary and lower	3,40	0,97	3,26	3,54	0,000
	Secondary special	3,38	0,91	3,24	3,52	
	Higher	3,76	0,78	3,66	3,86	
Financial Aspects	Secondary and lower	3,10	1,03	2,96	3,25	0,001
	Secondary special	2,99	1,01	2,83	3,15	
	Higher	3,36	0,93	3,24	3,47	
Accessibility and Convenience	Secondary and lower	2,96	0,91	2,83	3,09	0,001
	Secondary special	2,89	0,91	2,75	3,04	
	Higher	3,21	0,84	3,10	3,32	

Table 7. Pairwise comparison of PSQ-18 means according to education (n=598)

Scale		p value	
		Secondary and lower	Higher
General PSQ-18 score	Secondary special	0,591	0,000
	Higher	0,001	
General Satisfaction	Secondary special	0,486	0,001
	Higher	0,032	
Technical Quality	Secondary special	0,742	0,000
	Higher	0,000	
Interpersonal Manner	Secondary special	0,387	0,000
	Higher	0,001	
Communication	Secondary special	0,978	0,000
	Higher	0,000	
Financial Aspects	Secondary special	0,551	0,001
	Higher	0,025	
Accessibility and Convenience	Secondary special	0,768	0,001
	Higher	0,010	

3.2. Second stage

3.2.1. General evaluation of the provided services

The majority (44%) evaluated the services as good, whilst 38% evaluated them as mediocre, and 18% evaluated the PHC services as poor. Thus, the satisfaction with the researched family medical centers in Vilnius is fair. Similarly to the pilot study, the respondents evaluated the Accessibility and Convenience, as well as Time Spent with Doctor the poorest. The Interpersonal Manner, and Communication were evaluated the best (Table 8).

Table 8. PSQ-18 subscale estimates and their arrangement (rating) (n=887)

PSQ-18 categories	Mean estimate and st. deviation	Ascending order of estimates
Accessibility and Convenience	2,97 (0,98)	1
Time Spent with Doctor	3,20 (1,01)	2
General Satisfaction	3,37 (0,98)	3
Financial Aspects	3,40 (0,91)	4
Technical Quality	3,45 (0,84)	5
Communication	3,55 (0,97)	6
Interpersonal Manner	3,59 (0,98)	7

3.2.2. *The links between separate factors and the satisfaction with PHC services*

Gender of the patient. Women evaluate the PHC services better than men; the mean of the general score was 58,60(15,39) among men, and 60,74(14,07) among women ($p=0,033$). The differences were noticed in the evaluation of Interpersonal Manner, and Communication. Female patients had a higher average of evaluation in these subscales than men (Table 9).

Table 9. PSQ-18 estimates according to gender of a patient (n=887)

Scale	Gender	Mean	Statutory deviation	95% mean CI		p
				Upper limit	Lower limit	
Interpersonal Manner	Male	3,47	1,01	3,36	3,57	0,003
	Female	3,67	0,96	3,59	3,75	
Communication	Male	3,46	1,01	3,35	3,56	0,025
	Female	3,61	0,93	3,53	3,69	
Time Spent with Doctor	Male	3,10	1,03	2,99	3,21	0,017
	Female	3,27	0,99	3,18	3,35	

Age of the patient. Younger patients were more satisfied with the health care (Spearman's $r=-0,161$; $p<0,001$). Their satisfaction was evident in all seven subscales (the diapason of Spearman's correlation coefficient was from $-0,074$ to $-0,223$; $p<0,001$) (Table 10).

Table 10. Spearman correlation coefficient between age of patients and PSQ-18 estimates (n=887)

PSQ-18 categories	Spearman correlation coefficient
General Satisfaction	-0.155**
Technical Quality	-0.074**
Interpersonal Manner	-0.170**
Communication	-0.153**
Financial Aspects	-0.175**
Time Spent with Doctor	-0.223**
Accessibility and Convenience	-0.171**

**- $p<0,001$

The place of residence. The residents of the city were more satisfied with the services, whilst the residents of the district center were the least satisfied (the average of the general score in the city was 61,42(14,26), 52,60(13,11) in the district center, and 54,23(15,65) in the village; $p < 0.001$). The residents of the city evaluated the separate subscales describing different quality aspects better than the residents of the district center or the residents of the village (Table 11). The statistical difference between the residents of the city and the residents of the village was found in the pairwise comparisons of almost every subscale. The evaluation between the residents of the district center and the residents of the village differed only in two domains: Financial Aspects and Time Spent with Doctor; they were evaluated better by the residents of the city (Table 12).

Table 11. PSQ-18 subscale estimates according to the place of residence (n=887)

Scale	Residence	Mean	St. deviation	95% mean CI		p
				Up. limit	Lower limit	
General Satisfaction	City	3,50	0,94	3,43	3,57	0,000
	District center	2,76	0,88	2,56	2,95	
	Village	2,94	1,01	2,73	3,14	
Technical Quality	City	3,50	0,83	3,44	3,56	0,000
	District center	3,37	0,67	3,22	3,52	
	Village	3,09	0,93	2,90	3,28	
Interpersonal Manner	City	3,67	0,94	3,60	3,74	0,000
	District center	3,24	1,08	2,99	3,48	
	Village	3,24	1,09	3,02	3,47	
Communication	City	3,64	0,94	3,57	3,71	0,000
	District center	3,20	0,93	2,99	3,41	
	Village	3,11	1,01	2,91	3,32	
Financial Aspects	City	3,47	0,89	3,40	3,53	0,000
	District center	2,88	0,87	2,69	3,08	
	Village	3,29	1,01	3,08	3,50	
Time Spent with Doctor	City	3,33	0,98	3,26	3,41	0,000
	District center	2,44	0,81	2,25	2,62	
	Village	2,82	1,00	2,61	3,03	
Accessibility and Convenience	City	3,05	0,98	2,97	3,12	0,000
	District center	2,52	0,82	2,34	2,71	
	Village	2,76	0,90	2,58	2,95	

Table 12. Pairwise comparison of PSQ-18 means according to the place of residence (n=887)

Scale	p value		
		City	Village
General PSQ-18 score	District center	0,000	0,738
	Village	0,000	
General Satisfaction	District center	0,000	0,426
	Village	0,000	
Technical Quality	District center	0,260	0,063
	Village	0,000	
Interpersonal Manner	District center	0,003	0,999
	Village	0,001	
Communication	District center	0,000	0,826
	Village	0,000	
Financial Aspects	District center	0,000	0,014
	Village	0,259	
Time Spent with Doctor	District center	0,000	0,017
	Village	0,000	
Accessibility and Convenience	District center	0,000	0,162
	Village	0,015	

Education. The satisfaction with the PHC services was the poorest among those who have Secondary or lower education (Secondary or lower education 57,84(15,47), Secondary special 61,11(13,36), Higher education 60,55(14,40); $p=0,025$). Patients with Secondary or lower education evaluated the statements the poorest, however, the statistically significant results were acquired in four subscales (Table 13). Some of the subscales were evaluated the best by patients with Secondary special education; some were evaluated the best by those with Higher education. “General Satisfaction”, “Interpersonal Manner” and “Communication” subscales were evaluated poorer by patients with Secondary or lower education than by patients with Higher or Secondary special education. The difference in the “Time Spent with Doctor” subscale was found only between patients with Secondary or lower education and patients with Higher education (Table 14).

Table 13. PSQ-18 estimates according to education (n=887)

Scale	Education	Mean	St. deviation	95% mean CI		p
				Upper limit	Lower limit	
General Satisfaction	Secondary and lower	3,21	1,01	3,09	3,33	0,002
	Secondary special	3,51	0,89	3,37	3,66	
	Higher	3,42	0,98	3,33	3,51	
Interpersonal Manner	Secondary and lower	3,40	1,01	3,28	3,52	0,001
	Secondary special	3,71	0,85	3,57	3,84	
	Higher	3,64	1,00	3,55	3,74	
Communication	Secondary and lower	3,38	1,07	3,25	3,50	0,001
	Secondary special	3,70	0,81	3,57	3,83	
	Higher	3,60	0,94	3,51	3,69	
Time Spent with Doctor	Secondary and lower	3,00	1,03	2,88	3,12	0,000
	Secondary special	3,15	0,98	2,99	3,31	
	Higher	3,33	0,98	3,24	3,43	

Table 14. Pairwise comparison of PSQ-18 means according to education (n=887)

Scale		p value	
		Secondary and lower	Higher
General Satisfaction	Secondary special	0,004	0,542
	Higher	0,015	
Interpersonal Manner	Secondary special	0,003	0,725
	Higher	0,006	
Communication	Secondary special	0,001	0,422
	Higher	0,013	
Time Spent with Doctor	Secondary special	0,306	0,126
	Higher	0,000	

Nationality. The services were evaluated as more favorable by Lithuanians, and the poorest by Russians; the mean of PSQ-18 score

is 61,15(14,17) of Lithuanian patients, 59,00(15,15) of Polish patients and 57,60(15,20) of Russian patients ($p=0,013$). The differences were found in five evaluation subscales (Table 15).

Table 15. PSQ-18 subscale estimates according to nationality (n=887)

Scale	Nationality	Mean	St. deviation	95% mean CI		p
				Upper limit	Lower limit	
General Satisfaction	Lithuanian	3,47	0,94	3,39	3,56	0,003
	Russian	3,21	1,00	3,06	3,36	
	Polish	3,28	1,04	3,13	3,44	
Interpersonal Manner	Lithuanian	3,72	0,95	3,64	3,80	0,000
	Russian	3,36	1,00	3,20	3,51	
	Polish	3,46	1,01	3,31	3,61	
Communication	Lithuanian	3,63	0,92	3,55	3,71	0,004
	Russian	3,35	1,09	3,19	3,52	
	Polish	3,51	0,96	3,37	3,65	
Financial Aspects	Lithuanian	3,46	0,88	3,39	3,54	0,024
	Russian	3,25	0,90	3,12	3,39	
	Polish	3,36	1,01	3,21	3,51	
Time Spent with Doctor	Lithuanian	3,30	1,01	3,21	3,39	0,002
	Russian	3,01	0,99	2,86	3,16	
	Polish	3,13	1,01	2,98	3,28	

The most noticeable difference was observed in the Interpersonal Manner; less noticeable differences were noticed while evaluating the General Satisfaction, Communication, Financial Aspects and Time Spent with Doctor subscales. The subscales with identified statistical difference were evaluated the best by Lithuanians, and the poorest by Russians. The results of the Polish group were better than the Russian results and were nearer the Lithuanians' results. Therefore, the significant difference in the subscales was only noticed between Russian and Lithuanian groups. The difference between the Polish and the Lithuanian groups was noticed only in the evaluation of Interpersonal Manner (Table 16).

Table 16. Pairwise comparison of PSQ-18 means according to nationality (n=887)

Scale	p value		
		Lithuanian	Polish
General PSQ-18 score	Russian	0,020	0,666
	Polish	0,227	
General Satisfaction	Russian	0,008	0,803
	Polish	0,082	
Interpersonal Manner	Russian	0,000	0,614
	Polish	0,008	
Communication	Russian	0,008	0,333
	Polish	0,299	
Financial Aspects	Russian	0,020	0,556
	Polish	0,427	
Time Spent with Doctor	Russian	0,003	0,520
	Polish	0,129	

Type of PHC institution. The patients of public and private clinics evaluated the provided PHC services differently. The general score was very similar and did not significantly differ (public clinic: 59,60(14,35), private clinic: 60,83(15,59); $p=0,295$). Some of the subscales were evaluated better by the public clinic patients, and some by the semi-private clinic patients. However, only the satisfaction with the Accessibility and Convenience was evaluated differently: the private clinic patients evaluated that better than public clinic patients (Table 17).

Table 17. The influence of a type of institution on the PSQ-18 subscale estimates (n=887)

Scale	Institution	Mean	St. deviation	95% mean CI		p
				Upper limit	Lower limit	
Accessibility and Convenience	Public	2,92	0,96	2,85	2,99	0,008
	Private	3,14	1,02	3,00	3,28	

Chronic illnesses. Patients with chronic illnesses evaluated six out of seven satisfaction with the PHC service factors poorer than other patients. That also had a poorer general PSQ-18 score (“no illnesses” group 62,59(12,88), “one or more illnesses” 57,89(15,53); $p<0,001$).

Table 18. PSQ-18 subscale estimates according to chronic illnesses (n=887)

Scale	Illness	Mean	St. deviation	95% mean CI		p
				Upper limit	Lower limit	
General Satisfaction	No	3,58	0,90	3,49	3,67	0,000
	Yes	3,23	1,00	3,14	3,31	
Interpersonal Manner	No	3,76	0,90	3,67	3,85	0,000
	Yes	3,46	1,02	3,37	3,55	
Communication	No	3,69	0,85	3,61	3,78	0,000
	Yes	3,44	1,04	3,35	3,53	
Financial Aspects	No	3,53	0,83	3,45	3,62	0,000
	Yes	3,30	0,96	3,21	3,38	
Time Spent with Doctor	No	3,51	0,89	3,42	3,60	0,000
	Yes	2,97	1,03	2,88	3,06	
Accessibility and Convenience	No	3,10	0,95	3,00	3,20	0,001
	Yes	2,87	0,98	2,79	2,96	

The most evident difference has been noticed in the evaluation of the Time Spent with Doctor; ill patients had a significantly poorer mean of the score (“no illnesses” 3,51(0,89), “one or more illnesses” 2,97(1,03); $p<0,001$). “Technical Quality” was the only subscale to lack statistical significance (“no illnesses” group 3,51(0,82), and “one or more illnesses” 3,40(0,85); $p=0,061$).

Pain syndrome. Pain intensity correlated with the general PSQ-18 score ($r=-0,310$; $p<0,001$). The correlations were also found with all the questionnaire subscales (r diapason varies from -0,226 to -0,326; $p<0,001$) (Table 19).

Table 19. Spearman correlation coefficient between VAS for pain and PSQ-18 estimates (n=887)

PSQ-18 categories	Spearman correlation coefficient
General Satisfaction	-0.326**
Technical Quality	-0.226**
Interpersonal Manner	-0.255**
Communication	-0.269**
Financial Aspects	-0.295**
Time Spent with Doctor	-0.284**
Accessibility and Convenience	-0.285**
General PSQ-18 score	-0.310**

**-p<0,001

Gender of the family doctor. The consultations of female doctors were evaluated better by the PSQ-18 score (male doctor group score was 56,25(14,56), female doctor group score was 60,13(14,91); p=0,034). “Interpersonal Manner”, “Time Spent with Doctor” and “Accessibility and Convenience” has been evaluated better in the female doctor group than in the male doctor group (Table 20).

Table 20. PSQ-18 subscale estimates according to doctor’s gender (n=581)

Scale	Gender	Mean	St. deviation	95% mean CI		p
				Upper limit	Lower limit	
Interpersonal Manner	Male doctor	3,04	0,99	2,81	3,27	0,000
	Female doctor	3,63	1,00	3,54	3,72	
Time Spent with Doctor	Male doctor	2,83	1,01	2,60	3,06	0,004
	Female doctor	3,20	1,03	3,11	3,29	
Accessibility and Convenience	Male doctor	2,71	0,91	2,50	2,92	0,019
	Female doctor	2,99	0,97	2,90	3,07	

The most noticeable difference in the evaluation of the Interpersonal Manner aspect indicates that the patients of male doctors lack the ability to participate in the decision making process, they are less content with the male doctors' ability to hear them out and understand, to politely and respectfully consult.

The gender of patients, who would like to substitute their doctor with the doctor of an opposite sex, does not differ significantly among the female or male doctor groups; such number is small (7,5 % in the female doctor group, 10,5 % in the male doctor group; $p=0,654$).

We have divided the data into four groups according to the gender of the doctor and the gender of the patient (male doctor and male patient ($n=36$), male doctor and female patient ($n=40$), female doctor and male patient ($n=195$) and female doctor and female patient ($n=310$)), and we have evaluated the differences of the estimates among these four groups. The estimates of "Interpersonal Manner", and "Time Spent with Doctor" subscales have statistically significant differences in all four groups (Table 21).

Table 21. PSQ-18 subscale estimates on the doctor-patient groups according to gender ($n=581$)

Subscale	Group	Mean	St. deviation	95% mean CI		p
				Up. limit	Lower limit	
Interpersonal Manner	Male doctor – male patient	2,88	0,95	2,55	3,20	0,000
	Male doctor – female patient	3,19	1,01	2,86	3,51	
	Female doctor – male patient	3,56	1,02	3,41	3,70	
	Female doctor – female patient	3,68	0,98	3,57	3,79	
Time Spent with Doctor	Male doctor – male patient	2,72	1,00	2,39	3,06	0,003
	Male doctor – female patient	2,93	1,02	2,60	3,25	
	Female doctor – male patient	3,07	1,04	2,92	3,22	
	Female doctor – female patient	3,28	1,01	3,16	3,39	

The poorest evaluated estimates were in the male doctor and male patient group, slightly better estimates in the male doctor and female patient group, a lot better estimates in the female doctor and male patient group, and the best estimates in the female doctor and female patient group. Significant differences were not proved in all four groups; however, the same difference recur between the female doctor and female patient, male doctor and male patient groups (Table 22).

Table 22. Pairwise comparison of PSQ-18 means according to doctor-patient gender groups (n=581)

Scale		p value		
		Female doctor – female patient	Female doctor – male patient	Male doctor – female patient
Interpersonal Manner	Male doctor – male patient	0,002	0,002	0,511
	Male doctor – female patient	0,027	0,166	
	Female doctor – male patient	0,542		
Time Spent with Doctor	Male doctor – male patient	0,015	0,232	0,818
	Male doctor – female patient	0,183	0,843	
	Female doctor – male patient	0,129		

Age of the family doctor. The age of the doctor of more than 51 years correlated with the poorer PSQ-18 general score in comparison with the younger age groups (25-35 year group 67,82(10,43), 36-50 year group 64,96(11,90), and older than 51 years 51,58(15,10); $p < 0,001$). The age of the doctors older than 51 years were evaluated the poorest in all seven subscales (Table 23). The noticed differences are evident in all subscales. The satisfaction with services differs among the youngest and the oldest, and the middle-aged and the oldest doctor groups. The differences among the youngest and the middle-aged doctor groups were noticed only in two (“Communication”, and “Time Spent with Doctor”) subscales (Table 24).

Table 23. PSQ-18 subscale estimates according to doctors' age groups (n=581)

Scale	Age group	Mean	St. deviation	95% mean CI		p
				Upper limit	Lower limit	
General Satisfaction	25-35	3,93	0,81	3,74	4,12	0,000
	36-50	3,70	0,83	3,60	3,80	
	51 and older	2,89	0,96	2,77	3,02	
Technical Quality	25-35	3,73	0,77	3,54	3,91	0,000
	36-50	3,69	0,66	3,61	3,78	
	51 and older	3,15	0,87	3,04	3,25	
Interpersonal Manner	25-35	4,04	0,69	3,88	4,20	0,000
	36-50	3,89	0,80	3,80	3,99	
	51 and older	3,05	1,08	2,92	3,19	
Communication	25-35	4,17	0,67	4,01	4,32	0,000
	36-50	3,88	0,76	3,79	3,97	
	51 and older	3,00	1,06	2,87	3,13	
Financial Aspects	25-35	3,69	0,80	3,51	3,88	0,000
	36-50	3,62	0,78	3,53	3,72	
	51 and older	2,95	0,98	2,82	3,07	
Time Spent with Doctor	25-35	3,91	0,58	3,77	4,05	0,000
	36-50	3,46	0,93	3,35	3,57	
	51 and older	2,60	0,96	2,48	2,72	
Accessibility and Convenience	25-35	3,36	0,83	3,16	3,55	0,000
	36-50	3,27	0,90	3,16	3,38	
	51 and older	2,50	0,89	2,39	2,61	

Table 24. Pairwise comparison of PSQ-18 means according to doctors' age groups (n=581)

Scale	p value		
		Over 51	36-50
General PSQ-18 score	25-35	0,000	0,117
	36-50	0,000	
General Satisfaction	25-35	0,000	0,088
	36-50	0,000	
Technical Quality	25-35	0,000	0,948
	36-50	0,000	
Interpersonal Manner	25-35	0,000	0,262
	36-50	0,000	
Communication	25-35	0,000	0,006
	36-50	0,000	
Financial Aspects	25-35	0,000	0,784
	36-50	0,000	
Time Spent with Doctor	25-35	0,000	0,000
	36-50	0,000	
Accessibility and Convenience	25-35	0,000	0,702
	36-50	0,000	

The patients were asked about their preference of the doctor's age, and we evaluated if that correlates with the age of their doctor. The patients, who have consultations with 36-50 year old doctors, were the most satisfied and wanted to substitute their doctors the least (Table 25).

Table 25. Patient expectations of doctors age (n=581)

		Doctor age group			Total
		25-35	36-50	Over 51	
Does the doctor's age meet patients' expectations?	Yes	33a (45,8%)	247b(94,3%)	25c (10,1%)	305 (52,5%)
	No	39a (54,2%)	15b (5,7%)	222c (89,9%)	276 (47,5%)
	Total	72 (100%)	262 (100%)	247	581 (100%)

Each subscript letter denotes a subset of "doctor age group" categories whose column proportions do not differ significantly from each other at the 0.05 level.

Patients of doctors who are older than 51 years old were the least satisfied; they wanted to substitute their doctors the most. Out of those patients who would like to substitute their doctor, 93.1% would like to have a doctor of 36-50 years.

Anxiety and depression symptoms of patients. There were 290 (32.7%) patients with any degree of anxiety symptoms, and 193 (21.8 %) patients with any degree depression symptoms. The degree of depression and anxiety symptoms among the subjects is discussed in Table 26.

Table 26. The rate of depression and anxiety symptom severity degrees (n=887)

Symptom severity degree	Anxiety symptom scale		Depression symptom scale	
	Number of respondents	%	Number of respondents	%
Normal mood	597	67,3%	694	78,2%
Mild symptoms	146	16,5%	106	12%
Moderate symptoms	127	14,3%	63	7,1%
Severe symptoms	17	1,9%	24	2,7%
Total	887	100%	887	100%

Both anxiety and depression symptom subscales correlated with the general PSQ-18 score (Spearman coefficients -0,446 in HADS-A subscale and -0,536 in HADS-D subscale; $p < 0,001$). The connections between all the seven PSQ-18 subscales have also been noticed (Table 27 and 28).

Table 27. Spearman correlation coefficient between HADS-A and PSQ-18 estimates (n=887)

PSQ-18 categories	Spearman correlation coefficient
General Satisfaction	-0,421**
Technical Quality	-0,368**
Interpersonal Manner	-0,356**
Communication	-0,390**
Financial Aspects	-0,432**
Time Spent with Doctor	-0,390**
Accessibility and Convenience	-0,446**
General PSQ-18 score	-0,462**

**- $p < 0,001$

Table 28. Spearman correlation coefficient between HADS-D and PSQ-18 estimates (n=887)

PSQ-18 categories	Spearman correlation coefficient
General Satisfaction	-0,470**
Technical Quality	-0,430**
Interpersonal Manner	-0,405**
Communication	-0,453**
Financial Aspects	-0,490**
Time Spent with Doctor	-0,467**
Accessibility and Convenience	-0,521**
General PSQ-18 score	-0,536**

**-p<0,001

3.2.3. *General impact of the researched factors on the satisfaction with PHC services*

If the sociodemographic factors of patients, HADS and VAS pain scale estimates, sickness rate and demographic factors of doctors were included to the model of regression analysis, 79.1% of cases would be evaluated as good, 45.3% of cases would be evaluated as mediocre, 78.7% of cases would be evaluated as poor. The general percentage of correctly classified respondents of the sample is 67.5%. Nagelkerke pseudo coefficient is 0,609. The Chi quadrant statistics for the highest probability ratio of the model $\chi^2 = 431,523$, $p < 0,001$. The statistically significant variables in the table of maximum likelihood ratio Chi quadrant criterion results for each regression are the severity of patients' depression symptoms, place of residence, education, doctor's age and chronic illnesses (Table 29).

After the application of Wald criterion, we have found that the factors which increase a possibility of poor evaluation are stronger depression symptoms, place of residence in the village (in comparison with the district center), Secondary education, chronic illnesses and older doctor age (over 51 years) (Table 30).

While evaluating the regression coefficients, we have also observed that the higher estimates of anxiety symptoms could influence the evaluation of the services, as the regression coefficient of this variable in the "good vs. poor" evaluation submodel is -0,167, and $p = 0,026$.

However, we should exclude this variable as it was statistically insignificant in the table of the highest likelihood ratio Chi quadrant criterion results for every regression ($p=0,079$).

Table 29. The table of the maximum likelihood ratio chi quadrant criterion results for each regression (with demographic factors of patients, HADS and VAS for pain scales, chronic illnesses and demographic factors of doctors) (n=581)

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of reduced model	Chi-Square	Degree of Freedom	P
Intercept	760,999	0,000	0	
Patient's age	763,599	2,600	2	0,273
Anxiety symptoms	766,085	5,086	2	0,079
Depression symptoms	810,783	49,785	2	0,000
VAS for pain estimate	762,520	1,521	2	0,467
Patient's gender	761,299	0,300	2	0,861
Place of residence	797,922	36,924	4	0,000
Education	772,291	11,292	4	0,023
Nationality	767,389	6,390	4	0,172
Type of institution	761,993	0,994	2	0,608
Doctor's age	803,369	42,371	4	0,000
Doctor's gender	763,063	2,065	2	0,356
Chronic illnesses	776,751	15,753	2	0,000

Limitations of the study. This study has a few important limitations which should be considered. Respondents were from one city and district around the city, and the opinion of respondents from other cities could be different. The questionnaire was presented in the official state language of Lithuania, and the ethnic minorities, who do not speak the language, could not participate in the study; their opinion could differ from those, who understand the official language of Lithuania. This study surveyed only those residents of the district center and village who visit PHC centers in the city; the opinion of those who go to the village and district center clinics could differ. The evaluation of doctors' age was a bit subjective, as the patients themselves had to guess and indicate the age of their doctor. Nonetheless, they had wide intervals to select their age.

Table 30. The polynomial logistic regression indicator variables in the evaluation of the services, and the patients' sociodemographic factors, HADS and VAS for pain subscales, chronic illnesses and doctors' demographic factors (Nagelkerke = 0,609) (Extract from the full model) (n=581)

Evaluation of services	Factors	B	Wald	p	Odds ratio
Mediocre vs. poor	Depression symptoms	-0.142	5.308	0.021	0.868
	Place of residence:				
	-city	-0.004	0.000	0.993	0.996
	-district center	2.030	12.682	0.000	7.612
	-village	0 ^b			
	Education:				
	-Secondary and lower	-1.125	8.441	0.004	0.325
	-Secondary special	-0.187	0.170	0.680	0.829
	-Higher	0 ^b			
	Doctor's age:				
	-25-35	1.513	3.156	0.076	4.540
	-36-50	1.170	8.790	0.003	3.221
-over 51	0 ^b				
Chronic illnesses:					
-none	1.808	9.881	0.002	6.097	
-yes	0 ^b				
Good vs. poor	Depression symptoms	-0.432	35.720	0.000	0.649
	Doctor's age:				
	-25-35	3.112	13.118	0.000	22.462
	-36-50	2.178	25.978	0.000	8.832
-over 51	0 ^b				

b. Comparative variable

4. CONCLUSIONS

1. The poorer satisfaction with the PHC services was determined by such sociodemographic factors of patients as masculine gender, older age, lower education, Russian nationality, place of residence out of the city.
2. Severe anxiety and depression symptoms, chronic illnesses and pain conditions poorer patient satisfaction with the services received.
3. Masculine gender of the doctor and older age negatively affect the satisfaction with services. Patients of private clinics evaluated the accessibility of the services better.

Recommendations. The evaluation of the PHC services is closely related to various social, cultural and biopsychological factors of the patients, which must be taken into consideration when the labor in family centers is being organized. Discontent with the services of family centers is determined by several core matters: the unchanging health care system and the administrative gap, inability and unwillingness to organize the medical labor appropriately, to adapt to the changing needs of the clients and their dynamics. It is suggested:

- To use the PSQ-18 questionnaire in the healthcare institutions regularly to evaluate the quality of the institution.
- To organize the courses of basic communication, provision of emotional support and successful communication for the physicians.
- To give more attention and spend more time during the consultations with the elderly, less educated people with several illnesses who might have symptoms of anxiety and depression and have the pain syndrome.
- The ministry of health should legalize the longer duration of consultations and include additional qualified PHC specialists (health management, information and psychological-social help provision, and others) into the care of the patients officially.

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Publications:

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Presentations:

1. Gaidamovič (Kavalnienė) R, Kasiulevičius V, Šapoka V, DeksnYTE A, Aranauskas R. The influence of social and demographic factors on patient satisfaction with primary care. 9-th Baltic Family Medicine Conference. Vilnius, 2015.
2. Gaidamovič (Kavalnienė) R, Kasiulevičius V, Šapoka V, DeksnYTE A, Aranauskas R. The influence of social and demographic factors on patient satisfaction with primary care. The 4-th European MD/PhD Conference. Groningen, 2015.
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7. BRIEF INFORMATION ABOUT THE AUTHOR

Rima Kavalnienė (Gaidamovič, Belunska) graduated from the Vilnius University Faculty of Medicine with a degree in medicine in 2009. She completed her internship studies at the Vilnius University Faculty of Medicine in 2010, and her family medicine residency studies in 2013. She obtained the family doctor's professional qualification at the Vilnius University.

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As of 2013, she has been working as a family doctor at a Healthcare Center in Vilnius. Since 2014 she started to work there as a Doctor Echoscopist as well. She worked as an assistant in the Vilnius University Faculty of Medicine Internal Medicine, Oncology and Family Medicine Clinic in 2013 – 2014.

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