

FINANCIAL BARRIERS AND ACCESSIBILITY OF HEALTH SERVICES AMONG PATIENTS WITH NON-COMMUNICABLE DISEASES IN URBAN AND RURAL AREAS IN THE PELAGONIAN REGION

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Abstract

Financial barriers and accessibility of health services for patients with non-communicable diseases is a topic and issue of health policy, considering the impact of the world crisis on the provision of health care and the increased vulnerability of patients with non-communicable diseases.

The aim of this study is perceive the possible differences in financial barriers and accessibility of health services according to the place of residence in an urban or rural area of patients with non-communicable diseases. This is a cross-sectional analytical study, conducted in the period June-September 2023. Patients from the Pelagonian region with at least one chronic disease (heart attack, stroke, cancer, COPD, asthma, diabetes) were included.

A survey questionnaire was used for completing the purposes of the study. A total of 118 patients were included in the study. In the last 12 months, 13 (26.5%) of the urban respondents and 21 (31.3%) of the rural respondents postponed a health examination due to the cost.

Patients living in rural areas face insufficient access to pharmacies 4.39 times more compared to those from urban areas, general practitioners are 3.08 times more unavailable, and also the patients face with a problem of getting a examination by specialist 5.76 times more often compared to those living in urban areas. Patients with non-communicable disease living in rural areas face additional challenges in terms of access to health care and services. The results of this study make an important contribution to emphasize the importance of the place of residence for achieving health equity.

Keywords: access, financial barriers, health services, health care, non-communicable diseases.

Introduction

Primary public health interest at global level is to improve access to health care and access to health services with intention of achieving equality, equity and non-discrimination in its implementation. This initiative is becoming more and more integrated into the current international reforms and agreements in the field of health and social protection [1,2]. Although it is a current issue that, especially in highly developed countries, has been openly debated for the last decades, the number of implemented and published studies are insufficient compared to other topics in health. This especially applies to underdeveloped and developing countries, where the topic of equity in health care is still prohibited, and interpreted by many authorities as an attack on the health system.

Non-communicable diseases (NCDs) are global public health issue that affects more residents of underdeveloped and developing countries compared to highly developed countries [3]. With the demographic transition that has resulted in a significant increase of life expectancy, the number of adults as well as those of them who have NCDs shows a growing trend [4-7].

Access to health care and the difficulties that patients with NCDs face in life is a topic and issue of health policy of great importance, considering the impact of the world crisis on the provision of health care and the increased vulnerability of those patients.

Patients with NCDs face multiple barriers in seeking/receiving health care [8,9]. It is especially expressed in the part of the financial implications of the disease on the budget of the whole family [10,11].

Personal income is also reduced because the condition of the patients, and the disease that partially or completely limits their working ability [12].

Patients with NCDs also face barriers regarding the accessibility of health services (distance to health facilities, waiting lists, etc.). Financial barriers and access to health care represent a special challenge for patients from rural areas [7]. Compared to patients living in urban areas, rural residents have higher rates of all-cause mortality, higher rates of premature morbidity and mortality from diseases such as cancer and heart diseases [13].

The Pelagonian region is one of the eight statistical regions in the Republic of North Macedonia. The five cities in the Pelagonian region (Bitola, Prilep, Krushevo, Resen and Demir Hisar) occupy an urban area of 1.7% of the total area of the region, where 67.6% of the total population is concentrated. The rest of the rural area 98.7% consists of 338 rural settlements [14].

The aim of this study was to determine the characteristics of patients with NCDs in the Pelagonian region, as well as to perceive the possible differences in financial barriers and accessibility of health services according to the place of residence in an urban or rural area.

Material and methods

This is an analytical cross-sectional study that was conducted in the period from June to September 2023. The study included patients from the Pelagonian region with at least one NCD (cardiovascular-heart attack, cerebrovascular-stroke, cancer, chronic obstructive pulmonary disease-COPD, asthma, diabetes) registered in the system for electronic health- "My appointment" by specialist doctor. The study was conducted in the practices of general practitioners from the Pelagonian region, which were selected by Random sampling method. Respondents had the opportunity to complete the questionnaire by themselves as well as complete it with a help of a nurse from the practice. Before participating in the study, respondents were read detailed information about the study and verbal informed consent for participation was requested. The study included all patients who met the pre-set inclusion and exclusion criteria and who visited the general practitioner during the examined period.

We developed and used a survey questionnaire for competing the purposes of this study. For the creation of the questionnaire, parts of internationally accepted standardized questionnaires were used, and they were adapted to the conditions in our country after piloting a selected sample of respondents. The questionnaire processed the demographic and selected clinical characteristics of patients with NCDs as well as potential financial barriers, delayed health services and accessibility to public health services according to living in a rural or urban area.

Data were processed using the SPSS software package, version 26.0 for Windows (SPSS, Chicago, IL, USA). The analysis of the attributive (qualitative) series was done by determining the correlation coefficient, proportions and rates, and they were shown as absolute and relative numbers. Patients age was analyzed using measures of central tendency (mean, median, minimum values, maximum values) as well as measures of dispersion (standard deviation). Pearson Chi square test, Fisher exact test, Yates correction, and Fisher Freeman Halton exact test were used to determine the association between certain attributive dichotomous variables. Risk factors were quantified using odds ratio (OR) and confidence intervals (CI). Difference test was used to compare the proportions. A significance level of $p < 0.05$ was used to determine statistical significance.

Results

A total of 118 (100%) patient from the Pelagonian region with a diagnosis of a NCD by a specialist doctor were included in the study. Men and women were respectively represented by 49 (41.52%) vs. 69 (58.47) with a male to female ratio of 0.71:1.

Table 1. Characteristics of the sample of patients with NCDs from the Pelagonian region according to selected parameters

Parameters ¹	N (%)
Gender	
male	49 (41,52%)
female	69 (58,47%)
Residence place	
urban	50 (42,37%)
rural	68 (57,63%)
Grade of education	
no education	3 (2,54%)
elementary	19 (16,105)
secondary	70 (59,32%)
tertiary	22 (18,64%)
Employment status	
employee - indefinite employment contract	22 (18,64%)
employee - definite employment contract	8 (6,78%)
unemployed	13 (11,01%)
student	1 (0,85%)
retiree	72 (61,02%)
Non-communicable disease (NCD)	
heart attack	30 (25,42%)
stroke	10 (8,47%)
cancer	22 (18,64%)
COPD	23 (19,495)
asthma	2 (1,69%)
diabetes	62 (52,64%)
Number of NCDs	
one	94 (79,66%)
two	23 (19,49%)
three	1 (0,85%)
¹ Patients with one/ more the one NCDs	

The average age of the patients in the sample was 61.03±10.94 years, with a minimum age of 26 years and a maximum age of 85 years. Age in 50% of patients was ≤63 years, and 25% were ≥69 years for Median IQR=63 (55-69). Depending the gender males/females, the average age was consistently 59.87±11.90 with a min/max age of 26/83 years vs. 61.83 ± 10.22 with a min/max age of 40/85 years. No significant difference was determined between the genders in terms of age (Pearson Chi-square test= 32.992; df=40; p=0.7759).

The representation of patients with a NCDs living in a rural area - 68 (57.63%) was significantly higher compared to those living in a urban area 50 (42.37%) for Difference test=16.26% [(3.5-28 ,3) CI 95%]; p=0.013. According to the employment status, the majority of respondents were retiree, 72 (61.02%), and in terms of education, the most respondents were those with secondary education, 70 (59.32%) (Table 1).

Of the NCDs, diabetes was the most prevalent in 62 (52.64%) followed by heart attack in 30 (25.42%) and cancer in 22 (18.64%). Two NCDs were present in 23 (19.49%) of the respondents, and three NCDs were identified in only one person.

Table 2. Affordability of health services according to place of residence -Pelagonian region

Service	Can you afford these services (if you need):						p
	Place	Always	Very often	Sometimes	Rarely	Never	
physical examination by a specialist doctor at public health institution	urban	3 (7,1%)	3 (7,1%)	20 (46,6%)	12 (28,6%)	4 (9,5%)	X ² =3,522; df=4; p=0,4746
	rural	3 (4,8%)	5 (7,9%)	20 (31,7%)	26 (41,3%)	9 (14,3%)	
physical examination by a specialist doctor at private health institution	urban	24 (48,9%)	10 (20,4%)	6 (12,25)	6 (12,25)	3 (6,125)	X ² =10,582; df=4; p=0,0317*
	rural	35 (53,3%)	9 (13,6%)	19 (28,8%)	3 (4,5%)	0 (0%)	
Physical therapy in public health institution	urban	17 (38,6%)	6 (13,6%)	10 (22,7%)	8 (18,2%)	3 (6,8%)	X ² =4,994; df=4; p=0,2879
	rural	31 (48,4%)	2 (3,15)	16 (25%)	9 (14,15)	6 (9,4%)	
Physical therapy in private health institution	urban	2 (5,1%)	4 (10,35)	10 (25,6%)	7 (17,9%)	16 (41%)	X ² =8,757; df=4; p=0,0674
	rural	22 (3,3%)	1 (1,7%)	9 (15%)	7 (17,9%)	41 (68,3%)	
Medication (not covered by the public health insurance fund)	urban	24 (52,2%)	12 (26,1%)	7 (15,2%)	2 (4,35)	1 (2,2%)	Fisher Freeman Halton exact test: p=0,1925
	rural	43 (67,2%)	15 (23,4%)	4 (6,25)	0 (0%)	2 (3,1%)	
Laboratory test (not covered by the public health insurance fund)	urban	5 (11,4%)	6 (13,6%)	17 (38,6%)	12 (27,3%)	4 (9,1%)	X ² =2,748; df=4; p=0,6008
	rural	6 (9,4%)	10 (15,6%)	17 (26,6%)	20 (31,25)	11 (17,2%)	
X-ray, magnet, echo (not covered by the public health insurance fund)	urban	6 (13,6%)	5 (11,4%)	9 (20,4%)	7 (15,9%)	17 (38,6%)	X ² =13,225; df=4; p=0,0102*
	rural	5 (7,8%)	1 (1,6%)	14 (21,9%)	28 (43,7%)	16 (25%)	
X ² -Pearson Chi-square test				*сигнификантно за p<0,05			

Affordability of health services

There is no significant association of patients with NCDs from the urban or those from the rural area in terms of affordability of health services such as an examination by a specialist in the public health institution (p=0.4746), physical therapy in the the public health institution (p=0.2879), private purchase of medicines (p=0.1925) and laboratory analyzes that are not covered by the public health insurance fund (p=0.6008).

Patients with NCDs from rural areas borderline insignificantly more often compared to patients from the urban areas stated that they face financial problems for physical therapy in private health institution (p=0.0674). In addition, patients with NCDs from rural areas significantly more often faced financial problems for private specialist examination (p=0.0317) and private radiodiagnostic tests (p=0.0102) (Table 2).

Delayed health services

In the last 12 months, 13 (26.5%) of the respondents from the urban areas and 21 (31.3%) of the respondents from the rural areas postponed a health examination due to its cost, and they did it

twice or three times respectively 5 (10, 2%) vs. 6 (12.2%) of respondents from the urban areas and 7 (10.4%) vs. 6 (8.9%) of respondents from the rural areas.

There was no significant association of patients with NCDs living in a urban/rural area with the number of delayed health examinations due to its cost (Pearson Chi-square test=0.539; df=3; p=0.9102).

Table 3. Delayed health services due to financial reasons by place of residence -Pelagonian region

Parameters	Place	Yes	No	p
In the past 12 months, have you delayed due to financial reason:				
Medication/s	urban	10 (22,7%)	34 (77,3%)	X ² =1,281; df=1; p=0,2577
	rural	8 (14%)	49 (85,9%)	
Surgery /other procedure	urban	3 (9,1%)	30 (90,9%)	X ² =1,354; df=1; p=0,2446
	rural	10 (18,2%)	45 (81,8%)	
X-ray, magnet, echo, other	urban	5 (13,9%)	31 (86,1%)	X ² =2,142; df=1 p=0,1433
	rural	15 (26,8%)	41 (73,2%)	
Laboratory test	urban	2 (4,9%)	39 (95,1%)	Fisher exact test: p=0,0333*
	rural	12 (16,7%)	49 (80,3%)	
physical examination by a specialist doctor	urban	8 (18,2%)	36 (81,8%)	X ² =0,156; df=1 p=0,6924
	rural	13 (21,3)	48 (78,7%)	
In the last 12 months, did you reduced costs for essential needs because of the needs for:				
Health care / treatment	urban	27 (55,1%)	22 (44,9%)	X ² =0,853; df=1 p=0,3556
	rural	42 (63,6%)	24 (36,4%)	
X ² =Pearson Chi-square test		*сигнификантно за p<0,05		

The place of residence of respondents with a NCD (urban/rural) was not significantly associated with the delay in purchasing medicine (p=0.2577), surgery/other medical procedures (p=0.2446), x-ray/magnet/echo and others examinations (p=0.1433) and examination by a specialist doctor (p=0.6924). It was observed that postponing laboratory tests due to financial reasons was significantly more associated with patientse living in the rural than those living in the urban areas (p=0.0333) (Table 3).

The reduction of the costs of essential needs due to the costs of health care/treatment was not significantly associated with the place of residence (p=0.3556), and confirmation that they were forced to this was obtained from 27 (55.1%) of the respondents from the urban and 42 (63.6%) of those from the rural areas (Table 3).

Table 4. Accessibility of public health services according to place of residence - Pelagon region

Parameters	Place	Yes	No	p
Would you say the following services are located near enough from your home?				
Pharmacy	urban	41 (85,4%)	7 (14,6%)	X ² =10,249; df=1 p=0,0014*
	rural	36 (57,1%)	27 (42,9%)	
General practitioner	urban	38 (80,8%)	9 (19,1%)	X ² =6,564; df=1 p=0,0104*
	rural	37 (57,8%)	27 (42,2%)	
Specialist doctor	urban	36 (78,3%)	10 (21,7%)	X ² =53,037; df=1 p=0,00001*
	rural	6 (9,5%)	57 (90,5%)	
Hospital	urban	36 (75%)	12 (25%)	X ² =46,857; df=1 p=0,00001*
	rural	7 (11,1%)	56 (88,9%)	
Is distance an issue for you for physical examination at:				
Specialist doctor	urban	9 (18,4%)	40 (81,6%)	X ² =16,591; df=1 p=0,00001*
	rural	35 (55,4%)	27 (60,4%)	
X ² =Pearson Chi-square test		*сигнификантно за p<0,05		

Accessibility of public health services

Patients with NCDs living in rural areas face insufficient access to pharmacies 4.39 times significantly more compared to those from urban areas for OR=4.39 [95% CI (1.71-11.29)]. General practitioners are 3.08 times significantly more unavailable for patients with NCDs in rural areas compared to those living in urban areas by OR=3.08 [95% CI (1.28-7.43)] (Table 4).

Only 6 (9.5%) of the rural respondents answered that the public health services of specialist doctors are close enough to their home. Additional, the analysis indicated that the public health services of specialist doctors are 34.2 times more often inaccessible for patients with NCDs living in rural areas compared to those living in urban areas OR=34.20 [95% CI (11.44-102,21)] (Table 4).

Public health services in hospitals were accessible to only 7 (11.1%) of patients with NCDs from the rural compared to 36 (75%) of those living in the urban areas. Public health services from hospitals were 24 times more likely to be inaccessible for patients with NCDs living in rural areas compared to those living in urban areas OR=24.0 [95% CI (8.64-66.68)] (Table 4).

More than half of the respondents who live in the rural areas 35 (55.4%) answered that the distance is a problem for them to organize an examination by a specialist doctor. Patients with NCDs living in the rural areas face a problem in realizing a specialist examination 5.76 times more often compared to those living in the urban areas for OR=5.76 [95% CI (2.39-13.89)] (Table 4).

Discussion

The possible differences in financial barriers and accessibility of health services according to the place of residence (rural/urban) among patients with NCDs have not been investigated in the Pelagonian region.

This study is the first of its kind in this region and indicates original insights regarding this problem. Within the framework of our study, we made an analysis of the socio-demographic characteristics of the respondents, financial barriers and the accessibility of health services in relation

to the place of residence, i.e. whether the patients live in a urban or a rural area. A total of 118 respondents were included in this study. Of them, 57.63% are patients living in rural areas.

Our analysis showed that due to finances, in the last 12 months, 22.7% of patients from the urban areas and 14% from the rural areas postponed the purchase of medicines, a surgery or another procedure postponed 9.1% of patients from the urban and 18.2% from the rural areas, examination by a specialist doctor postponed 18.2% patients from the urban, and 21.3% from the rural areas. According to a similar study conducted by the European Patient Forum, in the last 12 months due to finances, 20.3% of respondents postponed the purchase of medicines, 24.5% of respondents postponed a surgery /other procedure, and 50.7% of respondents postponed an examination by a specialist doctor. (15) In a study conducted in Australia by Zurynski et al., 13.9% of patients with NCDs could not afford to buy medicines or health services, 32.9% postponed a diagnostic test, treatment or control by doctor due to finances. (16) In a study conducted in Greece among patients with NCDs by Kyriopoulos et al., 62.8% of the respondents stated that they face financial difficulties due to health care [17].

In a study conducted in Croatia regarding financial barriers by Pristas et al., people living in rural areas face higher costs when visiting a specialist doctor (40.8%), compared to people living in urban areas (19.3%)[18].

In a study conducted in the USA by Cyr et al. among patients who suffered from a malignant disease and live in a rural areas, a small number of respondents (17.6%), their place of residence caused financial difficulties related to the request for health care [19].

According to the results of our study, financial barriers are also present among patients from urban areas, but in a higher percentage among patients from rural areas. Delaying necessary health services or delaying the purchase of medicines can further burden our health system as a result of increasing morbidity, mortality as well as complications from NCDs that are preventable with timely and appropriate health care.

In our research, 55.1% of the respondents from the urban, and, 63.6% of the respondents from the rural areas stated that in the last 12 months they have reduced the costs of essential needs due to health care/treatment. According to a study conducted by the European Patients' Forum, 41% of the respondents declared that they have reduced the costs of essential needs in order to be able to cover the costs of health care [15].

In terms of geographical distance from home, patients with NCDs living in rural areas face the inaccessibility of pharmacies and general practitioners significantly more than patients living in cities. Examination by a specialist doctor due to the distance is a problem for 18.4% of patients living in the urban, compared to 55.4% of patients living in the rural areas. According to the similar study conducted by the European Patient Forum, patients stated that pharmacies are not close enough their homes to 2.3% of respondents, family doctors to 10.2% of respondents, specialists to 31.6% of respondents and hospitals to 21.1% of respondents [15].

In the study conducted by Kyriopoulos et al., 24.8% of the respondents declared that they face difficulties in terms of accessibility to health care from a geographical point of view [17].

In a study conducted by Pristas et al., people living in rural areas face geographic barriers when it comes to access to a general practitioner (30.2%), or access to a specialist doctor (52.4%). [18].

In a survey conducted by Cyr et al., 35.3% respondents declared that distance was a problem for them when visiting a general practitioner or specialist doctor [19].

Conclusion

Patients with chronic non-communicable diseases living in rural areas face additional challenges in access to health care, both from a financial point of view and from the point of view of distance to health facilities, comparing with patients living in urban areas. The results of this study make an important contribution to emphasizing the importance of the place of residence for achieving health equity, which all health systems around the world strive for it. The results also can be used for planning and implementation of larger national studies that will be of interest for the creation of further health policies.

Conflict of Interest

The authors declare that they have no conflict of interests

Ethics Statement

The research was approved by the Ethics Committee for Human Research of the Teaching Scientific Council of the Medical Faculty, at Ss. Cyril and Methodius University in Skopje and by the directors of the corresponding institutions.

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