

PHARMACEUTICAL CARE AS A CHANCE OF IMPROVING HEALTH CARE IN AREAS WITH AN AVERAGE LEVEL OF URBANIZATION

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Abstract

The access to medical services in less developed areas is more limited than in areas with a high level of urbanization. One of the solutions expanding the availability of medical services in less developed areas can be the inclusion of pharmacists in the healthcare team. The aim of the study was to define the expectations, describe and compare attitudes of communities living in areas with varied demographics regarding the possibility of implementing pharmaceutical care (PC) as a part of primary health care. The study comprised patients (n = 516) from 3 different sub-regions of Greater Poland (Poland): Poznan, Ostrow Wielkopolski and Chodzież. Anonymous questionnaires were used to obtain respondents' attitudes toward the investigated matter. The majority of respondents declared that their knowledge about the medications they were taking increased after pharmaceutical consultations. Residents of Poznan (86.21%) and Chodzież (79.35%) were most interested in the implementation of PC. Residents of Poznan (41.89%) were also most willing to pay for this type of care. However, the monetary value of PC is much lower for residents of Poznan than for residents of other cities. The favourable attitude of patients from less urbanized regions towards PC is a chance for its effective implementation and for the improvement of healthcare standards in small cities, which account for 82% of the total population of Greater Poland.

Rezumat

Accesul la servicii medicale în zonele mai puțin dezvoltate, este mai limitat decât în zonele cu un nivel ridicat de urbanizare. Una dintre soluții este extinderea disponibilității serviciilor medicale în aceste zone, prin includerea farmaciștilor în echipa de asistență medicală. Scopul studiului a fost de a defini așteptările, de a descrie și de a compara atitudinea comunităților care trăiesc în zone cu date demografice diferite din punct de vedere al posibilității de a implementa îngrijirea farmaceutică, parte a asistenței medicale primare. Pacienții incluși în studiu (n = 516), provin din 3 sub-regiuni diferite ale Poloniei: Poznan, Ostrow Wielkopolski și Chodzież. Au fost utilizate chestionare anonime, pentru a evalua atitudinea respondenților față de problema investigată. Locuitorii din Poznan (86,21%) și Chodzież (79,35%) au fost cei mai interesați în ceea ce privește îngrijirea farmaceutică. Locuitorii din Poznan (41,89%) au fost, de asemenea, cei mai dispuși să plătească pentru acest tip de îngrijire. Atitudinea favorabilă a pacienților din regiuni mai puțin urbanizate, în ceea ce privește îngrijirea farmaceutică, constituie o șansă pentru punerea sa în aplicare efectivă și pentru îmbunătățirea standardelor de asistență medicală în orașele mici, care reprezintă 82% din populația totală a Poloniei.

Keywords: pharmaceutical services, urbanization, pharmaceutical care, fee-for-service plans

Introduction

Free access to medical services has a significant effect on the quality and the standard of life of citizens. According to data from 2009, the access to medical advice in less developed areas was only one third of that found in highly urbanized areas,

the result of a smaller number of health care professionals [15]. The distance that patients have to go through to get medical care obstructs both the treatment and disease prevention [25] and may result in a high level of self-medication, which can reach even over 80% of the rural population [4].

The high demand for help from skilled medical personnel is illustrated by the fact that in the rural areas, the mean number of medical advices per person went from 2.8 in 2003 to 3.2 in 2009 [15]. At the same time, demographic projections show that one of the two basic problems in under developed regions is the ageing population, which distorts the proportions between demand and supply in health care services [15]. Optimization of healthcare in areas with lower rate of urbanization requires development of solutions different from those developed for metropolises [40]. Hilsenrath *et al.* suggested the use of pharmacists in rural communities as one solution to optimise the healthcare services [19]. Previous studies show that inclusion of more health care providers in working with a patient improves safety and effectiveness of treatment [45]. Pharmaceutical care (PC) is one of the services leading to improved quality of life in patients living in less developed areas [5]. This type of service, holistic in its nature, includes professional counselling on health issues which do not require medical intervention as well as long term analysis of pharmacological therapy with regard to adherence to doctor's prescription, possible drug interactions and side effects. It is important to note that educating the patient on the course of the disease; proper diet and lifestyle are all part of PC. Cooperation between the pharmacist and other health care professionals, including doctors, is the foundation of PC which gives hope for integrating the treatment, a common difficulty in smaller towns, according to many health care providers [25]. It has to be noted that areas with an average level of urbanization very often provide specialized health services that go beyond local needs as they serve the population of adjacent rural areas [14].

Establishing favourable attitude of local population towards proposed solution is a key element when considering the viability of promoting PC in any given area. In order to find out whether PC is a viable option as a part of standard health care, a cross-sectional quantitative study was developed, making it possible to define the expectations and describe and compare the attitudes of communities living in areas with different levels of urbanization.

Materials and Methods

The study was conducted in the period between 2010 and 2012. The study group included patients of community pharmacies in the cities of three different sub-regions of Greater Poland: Poznan (sub-region of Poznan), Ostrow Wielkopolski (sub-region of Kalisz) and Chodziej (sub-region of Pila), all characterized by different levels of urbanization (Table I). Patient's consent for participation in the study was another criterion of inclusion. The sample size was determined with the use of Krejcie and Morgan Table [26]. As the Greater Poland population was estimated at 3,447,441 in 2011 [12], the minimum of 384 respondents was required for the study to be representative.

In order to determine the attitudes of respondents towards the discussed proposals, an anonymous form was used, with closed-ended questions accompanied by nominal scales and five-point Likert scale. Additionally, questions regarding sociodemographic characteristics were included to ensure the proper characterization of the sample. Statistica PL 10 (StatSoft) package, with chi-square test with $\alpha = 0.05$, was used to perform the statistical analysis. The design of the study was accepted by the Bioethics Committee at the Poznan University of Medical Sciences.

Table I

Comparison of cities where the study was conducted with regard to selected demographic parameters and access to health care services [28, 32, 35-37, 44]

	Chodziej (sub-region of Pila)	Ostrow Wielkopolski (sub-region of Kalisz)	Poznan (sub-region of Poznan)
Area (ha)	1 277	4 190	26 191
Population	19 651	72 933	550 742
Urban population for the sub-region (%)	45.7	52.7	56.3
Number of clinics in the city offering the service of primary care physicians	4	15	123
Number of community pharmacies in the city	10	30	283
Primary ambulatory care (average number of consultations per citizen)	110.5	100.2	nda.*
City's budget health care expenses (%)	0.7	1.0	0.7

*nda. – no data available

Results and Discussion

Five hundred and sixteen patients participated in the study (Poznan – 202 respondents, Ostrow

Wielkopolski – 204 respondents, Chodziej – 110 respondents). Detailed characteristics of the studied groups are presented in Table II.

Table II

Detailed characteristics of respondents participating in the study in selected cities of Greater Poland Voivodeship

Characteristics of respondents	Chodziej (n = 110)	Ostrow Wielkopolski (n = 204)	Poznan (n = 202)
	n (%)	n (%)	n (%)
Sex			
Women	68 (62.81)	149 (73.04)	153 (75.74)
Men	42 (37.19)	55 (26.96)	49 (24.26)
Age			
< 20	0 (0.00)	5 (2.45)	9 (4.46)
20 - 40	39 (35.45)	76 (37.25)	82 (40.59)
41 - 64	48 (43.64)	89 (43.63)	88 (43.56)
> 64	23 (20.91)	34 (16.67)	23 (11.39)
Education			
Primary	6 (5.45)	8 (3.92)	8 (3.96)
Vocational	30 (27.27)	45 (22.06)	26 (12.87)
High school	47 (42.73)	91 (44.61)	114 (56.45)
College	27 (24.55)	60 (29.41)	54 (26.72)
Number of medications taken during last month			
0	13* (12.04)	29 (14.22)	29 (14.36)
1 - 2	34 (31.48)	80 (39.22)	92 (45.54)
3 - 4	25 (23.15)	43 (21.07)	40 (19.80)
> 4	36 (33.33)	52 (25.49)	41 (20.30)

* Because of 2 missing answers these do not total 110

The object of the study was to determine the attitudes of patients towards the possibility of using PC in community pharmacies. The results of the

study show that polypharmacy is common in all studied cities (Table II and III).

Table III

Dependence between the age of the respondents and the number of drugs taken during last month

Age of the respondent	Number of medications taken during last month, n (%)				p value
	0	1 - 2	3 - 4	> 4	
Total population n = 516					
< 20	2 (14.29)	9 (64.28)	2 (14.29)	1 (7.14)	< 0.0001
20 - 40	40 (20.41)	94 (47.96)	36 (18.37)	26 (13.26)	
41 - 64	27 (12.06)	92 (41.07)	52 (23.21)	53 (23.66)	
> 64	2 (2.50)	11 (13.75)	18 (22.50)	49 (61.25)	
Chodziej n = 110					
< 20	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0.0004
20 - 40	6 (15.79)	16 (42.10)	11 (28.95)	5 (13.16)	
41 - 64	6 (12.77)	16 (34.04)	11 (23.40)	14 (29.79)	
> 64	1 (4.35)	2 (8.70)	3 (13.04)	17 (73.91)	
Ostrow Wielkopolski n = 204					
< 20	1 (20.00)	3 (60.00)	1 (20.00)	0 (0.00)	< 0.0001
20 - 40	17 (22.37)	40 (52.63)	13 (17.11)	6 (7.89)	
41 - 64	10 (11.24)	33 (37.08)	18 (20.22)	28 (31.46)	
> 64	1 (2.94)	4 (11.77)	11 (32.35)	18 (52.94)	
Poznan n = 202					
< 20	1 (11.11)	6 (66.67)	1 (11.11)	1 (11.11)	0.0006
20 - 40	17 (20.73)	38 (46.34)	12 (14.64)	15 (18.29)	
41 - 64	11 (12.50)	43 (48.86)	23 (26.14)	11 (12.50)	
> 64	0 (0.00)	5 (21.74)	4 (17.39)	14 (60.87)	

Most respondents claimed that the knowledge about the medications they take (including the medications taken as a part of pharmacotherapy prescribed by their physician) increases due to pharmaceutical consultations available at community pharmacies

(Table IV). It is important to note that the patients wanted to receive pharmaceutical advice with regard to other aspects of the therapy such as lifestyle (71.74% in Chodziej, 72.88% in Ostrow Wielkopolski, 75.29% in Poznan; p = 0.0482) or

the symptoms and the course of the disease they suffer from (50.00%, 50.28% and 50.57% respectively); no statistically significant differences).

Table IV

The significance of pharmacist as patient's educator in selected cities of Greater Poland Voivodship

After the visit in a pharmacy, you find your knowledge has increased regarding ...	Chodziej n = 110			Ostrow Wielkopolski n = 204			Poznan n = 202			p value
	yes n (%)	no opinion n (%)	no n (%)	yes n (%)	no opinion n (%)	no n (%)	yes n (%)	no opinion n (%)	no n (%)	
all taken medications	82 (74.55)	17 (15.45)	11 (10.00)	135 (66.18)	44 (21.57)	25 (12.25)	112 (55.44)	45 (22.28)	45 (22.28)	0.0037
therapy prescribed by your physician	78 (70.91)	18 (16.36)	14 (12.73)	114 (55.88)	45 (22.06)	45 (22.06)	95 (47.03)	41 (20.30)	66 (32.67)	0.0004

The most favourable attitudes towards the implementation of PC were exhibited by citizens of Poznan (86.21%) and Chodziej (79.35%). The majority of respondents from each city were not willing to pay an additional fee for PC (35.61% in Chodziej, 41.27% in Ostrow Wielkopolski, 41.89% in Poznan; no statistically significant differences), and expressed the need for PC funding by the insurer (91.49% in Chodziej, 89.19% in Ostrow Wielkopolski, 81.61% in Poznan; no statistically significant differences). A single consultation of PC

had significantly lower monetary value for respondents in Poznan (35.23% of respondents declared the sum of 1 USD) than for citizens of Chodziej and Ostrow Wielkopolski who were ready to pay the fee of 2 USD or 5 USD (respectively 40.43% and 40.43% in Chodziej and 33.78% and 40.54% in Ostrow Wielkopolski). Detailed characteristics of patients' attitudes towards the implementation and financing of PC can be found in Table V.

Table V

The attitudes of patients regarding the possibility of using and financing pharmaceutical care in community pharmacies in Chodziej (n = 110), Ostrow Wielkopolski (n = 204) and Poznan (n = 202)

	Chodziej n (%)	Ostrow Wielkopolski n (%)	Poznan n (%)	p value
Need for implementation of PC				
yes	73 (79.35)	126 (71.19)	150 (86.21)	0.0027
no	19 (20.65)	51 (28.81)	24 (13.79)	
Duration of single PC consultation				
< 5 minutes	19 (26.03)	40 (31.75)	61 (40.94)	0.0114
5 - 15 minutes	48 (65.75)	74 (58.73)	64 (42.95)	
> 15 minutes	6 (8.22)	12 (9.52)	24 (16.11)	
Funding by the insurer				
yes	43 (91.49)	66 (89.19)	71 (81.61)	0.1969*
no	4 (8.51)	8 (10.81)	16 (18.39)	
Funding by the patient				
no	26 (35.61)	52 (41.27)	62 (41.89)	0.2843*
no opinion	22 (30.14)	36 (28.57)	29 (19.60)	
yes	25 (34.25)	38 (30.16)	57 (38.51)	
Monetary value of single PC consultation				
1 USD	7 (14.88)	14 (17.57)	31 (35.23)	0.0007
2 USD	19 (40.43)	25 (33.78)	16 (18.18)	
5 USD	19 (40.43)	30 (40.54)	22 (25.00)	
5 - 20 USD	1 (2.13)	3 (5.41)	12 (13.64)	
> 20 USD	1 (2.13)	2 (2.70)	7 (7.95)	

* no statistically significant differences

It is worth noting that the willingness to pay for PC varied with the age of respondents, being higher for the middle age (20 - 64 years) than for younger or older ages (Table VI).

Conducted studies confirmed the interest of patients in implementing PC in community pharmacies. It is of particular importance for patients who use many drugs and need specialist supervision over their pharmacotherapy. Studies by Szydlarska *et al.*

considered this problem showing that one-fourth of patients who are 65 and older take as many as 10 different drugs daily [39]. This fact is strongly associated with hospitalizations due to not following doctor's advice and polypharmacy. The cost of these hospitalizations is estimated to be 10 billion dollars each year in the US [29] and 6 billion Polish zlotys (2 billion USD) in Poland, almost the same amount of money National Health Fund spends on

general practitioners for the entire population [23]. The analyses show that unwarranted drug payment by the National Health Fund in Poland is between 400 million to 1 billion zlotys (approximately 100 to 300 million USD) each year [6]. That is why it is

important to inform pharmacists about medications patients use, so they can inform them on the proper use of the medications, eliminate drug interactions and polypharmacy.

Table VI

Dependence between the age of respondents and the attitudes towards self-funding of pharmaceutical care consultations

Age of respondent	Patients' attitudes towards self-funding of pharmaceutical care consultations, n (%)			p value
	yes	no opinion	no	
Total population (n = 516)				
< 20	0 (0.00)	3 (33.33)	6 (66.67)	0.0008
20 - 40	42 (30.00)	37 (26.43)	61 (43.57)	
41 - 64	62 (41.61)	42 (28.19)	45 (30.20)	
> 64	16 (32.65)	5 (10.21)	28 (57.14)	
Chodziez n = 110				
< 20	0 (0.00)	0 (0.00)	0 (0.00)	0.0103
20 - 40	8 (30.77)	10 (38.46)	8 (30.77)	
41 - 64	14 (43.75)	11 (34.37)	7 (21.88)	
> 64	3 (20.00)	1 (6.67)	11 (73.33)	
Ostrow Wielkopolski n = 204				
< 20	0 (0.00)	2 (66.67)	1 (33.33)	0.0303
20 - 40	9 (17.65)	15 (29.41)	27 (52.94)	
41 - 64	22 (41.51)	16 (30.19)	15 (28.30)	
> 64	7 (36.84)	3 (15.79)	9 (47.37)	
Poznan n = 202				
< 20	0 (0.00)	1 (16.67)	5 (83.33)	0.2618*
20 - 40	25 (39.68)	12 (19.05)	26 (41.27)	
41 - 64	26 (40.62)	15 (23.44)	23 (35.94)	
> 64	6 (40.00)	1 (6.67)	8 (53.33)	

* ns – no statistically significant differences

On the basis of performed analyses it was established that the pharmacist counselling resulted in increased knowledge on the treatment and all medications used in it, Chodziez and Ostrow Wielkopolski having the best results. The respondents considered that pharmacists should educate the patients on the dosage, possible side effects, preparation of medications and the purpose of their administration. Patients were interested in the mechanism of action and possible drug interactions. They also wanted to know about cheaper, generic drugs and other over-the-counter drugs prescribed by their physician. The respondents, especially in Chodziez, were also interested in advice on their lifestyle during the use of medication. The information patients were least interested in regarded the symptoms and the course of their disease, which might mean patients have more trust in physicians considering this matter. Still, these results are in line with those of previous studies which indicated the role of pharmacist as an educator as desirable by wide healthcare professionals communities and patients [13, 41]. Prior studies shown that people diagnosed with chronic conditions are in bigger need of PC [18]. Danes, for example, are mainly interested in getting help regarding possible drug interactions [31]. Patients express their satisfaction with pharmacist's skills and they are willing to

discuss drugs prescribed to them, although pharmacies in many other countries have wider attributions than Polish pharmacies [20, 27]. This is in contrast with a study performed in Krakow where patients thought that the pharmacist is not the source of knowledge about health or medications [34]. Similar results were reported in Italy where patients considered that large queues in pharmacies prevent them from obtaining meaningful information [7]. The demand for education in community pharmacies is an important argument for the implementation of PC. Our results show that a large number of questioned patients were in favour of implementing this new service, not only in Poznan, but also in Chodziez and Ostrow Wielkopolski. It is a chance for the implementation of a new provision that can improve the quality of health care, especially in smaller towns. Furthermore, it can also serve as a base of services delivered to rural areas and can create health care provisions available beyond local level [14]. This is important because, as the study in 2009 demonstrated, cities have three times as much registered physicians and dentists when compared with rural areas. Additionally, in the same year there were 3.2 medical consultations per person in rural areas as opposed to 10.5 in the city [15]. Limited access to primary and specialized health care can serve as an argument for implementation

of PC in rural areas. Investment programs in boroughs can be used to achieve that goal as they might be interested in improving the quality of life of its citizens by increasing their access to health care. Because integrated approach to the development of cities assumes high quality of life, it might, with time, lead to including PC in the scope of health care provisions [33]. Analysis performed by Statistical Office of Poznan (2013), are a positive sign showing increase in health care expenditures in Ostrow Wielkopolski and Chodziej when compared with Poznan. This can be a good argument for the commencement of implementation of PC in smaller towns. Additionally, data from various countries confirms the effectiveness of PC implemented especially in areas with a lower level of urbanization [3, 5]. Patients trust pharmacists; they expect care and professional advice [17, 34, 43]. Previous experiences of patients call for a broadened scope of PC [11, 24, 41].

The study confirms that PC consultation should last from 5 to 15 minutes, especially according to patients in Ostrow Wielkopolski and Chodziej. One third of respondents said it should last less than 5 minutes. Patients in Polish cities are not used to long visits in pharmacies, because, as Jankowski et al. reports, in the last 10 years the time devoted to a patient in a pharmacy ranged from 7 minutes in rural areas to 9.5 minutes in cities [22]. In Sweden, on the other hand, the pharmacist works with a patient for 3.8 minutes on average, where discussions regarding medications and therapy last only 25 seconds. The remaining time is spent on verifying the validity of the prescription, finding the drug and filling out all required forms [42]. Campbell and Saulie reported that the pharmacist consiliates the patient on medication-related issues for up to 15 minutes on average [10].

The study also touches on the important question of funding individually the visit at pharmacy as a part of PC. According to patients, the service should be refunded by National Health Fund or some other insurance entity. Unfortunately, in Poland, as for now, there are no legal regulations that would guarantee paying for PC with public funds [42]. The study shows that single consultation for residents of Poznan is less valuable than for the residents of Chodziej and Ostrow who are willing to pay 2 USD to 5 USD. Other Polish studies also confirm the validity of charging National Health Fund for PC, with 20.00 zlotys (7 USD) being the maximum price for a single visit [34]. In the US, one analysis reported that patients were willing to pay about 5 USD for a 5-min consultation [21]. Properly valued consultation is a deciding factor that can lead to the inclusion of PC into Polish health care system.

PC is beneficial for the health of patients [1, 2, 38]. It is also an affordable element of pharmacotherapy, lowering the costs of drugs for patients and insurance companies [8, 9, 16]. Favourable opinions of patients, especially in areas with an average level of urbanization, are a sign that implementing PC will bring positive changes in the current health care system, leading to improved quality of patients care.

Study limitations

Although the number of respondents was established above the minimum, authors are aware that, because of the number of subcategories, some comparisons could not achieve the required power (the power of the test is typically expected as at least 80%) to detect smaller differences between groups. Nevertheless, the results have shown some trends in the analysed population.

The questionnaire contained only closed-ended questions. Inclusion of some open questions may have helped to elicit information on expectations or experiential problems which were not specifically addressed in the questionnaire.

Conclusions

Favourable attitudes of patients in less urbanized areas towards PC are thought to be a chance for effective implementation of this new provision, allowing for improved quality of health care in small towns which accounts for 82% of all city residents in Greater Poland.

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