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Physicians' and patients' valuation of pharmaceutical care implementation in Poznan (Poland) community pharmacies

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Abstract Implementation of pharmaceutical care (PC) in Poland is of great importance to patients, who, on the one hand, often follow complex pharmacological treatment regimens recommended by several physicians of different specialties, and, on the other, take up the decision on self-treatment due to availability of OTC medications. The aim of the present study was to assess the opinion of both patients and physicians about implementation of PC service in Polish community pharmacies.

A cross sectional study was carried out from September 2009 to September 2010 by a pharmacist (author of the study) on the basis of an anonymous questionnaire, where demand of physicians ($n = 104$) and patients ($n = 202$) for implementation of PC in a community pharmacy was assessed. The study was planned to determine the relationship between implementation of PC, cost and time of this service and patients' and physicians' socio-economic information.

Responding patients (85.64%) and physicians (76.92%) unanimously confirmed the need for implementation of PC. Most people convinced of the service implementation were 88.89% of physicians under the age of 35 and all the respondents were over 65 years of age ($p = 0.027$), just as 93.33% with service lesser than 5 years and 73.68% of respondents working a maximum of 20 years ($p = 0.023$). Mainly according to 90.00% of physicians with specialty in internal medicine and 92.59% of physicians of the group "Others" ($p = 0.012$), PC should be implemented in pharmacies. Women more frequently than men reckoned that appointments with a pharmacist should last up to

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15 min ($p = 0.012$). According to 77.78% of the youngest physicians and 83.33% of the oldest ones, appointments should last from 5 to 15 min ($p = 0.049$), and a similar opinion was shared by 80.77% of physicians without specialty and 77.78% of physicians of the group "Others" ($p = 0.0009$). According to patients, the mean cost of the visit should be USD 7. Physicians most often assessed the mean cost of the appointment at USD 14.

This study provides new data about implementation of PC in Poland. The increased patients' and physicians' willingness to benefit from this service provides pharmacists with opportunities to develop PC in community pharmacies.

1. Introduction

Transformations which affected health care in Poland in the last few years, apart from some positive aspects for pharmaceutical branches, such as very good supply or a wide range of available medications, also contributed to exacerbation of the situation of community pharmacies among other things by intensification of unhealthy competition. Aggressive advertising, breaking pharmaceutical law and even dumping very often dominate professional advice. It makes some pharmacists mainly entrepreneurs whose main aim is to obtain income essential for maintaining a pharmacy and earning profit. What is more, in the case of an insufficient number of employees, pharmacists are compelled to carry out non-specific administration duties, not related to work with patients, which could be fulfilled by persons without pharmaceutical education (Waszyk-Nowaczyk and Simon, 2009). Similar problems have also been noted in other countries (Hughes et al., 2010; Perraudin et al., 2011; Van den Brink et al., 2012; Ibrahim and Scott, 2013).

A pharmacist is the first person addressed by a patient with a health problem due to often an impossible immediate contact with a physician within the service of the National Health Fund in Poland (Jasińska and Orszulak-Michalak, 2009). Additionally, the mean time of a physician's advice is decreasing, so a medical examination of a patient is often followed by only providing the patient with a prescription and some evasive information (Kwilecki, 2009). Therefore patients often seek advice in community pharmacies, and frequently omit a visit to a physician's office. Implementation of PC is of great importance to patients, who, on the one hand, often follow complex pharmacological treatment regimens prescribed by several physicians of different specialties, and, on the other one, due to aggressive advertising, take up a decision on self-treatment (Szalonka and Sikorska, 2007; Modig and Kristensson, 2009; Wong et al., 2011; Chan et al., 2013). PC provides an opportunity to establish close cooperation between a pharmacist and a physician to ensure optimal pharmacotherapy conditions of a given patient to avoid problems of polypragmasy, and also offers the possibility of cost reduction resulting from reimbursement of medications dispensed in pharmacies (Al Mazroui et al., 2009; Onda et al., 2009; Westerlund and Marklund, 2009; Niquille et al., 2010; Santos et al., 2010; Krass et al., 2011; Waszyk-Nowaczyk and Simon, 2011). Appropriate cooperation between a physician, a pharmacist and a patient should also enhance the prestige of the pharmacist profession in Poland. Hence research was carried out determining opinions of both patients and physicians about implementation of PC service in community pharmacies. The study was planned to establish the relationship between implementation of PC, cost and time of this service and age, sex, and education of patients as well as age, sex, specialty, professional/scientific degree and length of service of physicians.

2. Materials and methods

A cross sectional study was carried out from September 2009 to September 2010 by a pharmacist (the author of the present study) on the basis of an anonymous questionnaire where physicians' and patients' demand for PC implementation in a community pharmacy was determined. The study included 104 physicians and 202 patients receiving services of four independent Poznan community pharmacies. The questionnaire was developed not only to examine physicians' and patients' willingness to pay for the service, but also to generate information to help pharmacists design PC in community pharmacies that patients would pay for. This study used only some of the collected information.

Respondents were asked to circle 'yes' or 'no' if they would be willing to pay for PC. Persons exhibiting willingness to pay for PC have been proposed with five sums which they would be willing to pay for the offered service: USD 1, 2, 5, USD 5–20, > 20. It is associated with Polish insurance and accounting system of pharmacy services with the National Health Fund, where one lump sum amounts to approximately 2 dollars. Also the time, which, in the opinion of a physician and a patient, a pharmacist should spend on delivering PC was assessed. Three categories were listed: less than 5 min, 5–15 min, more than 15 min. Socio-economic data included information about age, sex, specialty, professional/scientific degree and length of service of physicians, and age, sex and education of patients. The study was approved by the ethics review board of Poznan University of Medical Sciences.

The results were statistically analyzed with the use of Statistica 8.0 application (StatSoft®). In order to analyze relationships between the traits, taking into account sample size and frequency of analyzed categories of the examined traits, chi-square test of independence (χ^2) was used in the case of a large sample and a higher frequency of categories, and Fisher–Freeman–Halton test for low expected frequencies. For all the statistical analyses, a significance level of 0.05 was used to assess differences between groups.

3. Results

In the research, 202 questionnaires were collected from patients (Table 1) and 104 questionnaires from physicians

Table 1 Patients' frequency distribution of the study.

	Frequency (*n*)	Percentage (%)
Age (years)		
Under 35	76	37.62
35–64	103	50.99
65 +	23	11.39
Total	202	100.00
Gender		
Male	49	24.26
Female	153	75.74
Total	202	100.00
Education		
Primary/vocational	34	16.83
Secondary	72	35.65
Student	42	20.79
Higher	54	26.73
Total	202	100.00

Table 2 Physicians' frequency distribution of the study.

	Frequency (*n*)	Percentage (%)
Age (years)		
Under 35	36	34.62
35–64	62	59.61
65 +	6	5.77
Total	104	100.00
Gender		
Male	41	39.42
Female	63	60.58
Total	104	100.00
Specialty		
Family medicine	21	20.19
Internal medicine	30	28.85
No specialty	26	25.00
Others:	27:	25.96:
Pediatrics	4	3.85
General surgery	4	3.85
Cardiology	4	3.85
Ophthalmology	3	2.88
Clinical oncology	3	2.88
Obstetrics and gynecology	3	2.88
Dermatology and venereology	2	1.93
Orthopedics and traumatology	1	0.96
Otolaryngology	1	0.96
Psychiatry	1	0.96
Radiology	1	0.96
Total	104	100.00
Scientific/Professional degree		
MD	88	84.62
PhD, MD	14	13.46
Prof., PhD, MD	2	1.92
Total	104	100.00
Length of service as a physician		
Under 5 years	30	28.85
5–20 years	36	34.61
Over 20 years	38	36.54
Total	104	100.00

(Table 2). About 60.00% of patients were 35–64 years old, while women accounted for 75.74% of patients. Most of the respondents had at least secondary education (83.17%). About 60.00% of physicians were women at the age of 35–64 years. Predominant physicians' specialties included internal medicine (28.85%) and family medicine (20.19%). Most of the responding physicians had no scientific degree (84.62%). The length of service of the physicians in the predominant group was longer than 5 years (71.15%).

The research assessed the need for implementation of PC and time and cost of an appointment with a pharmacist for the purpose. The need was unanimously confirmed by 85.64% of responding patients (Fig. 1) and 76.92% of physicians (Fig. 2). The decision was independent of age, education and sex of patients (Table 3). The results concerning opinions of physicians are presented in Table 4. Most respondents convinced of PC implementation were 88.89% of physicians under the age of 35 and all the respondents over the age of 65 ($p = 0.027$), similarly as 93.33% of physicians with a length of service shorter than 5 years and 73.68% of respondents working for a maximum of 20 years ($p = 0.023$). According to 90.00% of physicians with specialty in internal medicine and 92.59% of physicians of the group "Others" ($p = 0.012$), implementation of PC in pharmacies should take place.

Percentages of patients reckoned that the appointment should last up to 5 min, and from 5 to 15 min were comparative (43.07% vs 40.59%, Fig. 3). A considerable percentage of physicians stated that an appropriate appointment time was at least 5 min with a maximum of 15 min (67.31%, Fig. 4). Women more often than men stated that appointments with a pharmacist should last up to 15 min ($p = 0.012$, Table 5). Table 6 collates detailed information about physicians, where 77.78% of the youngest physicians and 83.33% of the oldest ones reckoned that the visit should last from 5 to 15 min ($p = 0.049$), similarly as 80.77% of physicians without specialty and 77.78% of physicians of the group "Others" ($p = 0.0009$).

The questionnaire also addressed the issue of paying for PC. The mean cost of the appointment according to patients should amount to about USD 7, and most of the respondents
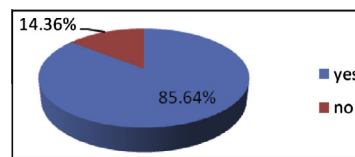
Figure 1 Patients' willingness to implement PC in community pharmacies, *n* = 202.
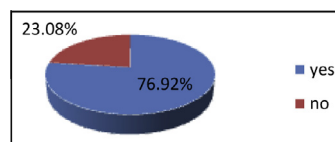
Figure 2 Physicians' willingness to implement PC in community pharmacies, *n* = 104.

Table 3 Patients' opinions concerning implementation of PC in community pharmacies and their sex, age and education.

	Yes *n* (%)	No *n* (%)	*p*-Value
Age			
Under 35	68 (89.47)	8 (10.53)	0.473
35–64	85 (82.52)	18 (17.48)	
65 +	4 (17.39)	19 (82.61)	
Total	157 (77.72)	45 (22.28)	
Gender			
Male	41 (83.67)	8 (16.33)	0.396
Female	135 (88.24)	18 (11.76)	
Total	176 (87.13)	26 (12.87)	
Education			
Primary/vocational	26 (76.47)	8 (23.53)	0.407
Secondary	61 (84.72)	11 (15.28)	
Student	8 (90.47)	4 (9.53)	
Higher	49 (90.74)	5 (9.26)	
Total	174 (86.14)	28 (13.86)	

Table 4 Physicians' opinions concerning implementation of PC in community pharmacies and their sex, age and education.

	Yes *n* (%)	No *n* (%)	*p*-Value
Age			
Under 35	32 (88.89)	4 (11.11)	0.027[*]
35–64	42 (67.74)	20 (32.26)	
65 +	6 (100.00)	0 (0.00)	
Total	80 (76.92)	24 (23.08)	
Gender			
Male	33 (80.49)	8 (19.51)	0.635
Female	47 (74.60)	16 (25.40)	
Total	80 (76.92)	24 (23.08)	
Specialty			
Family medicine	13 (61.90)	8 (38.10)	0.012[*]
Internal medicine	27 (90.00)	3 (10.00)	
No specialty	18 (69.23)	8 (30.77)	
Others	25 (92.59)	2 (7.41)	
Total	83 (79.81)	21 (20.19)	
Scientific/professional degree			
MD	67 (76.14)	21 (23.86)	0.496
PhD, MD	12 (85.71)	2 (14.29)	
Prof., PhD, MD	1 (50.00)	1 (50.00)	
Total	80 (76.92)	24 (23.08)	
Length of service as a physician			
Under 5 years	28 (93.33)	2 (6.67)	0.023
5–20 years	24 (66.67)	12 (33.33)	
Over 20 years	28 (73.68)	10 (26.32)	
Total	80 (76.92)	24 (26.32)	

[*] $p < 0.05$.

indicated a sum of USD 1 (Fig. 5), more precisely – 41.86% of persons aged from 35 to 64 years ($p = 0.034$) and 50.00% of respondents with primary and occupational education ($p = 0.024$, Table 7). Physicians most often determined mean appointment cost at USD 14 by indicating a sum of the range of USD 5–20 (Fig. 6). Table 8 shows that the sum was most often stated by about 50.00% of persons over the age of 35
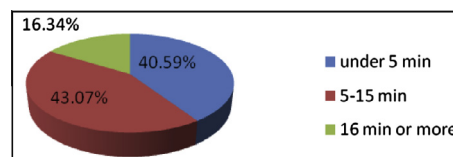
Figure 3 Patients' willingness to spend time on delivering PC, $n = 202$.
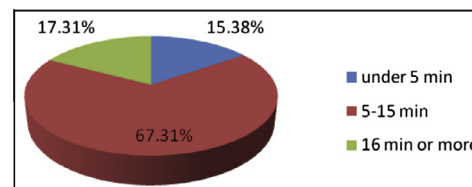
Figure 4 Physicians' willingness to spend time on delivering PC, $n = 104$.

($p = 0.005$), by 55.56% of persons with specialty in family medicine and by 66.67% of persons of the group without specialty ($p = 0.024$). The other patients (27.72%) and physicians (30.77%) stated that PC should be a service reimbursed by state (Figs. 5 and 6).

4. Discussion

The need for implementation of PC was confirmed on the basis of both patients' and physicians' opinions. The greatest acceptance was exhibited by internal medicine physicians, young physicians without specialty and, what is especially important, also by the group of the greatest length of service – more than 20 years. It probably results from many years of experience, which is important for establishing appropriate cooperation between physicians and pharmacists in Poland. The youngest physicians confirmed the need for joint work in the interdisciplinary team on safety of pharmacotherapy of a patient (Cerbin and Lulek, 2013). However, researches outside Poland demonstrated no dependence on physician's age (Azhar et al., 2004; Matowe et al., 2006; Zaidan et al., 2011), and, even in contrast to the results obtained in the study, it has been reported that the higher length of service of a given physician, the lower demands he makes on a pharmacist (Smith et al., 2002). Data available in the literature indicate that patients' experiences result in their positive attitude toward PC (Montgomery et al., 2007) and make them expect wider and wider range of the new service (Kassam et al., 2009). With time they begin to notice the differences between "a friendly advice" and substantiated PC, which, according to respondents, is much more beneficial (Montgomery et al., 2010; Robinson et al., 2010). The need for implementation of PC in Poland has been confirmed by numerous researches carried out in the world, proving health benefits of PC to a patient. It is of particular importance since many prescribed medications are not taken according to a physician's recommendations, which contributes to an increase in the number of hospitalized patients and therefore increased expenditure on health care (Waserfallen et al., 2011). However, appropriate pharmacist's interven-

Table 5 Patients' opinions concerning time which a pharmacist should spend on delivering PC and their sex, age and education.

	< 5 min. n (%)	5–15 min n (%)	15 min. n (%)	p-Value
Age				
Under 35	32 (42.11)	32 (42.11)	12 (15.78)	0.890
35–64	42 (40.78)	46 (44.66)	15 (14.56)	
65+	9 (39.13)	9 (39.13)	5 (21.74)	
Total	83 (41.09)	87 (43.07)	32 (15.84)	
Gender				
Male	31 (63.27)	13 (26.53)	5 (10.20)	0.012[*]
Female	96 (62.75)	39 (25.49)	18 (11.76)	
Total	127 (62.87)	52 (25.74)	23 (11.39)	
Education				
Primary/vocational	14 (41.18)	10 (29.41)	10 (29.41)	0.149
Secondary	25 (34.72)	33 (45.83)	14 (19.45)	
Student	16 (38.09)	1 9 (45.24)	7 (16.67)	
Higher	28 (51.85)	24 (44.44)	2 (3.71)	
Total	83 (41.09)	86 (42.57)	33 (16.34)	

[*] $p < 0.05$.

Table 6 Physicians' opinions concerning time which a pharmacist should spend on delivering PC and their sex, age and education.

|	< 5 min. n (%)	5–15 min n (%)	15 min. n (%)	p-Value
Age				
Under 35	6 (16.67)	28 (77.78)	2 (5.55)	0.049[*]
35–64	9 (14.52)	34 (54.84)	19 (30.64)	
65+	1 (16.67)	5 (83.33)	0 (0.00)	
Total	16 (15.39)	67 (64.42)	21 (20.19)	
Gender				
Male	10 (24.39)	27 (65.85)	4 (9.76)	0.062
Female	5 (7.94)	42 (66.67)	16 (25.39)	
Total	15 (14.42)	69 (66.35)	20 (19.23)	
Specialty				
Family medicine	5 (23.81)	13 (61.91)	3 (14.28)	0.0009[*]
Internal medicine	2 (6.67)	13 (43.33)	15 (50.00)	
No specialty	3 (11.54)	21 (80.77)	2 (7.69)	
Others	6 (22.22)	21 (77.78)	0 (0.00)	
Total	16 (15.38)	68 (65.39)	20 (19.23)	
Scientific/professional degree				
MD	12 (13.64)	58 (65.91)	18 (20.45)	0.644
PhD, MD	4 (28.57)	9 (64.29)	1 (7.14)	
Prof., PhD, MD	0 (0.00)	2 (100.00)	0 (0.00)	
Total	16 (15.38)	69 (66.35)	19 (18.27)	
Length of service as a physician				
Under 5 years	4 (13.33)	24(80.00)	2(6.67)	0.087
5–20 years	6 (16.67)	19(52.78)	11(30.55)	
Over 20 years	5 (13.16)	23 (60.53)	10 (26.31)	
Total	15 (14.42)	66 (63.46)	23 (22.12)	

[*] $p < 0.05$.
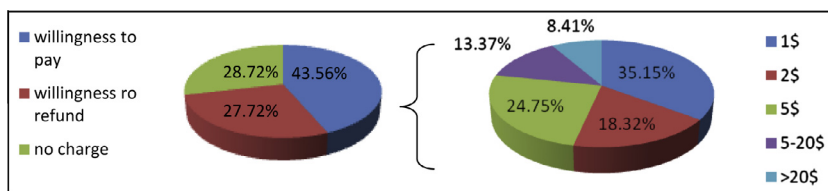
Figure 5 Patients' willingness to pay for PC, $n = 202$.

Table 7 Patients' opinions concerning paying for PC and their sex, age and education.

	1$ n (%)	2$ n (%)	5$ n (%)	5–20$ n (%)	20$ n (%)	p-Value
Age						
Under 35	7 (23.22)	6 (20.00)	8 (26.67)	4 (13.33)	5 (16.67)	0.034*
35–64	18(41.86)	8 (18.61)	11 (25.58)	4 (9.30)	2 (4.65)	
65+	4 (26.67)	4 (26.67)	0 (0.00)	7 (46.66)	0 (0.00)	
Total	29 (32.95)	18 (20.45)	19 (21.59)	15 (17.05)	7 (7.96)	
Gender						
Male	12 (42.86)	5 (17.86)	5 (17.86)	3 (10.71)	3 (10.71)	0.804
Female	21 (35.00)	11 (18.33)	16 (26.67)	8 (13.33)	4 (6.67)	
Total	33 (37.50)	16 (18.18)	21 (23.86)	11 (12.50)	7 (7.96)	
Education						
Primary/vocational	6 (50.00)	1 (8.33)	1 (8.33)	4 (33.33)	0 (0.00)	0.024*
Secondary	15 (46.87)	4 (12.50)	6 (18.75)	5 (15.63)	2 (6.25)	
Student	2 (12.50)	1 (6.25)	7 (43.75)	3 (18.75)	3 (18.75)	
Higher	8 (28.57)	12 (42.86)	5 (17.86)	1 (3.57)	2 (7.14)	
Total	31 (35.23)	18 (20.45)	19 (21.59)	13 (14.77)	7 (7.96)	

* $p < 0.05$.
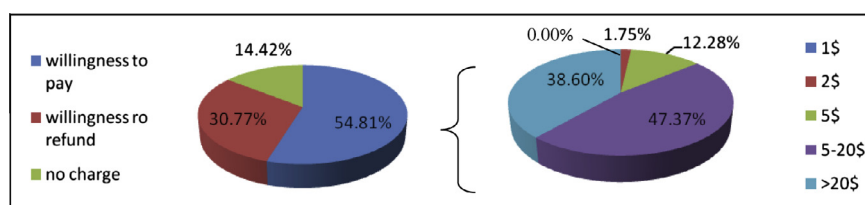
Figure 6 Physicians' willingness to pay for PC, $n = 104$.

Table 8 Physicians' opinions concerning paying for PC and their sex, age and education.

	1$ n (%)	2$ n (%)	5$ n (%)	5–20$ n (%)	20$ n (%)	p-Value
Age						
Under 35	0 (0.00)	1 (6.25)	2 (12.50)	6 (37.50)	7 (43.75)	0.005*
35–64	0 (0.00)	0 (0.00)	4 (12.90)	16 (51.61)	11 (35.49)	
65+	0 (0.00)	0 (0.00)	0 (0.00)	5 (50.00)	5 (50.00)	
Total	0 (0.00)	1 (1.75)	6 (10.53)	27 (47.37)	23 (40.35)	
Gender						
Male	0 (0.00)	1 (4.00)	2 (8.00)	15 (60.00)	7 (28.00)	0.877
Female	0 (0.00)	0 (0.00)	5 (15.63)	9 (28.12)	18 (56.25)	
Total	0 (0.00)	1 (1.75)	7 (12.28)	24 (42.11)	25 (43.86)	
Specialty						
Family medicine	0 (0.00)	0 (0.00)	1 (11.11)	5 (55.56)	3 (33.33)	0.024*
Internal medicine	0 (0.00)	0 (0.00)	2 (10.00)	9 (45.00)	9 (45.00)	
No specialty	0 (0.00)	0 (0.00)	1 (8.33)	8 (66.67)	3 (25.00)	
Others	0 (0.00)	1 (6.25)	3 (18.75)	7 (43.75)	5 (31.25)	
Total	0 (0.00)	1 (1.75)	7 (12.28)	29 (50.88)	20 (35.09)	
Scientific/professional degree						
MD	0 (0.00)	1 (2.27)	5 (11.36)	21 (47.73)	17 (38.64)	0.663
PhD, MD	0 (0.00)	0 (0.00)	1 (8.33)	8 (66.67)	3 (25.00)	
Prof., PhD, MD	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1(100.00)	
Total	0 (0.00)	1 (1.75)	6 (10.53)	29 (50.88)	21 (36.84)	
Length of service as a physician						
Under 5 years	0 (0.00)	1 (6.67)	3 (20.00)	6 (40.00)	5 (33.33)	0.221
5–20 years	0 (0.00)	0 (0.00)	1 (5.26)	10 (52.63)	8 (42.11)	
Over 20 years	0 (0.00)	0 (0.00)	3 (13.04)	13 (56.52)	7 (30.44)	
Total	0 (0.00)	1 (1.75)	7 (12.28)	29 (50.88)	20 (35.09)	

* $p < 0.05$.

tion enables to prevent medication problems, resulting in obtaining right effects of prescribed pharmacotherapy (Leemans et al., 2003; Van Mil et al., 2004; Williams et al., 2008). According to Szalonka studies (2010), half of responding physicians determined the actual odds in favor of PC implementation, and the most considerable obstacle indicated by respondents was lack of a consistent computer application and inappropriate system of communication between physicians and pharmacists (Szalonka, 2010).

Patients, just as physicians, stated that a PC appointment should last up to 15 min. Women were interested in a longer time of the appointment, which was indicated also by two physician groups: of the physicians with a short length of service and of those with the longest service. Scientific researches confirm that a pharmacist spends an average of up to 15 min per patient on consulting medication problems (Campbell and Saulie, 1998; Look et al., 2012). However, it is disturbing that the time of the appointment indicated by half of the respondents in the questionnaire was up to 5 min. The situation may result from unawareness as well as from misunderstanding of PC principles. The reason is that such time is insufficient for delivering the service as it only allows to provide essential information, e.g., information concerning OTC medications taken (Hong et al., 2010).

On the basis of the conducted research, it was determined that about 43.56% of patients and 54.81% of physicians indicated the need for paying for the service. Evaluation of PC service was carried out and, in patients' opinions, the averaged value amounted to USD 7, and, in physicians' opinion, it was USD 14. About 1/3 of examined patients and physicians indicated that the service should be reimbursed. A study by Dryja et al. confirms that patients in Poland are aware of the costs of the care, and reckon that a pharmacist should receive additional payment at a maximum of USD 7 and the National Health Fund should be the payer (Dryja et al., 2011). Also Skowron in her paper noted that over half of responding patients were willing to pay for the visit USD 2–3, and 31.00% of respondents indicated a sum of USD 4–7. The figure was not dependent on obtained income (Skowron, 2011). It was observed in the USA in 1994 that 20.00% of patients were inclined to pay a sum from 50 cents to USD 1.5 for a consulting service concerning used OTC medications (Gore and Madhavan, 1994). However, according to a study conducted several years later, the interest in paying for pharmaceutical services has been growing and reached 55.00% support, while USD 5 and more was indicated as an adequate level of payment (Hong et al., 2010). Wang et al. in their paper found that the service of Medication Management Therapy is economically viable when a pharmacist's salary ranges from USD 30–100 an hour (Wang et al., 2011).

This study indicates that implementation of PC is expected in the Polish reality. However, there are still problems with understanding the idea of good pharmacy practice and PC. Also the realities of everyday work of a pharmacist are an obstacle, where there is no enactment of the Polish Pharmacist Law, sources of service financing, appropriate place for a talk with a patient and no additional staff hired in a pharmacy (Skowron, 2011).

The limitation of this study is the study sample because it is not representative of the population of both patients and physicians. The study sample consisted of patients and physicians in Poznan. Thus, the results may not be generalizable to populations other than the study sample. The patients' and physi-cians' willingness to pay for PC was a subjective opinion of respondents not an actual transaction data. Surveyed may not actually pay for PC visit.

5. Conclusion

There is little evidence from Polish studies so this investigation supplies new data about implementation PC in Poland. The increased patients' and physicians' willingness to benefit from this service provides pharmacists with opportunities to develop PC in community pharmacies.

The results of the study assure positive evidence to support PC. It is expected by patients and physicians in the opportunity of individualized and controlled pharmacotherapy in close cooperation with pharmacists. Future investigation is needed to understand how to better organize and finance these services in Poland.

References

Al Mazroui, N., Kamal, M., Ghabash, N., Yacout, T., Kole, P., McElnay, J., 2009. Influence of pharmaceutical care on health outcomes in patients with type 2 diabetes mellitus. Br. J. Clin. Pharmacol. 67, 547–557.

Azhar, S., Hassali, M., Ibrahi, M., 2004. Doctors' perception and expectations of the role of the pharmacist in Punjab. Trop. J. Pharm. Res. 9, 205–222.

Campbell, R., Saulie, B., 1998. Providing pharmaceutical care in a physician office. J. Am. Pharm. Assoc. 38, 495–499.

Cerbin, M., Lulek, J., 2013. Interprofessional education – a short-term trend or a way to improve the quality of health care? Farm. Pol. 69, 86–89.

Chan, F., Wong, F., So, W., Kung, K., Wong, C., 2013. How much do elders with chronic conditions know about their medications? BMC Geriatr. 13, 59.

Dryja, M., Skowron, A., Turska, W., 2011. Ocena gotowości pacjentów do pacenia za usugi farmaceutyczne, In: Abstract Book – Prowadzenie Opieki Farmaceutycznej, Hucisko koo Zawiercia. pp. 10–11.

Gore, P., Madhavan, S., 1994. Consumers' preference and willingness to pay for pharmacist counseling for non-prescription medicines. J. Clin. Pharm. Ther. 19, 17–25.

Hong, S., Spadaro, D., West, D., Tak, S., 2010. Patent valuation of pharmacist services for self-care with OTC medications. J. Clin. Pharm. Ther. 30, 193–199.

Hughes, C., Hawwa, A., Scullin, C., Anderson, C., Bernsten, C., Björnsdóttir, I., Cordina, M., Costa, F., De Wulf, I., Eichenberger, P., Foulon, V., Henman, M., Hersberger, K., Schaefer, M.,

Søndergaard, Tully, M., Westerlund, T., McElnay, J., . Provision of pharmaceutical care by community pharmacists: a comparison across Europe. Pharm. World Sci. 32, 472–487.

Ibrahim, A., Scott, J., 2013. Community pharmacists in Khartoum State, Sudan: their current roles and perspectives on pharmaceutical care implementation. Int. J. Clin. Pharm. 35, 236–243.

Jasińska, M., Orszulak-Michalak, D., 2009. Optymalizacja farmakoterapii w przebiegu opieki farmaceutycznej. Aptekarz Polski 39, 14–19.

Kassam, R., Collins, J., Berkowitz, J., 2009. Developing anchored measures of patient satisfaction with pharmaceutical care delivery: experiences versus expectations. Patient Prefer. Adherence 3, 113–122.

Krass, I., Mitchell, B., Song, Y., Stewart, K., Peterson, G., Hughes, J., Smith, L., White, L., Armour, C., 2011. Diabetes medication assistance service stage 1: impact and sustainability of glycemic and lipids control in patients with type 2 diabetes. Diabet. Med. 28, 987–993.

Kwilecki, W., 2009. Zamiast opieki farmaceutycznej. Gazeta. Farmaceutyczna 3, 40–41.

Leemans, L., Veroeveren, L., Buelens, J., 2003. Frequency and trends of interventions on prescriptions in Flemish pharmacies. Pharm. World Sci. 25, 65–69.

Look, K., Mott, D., Leedham, R., Kreling, D., Hermansen-Kobulnicky, C., 2012. Pharmacy participation and claim characteristics in the Wisconsin medicaid pharmaceutical care program from 1996 to 2007. J. Manag. Care Pharm. 18, 116–128.

Matowe, L., Abahussain, E., Al-Saffar, N., Bihzad, S., Al-Foraih, A., Al-Kandery, A., 2006. Physicians' perceptions and expectations of pharmacists' professional duties in government hospitals in Kuwait. Med. Princ. Pract. 15, 185–189.

Modig, S., Kristensson, J., 2009. Frail elderly patients in primary care – their medication knowledge and beliefs about prescribed medicines. Eur. J. Pharmacol. 13, 151–155.

Montgomery, A., Kälvemark-Sporrong, S., Henning, M., Tully, M., Kettis-Lindblad, A., 2007. Implementation of a pharmaceutical care service: prescriptionists', pharmacists' and doctors' views. Pharm. World Sci. 29, 593–602.

Montgomery, A., Kälvemark-Sporrong, S., Manap, N., Tully, M., Lindblad, A., 2010. Receiving a pharmaceutical care service compared to receiving standard pharmacy service in Sweden-how do patients differ with regard to perceptions of medicine use and the pharmacy encounter? Res. Social Adm. Pharm. 6, 185–195.

Niquille, A., Ruggli, M., Buchmann, M., Jordan, D., Bugnon, O., 2010. The nine-year sustained cost-containment impact of Swiss pilot physicians–pharmacists quality circles. Ann. Pharmacother. 44, 650–657.

Onda, M., Sakura, H., Hayase, Y., Sakamaki, H., Arakawa, Y., Yasukawa, F., 2009. Effects of patient–pharmacist communication in the treatment of asthma. Yakugaku Zasshi 129, 427–433.

Perraudin, C., Brion, F., Bourdon, O., Pelletier-Fleury, N., 2011. The future of pharmaceutical care in France: a survey of final-year pharmacy students' opinions. BMC Clin. Pharmacol. 25, 6.

Robinson, J., Segal, R., Lopez, L., Doty, R., 2010. Impact of a pharmaceutical care intervention on blood pressure control in a chain pharmacy practice. Ann. Pharmacother. 44, 88–96.

Santos Dde, O., Martins, M., Cipriano, S., Pinto, R., Cukier, A., Stelmach, R., 2010. Pharmaceutical care for patients with persistent asthma: assessment of treatment compliance and use of inhaled medications. J. Bras. Pneumol. 36, 14–22.

Skowron, A., 2011. Model opieki farmaceutycznej dla polskiego systemu zdrowotnego (Disertation). Jagiellonian University in Krakow.

Szalonka, K., Sikorska, S., 2007. Patients opinion on Polish pharmacies – the report from questionnaire study. Farm. Pol. 10, 423–429.

Waszyk-Nowaczyk, M., Simon, M., 2009. The problems with implementation of pharmaceutical care in Poland. Farm. Pol. 65, 713–716.

Waszyk-Nowaczyk, M., Simon, M., 2011. Czym kieruje się pacjent dokonując wyboru preparatów OTC w aptece. In: Krajewski-Siuda, K. (Ed.), Samoleczenie. Instytut Sobieskiego, Krakow, pp. 186–191.

Smith, W., Ray, M., Shannon, D., 2002. Physicians' expectations for pharmacists. Am. J. Health Syst. Pharm. 59, 50–57.

Szalonka, K., 2010. Szanse wdrożenia opieki farmaceutycznej w polskich aptekach w świetle badań. In: Szalonka, K. (Ed.), Opieka Farmaceutyczna w Polsce – Warunki i Szanse Wdrożenia. Continuo., Wroclaw. pp. 85–102.

Wang, J., Hong, S., Meng, S., Brown, L., 2011. Pharmacists' acceptable levels of compensation for MTM services: a conjoint analysis. Res. Social. Adm. Pharm. 7, 383–395.

Waserfallen, J., Livio, F., Buclin, T., Tillet, L., Yersin, B., Biollaz, J., 2011. Rate, type, and cost of adverse drug reactions in emergency department admissions. Eur. J. Intern. Med. 2, 442–447.

Westerlund, T., Marklund, B., 2009. Assessment of the clinical and economic outcomes of pharmacy interventions in drug-related problems. J. Clin. Pharm. Ther. 34, 319–327.

Williams, A., Manias, E., Walker, R., 2008. Interventions to improve medication adherence in people with multiple chronic conditions: a systematic review. J. Adv. Nurs. 63, 132–143.

Wong, F., Chan, F., You, J., Wong, E., Yeoh, E., 2011. Patient self-management and pharmacist-led patient self-management in Hong Kong: a focus group study from different healthcare professionals' perspectives. BMC Health Serv. Res. 13, 121.

Van den Brink, H., Nanthini Haridass, I., Siranyan, V., 2012. The development and implementation of pharmaceutical care across borders. Ann. Pharm. Fr. 70, 82–87.

Van Mil, J., Schulz, M., Tromp, T., 2004. Pharmaceutical care, European developments in concepts, implementation, teaching, and research: a review. Pharm. World Sci. 26, 303–311.

Zaidan, M., Singh, R., Wazaify, M., Tahaineh, L., 2011. Physicians' perceptions, expectations, and experience with pharmacists at Hamad Medical corporation in Qatar. J. Multidiscip. Healthcare 4, 85–90.