

OPINIONS OF PATIENTS ON COMMUNITY PHARMACY-BASED BLOOD PRESSURE CONTROL COUNSELLING MODEL

MAGDALENA WASZYK-NOWACZYK^{1*}, WERONIKA GUZENDA², BEATA PLEWKA³,
MICHAŁ MICHALAK⁴, ŁUKASZ STRYCZYŃSKI⁵, MAGDALENA CERBIN-KOCZOROWSKA⁶,
MICHAŁ BYLINIAK⁷, ANNA RATKA⁸

¹Department of Pharmaceutical Technology, Pharmacy Practice Division, Poznan University of Medical Sciences, 6 Grunwaldzka Street, 60-780 Poznan, Poland

²Student's Pharmaceutical Care Group, Department of Pharmaceutical Technology, Pharmacy Practice Division, Poznan University of Medical Sciences, 6 Grunwaldzka Street, 60-780 Poznan, Poland

³Medicover Pharmacy, 88 Baraniaka Street, 61-131 Poznan, Poland

⁴Department of Computer Science and Statistics, Poznan University of Medical Sciences, 7 Rokietnicka Street, 60-806 Poznan, Poland

⁵Department of Hypertensiology, Angiology and Internal Medicine, Poznan University of Medical Sciences, 1/2 Długa Street, 61-848 Poznan, Poland

⁶Department of Medical Education, Poznan University of Medical Sciences, 7 Rokietnicka Street, 60-806 Poznan, Poland

⁷Polish Pharmaceutical Chamber, 77/6 Stefana Zeromskiego Street, 01-882 Warszawa, Poland

⁸Wegmans School of Pharmacy, St. John Fisher College, 3690 East Avenue, Rochester, NY 14618, United States of America

*corresponding author: mwaszyk@ump.edu.pl

Manuscript received: September 2019

Abstract

In Poland, 10.5 million people have too high blood pressure and a half of them don't know about it. Early detection of high blood pressure is critical also in community pharmacy with patients' full satisfaction and effective collaboration between pharmacists and physicians. So the aim of the study was to assess patients' opinion on community pharmacy-based practice model for blood pressure screening and counselling in Poznan (Poland). 96.9% of patients felt that the service met their expectations. An average level of patients' knowledge was significantly improved after the education session ($p < 0.0001$). Obese people assessed the value of professional counselling at significantly lower level ($p = 0.0311$). Individuals who abused alcohol were less likely to appreciate the comprehensibility of education ($p = 0.0267$). In general, the community pharmacy-based blood pressure control counselling model met the patients' expectations and resulted in patient satisfaction with the service.

Rezumat

În Polonia, 10,5 milioane de oameni sunt hipertensivi și jumătate dintre ei nu știu acest lucru. Detectarea precoce a hipertensiunii arteriale este esențială și în farmacia comunitară pentru o colaborare eficientă între farmaciști, medici și pacienți. Deci, scopul studiului a fost evaluarea opiniei pacienților cu privire la modelul de *screening* și consiliere privind tensiunea arterială utilizat în farmaciile comunitare din Poznan (Polonia). 96,9% dintre pacienți au considerat că acest serviciu a fost conform așteptărilor. Nivelul mediu de cunoștințe al pacienților a fost îmbunătățit semnificativ după sesiunea de informare ($p < 0,0001$). Persoanele obeze au evaluat valoarea consilierii profesionale la un nivel semnificativ mai scăzut ($p = 0,0311$). Persoanele consumatoare de alcool au fost mai puțin susceptibile să aprecieze această consiliere ($p = 0,0267$). În general, modelul comunitar de consiliere privind controlul tensiunii arteriale folosit în farmacie a îndeplinit așteptările pacienților și a condus la satisfacția acestora.

Keywords: pharmacist, pharmaceutical counselling, community pharmacy, blood pressure measurement

Introduction

Community pharmacies have been providing crucial healthcare services for patients for many years. Pharmacy professionals around the world provide medication dispensing, expert advice and participate in disease prevention services and health promotion [9, 20]. Pharmacies are an acclaimed place where people seek help in the treatment of minor ailments as well as chronic diseases. For this reason, the community pharmacists are uniquely positioned to provide health

screening programs to facilitate earlier diagnosis by a physician or identification of risk factors [2]. An important aspect of the pharmacist's professional practice is the participation in screening tests performed in community pharmacies, including identification of risk factors for hypertension. This preventive patient care may result in lower the occurrence of complications from chronic diseases [5]. Worldwide, health services are implemented and assessed to improve treatment of chronic illnesses, while providing high-quality patient counselling [10]. The rapidly growing emphasis on a

patient-centred health care is recognized as an integral part of high-quality healthcare [1]. A pharmacy located in a community helps people manage medication therapy as well as detect and treat chronic diseases such as e.g. hypertension [4].

Cardiovascular diseases are the leading cause of death in the world and accounts for around 17 million deaths *per year* [25]. In Poland, 10.5 million people have elevated blood pressure and a half of them don't even know about it [21]. Appropriate patient education and regular blood pressure monitoring in community pharmacy, collaboration between pharmacists and physicians, as well as education of patients about the importance of systematic control may improve early detection of high blood pressure [24].

The role of a pharmacist in the Polish health care system is now widely discussed. It has been recognized that pharmacists working in a community pharmacy have opportunities to improve and ensure the effectiveness of pharmacotherapy and improvement of community health. The pharmacist is usually the first healthcare professional contacted by the patient, therefore, pharmacist's involvement in the early detection of chronic diseases, including hypertension is very important [20]. Professional counselling provided to patients in community pharmacy is the foundation of the pharmacy practice services all over the world and has positive long-lasting impact on patient's health and wellbeing [15]. Effective patient-pharmacist cooperation can have a very significant influence on outcomes of medication therapy, healthy lifestyle, and early detection of chronic diseases and appropriate patient self-treatment. It is very important to get a high patient's satisfaction [18]. Moreover, effective collaboration between health-care professionals e.g. physician and pharmacist, results in achievement of better health outcomes. Satisfied patients use health services more regularly. In addition, they are more likely to continue working with one physician or pharmacist and are more likely to adhere to drug dosing regimens [12, 22].

Therefore, a well-designed professional model for pharmacy-provided counselling may enable the development of standards for screening and control of blood pressure in a community pharmacy and improve patient satisfaction. Until now, no health screening procedures have been implemented in Polish community pharmacies. The aim of the study was to assess patients' opinion about a new community pharmacy-based blood pressure control counselling model.

Materials and Methods

Research was conducted between January and April 2019 in a community pharmacy in Poznan (Poland). Three pharmacists were involved in the study and implemented the counselling model during the blood pressure control in community pharmacy. These community pharmacists were trained by the study authors. During

the session in a pharmacy, blood pressure measurements were taken with certified sphygmomanometer - Medel, CHECK MY 17 [8] together with the patient's health education about healthy lifestyle and hypertension risk factors in a private place in community pharmacy. Pharmacist also recorded patient's body weight and collected various information including alcohol consumption, smoking, physical activity. Anonymous study participants were selected at random, at age of 18 years or older, and without diagnosed hypertension. Patients with elevated blood pressure ($\geq 140/90$ mmHg) were referred to their family doctor [10]. At the end of the counselling session with the pharmacist, the patient filled out a satisfaction survey, which included 3 open-ended and 10 close-ended questions. It is an important assessment tool that provides results which may translate into subsequent satisfaction of patients with the pharmacy services provided. After blood pressure measurement, counselling and education, the participant completed a satisfaction survey to assess their experience with the screening and education provided by the pharmacist. Patients could also estimate the level of their knowledge before and after the education. The study was approved by the ethics review board at Poznan University of Medical Sciences, Poland.

Statistica PL 12 (StatSoft) package was used to perform the statistical analysis. The correlations between the analysed nominal data were performed by Chi-square test of independence (χ^2). Also, the estimation scale (Likert scale) was used to assess the opinions of study participants. All statistical analyses were performed at $p < 0.05$.

Results and Discussion

The research involved 118 patients (69.5% women and 30.5% men). Most participants were aged between 30 - 39 (34.7%) and 19 - 29 (31.4%). 66.7% of participants had higher education. Detailed information is presented in Table I.

Table I

Characteristics of study participants			
	Study Participants n (%)		
	Male	Female	Total
Age [years]			
Total	36 (30.5)	82 (69.5)	118 (100)
19-29	6 (16.7)	31 (37.8)	37 (31.4)
30-39	16 (44.5)	25 (30.5)	41 (34.7)
40-49	8 (22.2)	19 (23.2)	27 (22.9)
50-59	3 (8.3)	3 (3.6)	6 (5.1)
> 60	3 (8.3)	4 (4.9)	7 (5.9)
Education			
Total	34 (30.6)	77 (69.4)	111 (100)
High school	1 (2.9)	1 (1.3)	2 (1.8)
Vocational	2 (5.9)	2 (2.6)	4 (3.6)
Secondary	8 (23.5)	23 (29.9)	31 (27.9)
Higher	23 (67.7)	51 (66.2)	74 (66.7)

55.9% of men and 32.9% of women had elevated BMI value (Figure 1). 2.5% abused alcohol and 32.2% declared no physical activity (Figure 2). The most common risk factors of cardiovascular diseases were family history (33.8%) and obesity

(26.2%) (Figure 3). Normal blood pressure was found in 65.3% of patients and 34.7% had blood pressure above 140/90 mmHg. The specific distribution of participants into different blood pressure categories is presented in Figure 4.

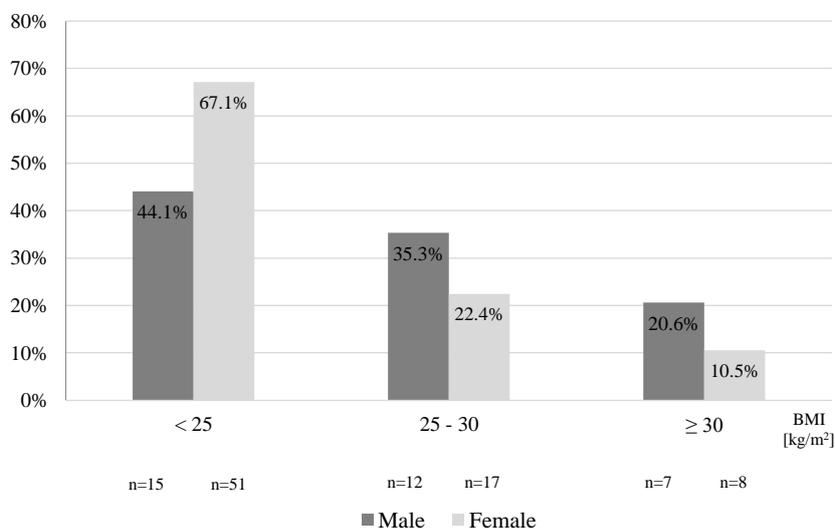


Figure 1.
Body mass index depending on the patients' gender (n = 110)

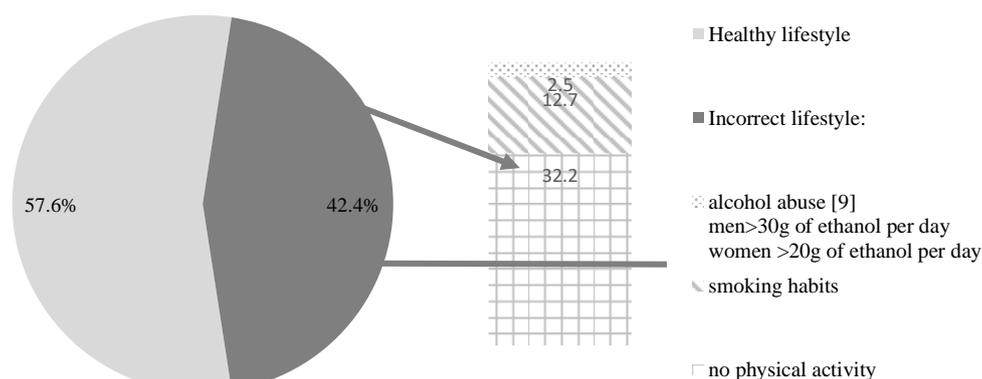


Figure 2.
Study participants' lifestyle (n = 118)

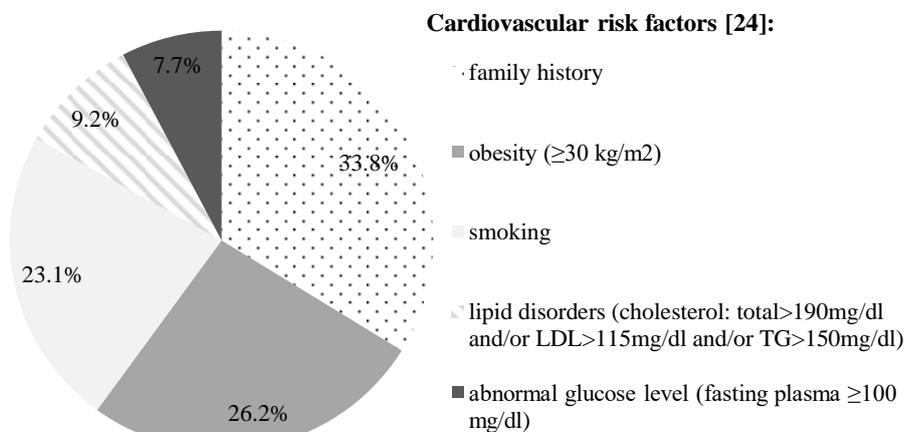


Figure 3.
Cardiovascular risk factors identified among study participants (n = 65)

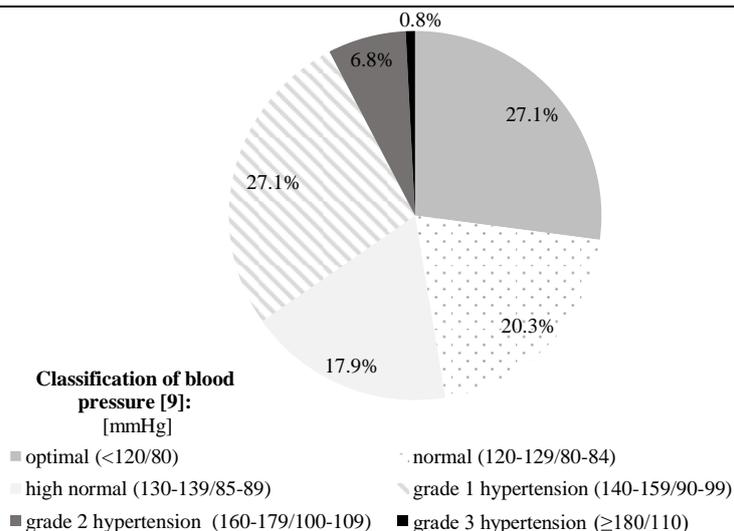


Figure 4.

Distribution of study participants into categories of blood pressure (n = 118)

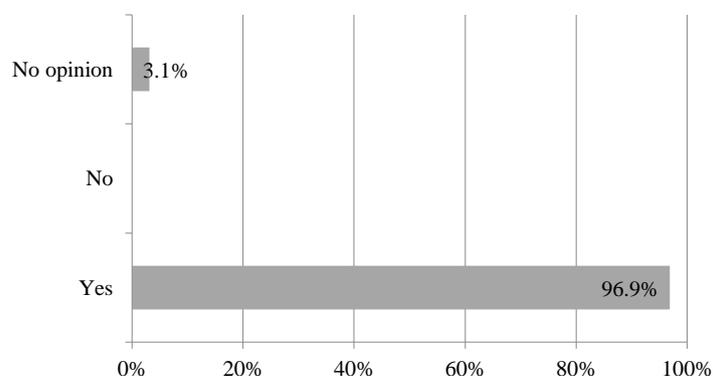


Figure 5.

Satisfaction with fulfilment of expectations about professional advice provided by community pharmacists (n = 96)

96.9% of patients felt that the service met their expectations (Figure 5). On a scale 0 to 5, the level of satisfaction was 4.99 and the purposefulness of the conducted education was at 4.88. The usefulness of the provided information was 4.81, while the comprehensibility

of the provided information was at 4.95. The pharmacist's attitude toward the patient was always assessed at maximum. A summary of the patients' assessments of education is shown on Figure 6.

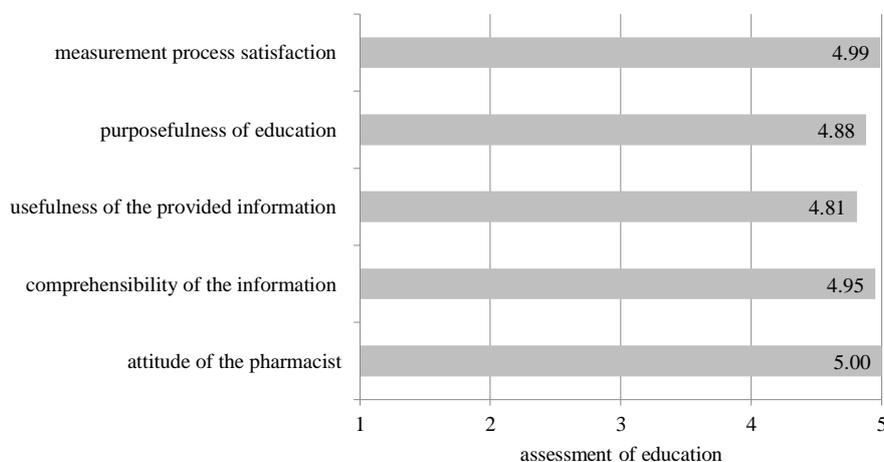


Figure 6.

Assessment of education provided during the blood pressure services at community pharmacy (n = 96)

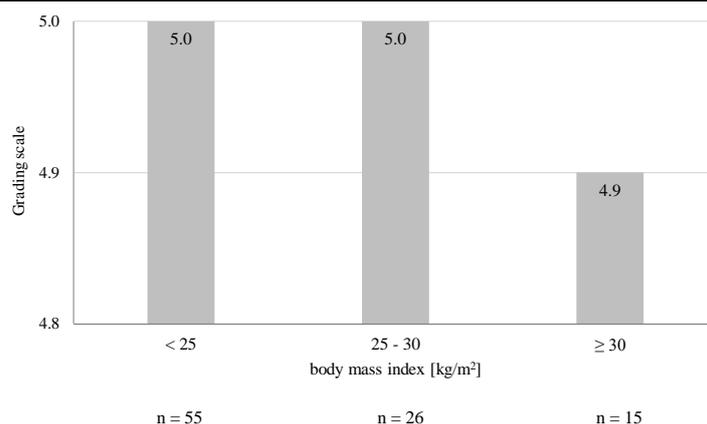


Figure 7.

The effect of body mass index on assessment of professional counselling (n = 96, p = 0.0311*)
 * results statistically significant at p < 0.05

Obese participants assessed the education at lower level than non-obese individual (p = 0.0311; Figure 7). Individuals who admitted to abusing alcohol showed

significantly lower appreciation of the comprehensibility of education (p = 0.0267, Figure 8).

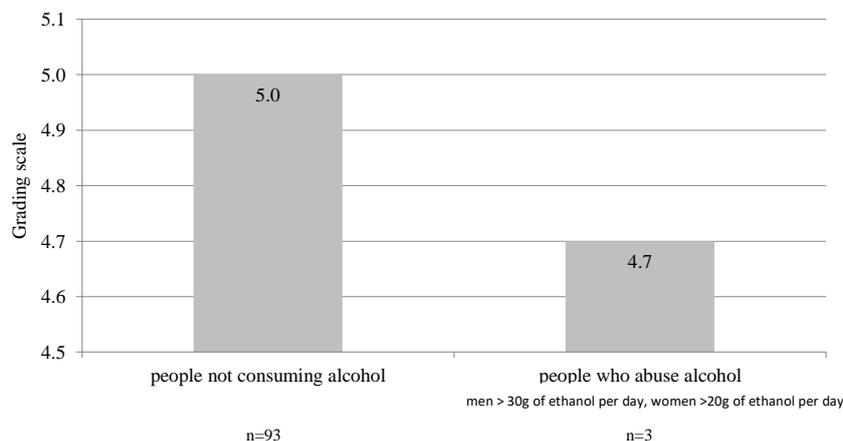


Figure 8.

The effect of alcohol consumption on assessment of the comprehensibility of the counselling provided by pharmacists (n = 96, p = 0.0267*)
 * results statistically significant at p < 0.05

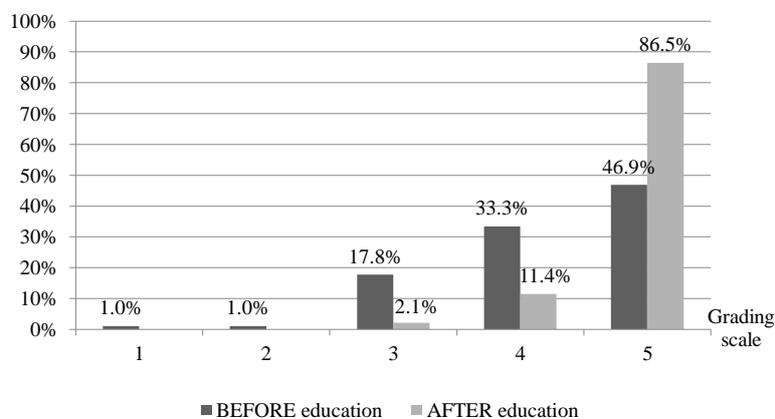


Figure 9.

The comparison of patients' knowledge level before and after education service provided by a community pharmacist (n = 96, p < 0.0001*)
 * results statistically significant at p < 0.05

After the pharmacist's teaching, 86.5% participants indicated the maximum score of 5 (vs. 46.9% before education), 11.4% participants selected score 4 (vs. 33.3% before education), and 2.1% selected score of

3 (vs. 17.8% before education) ($p < 0.0001$; Figure 9). The average of patients' knowledge increased significantly after pharmacist's consultation ($p < 0.0001$; Figure 10).

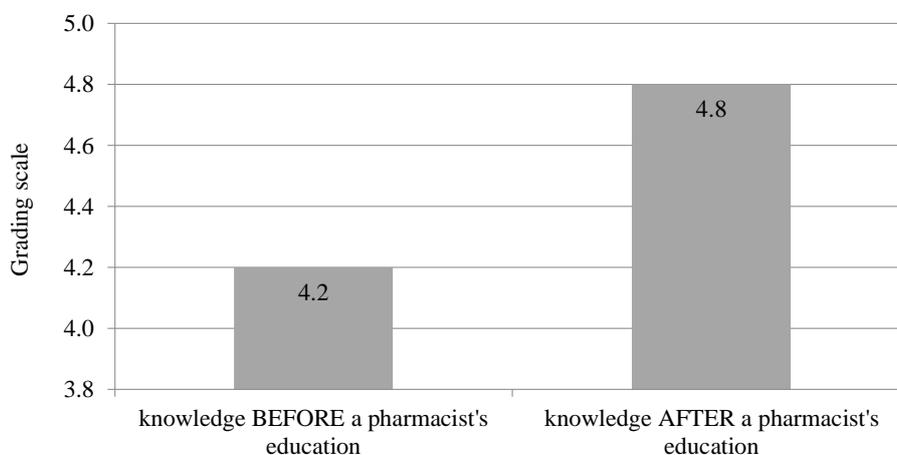


Figure 10.

Average patients' knowledge before and after education service provided by a community pharmacist
($n = 96$, $p < 0.0001^*$)

* results statistically significant at $p < 0.05$

The screening for patients with elevated blood pressure in a community pharmacy is a common practice of pharmacists in many countries around the world, e.g., France, Italy, the United Kingdom or Canada. This pharmacy service brings significant benefits to the pharmacotherapy outcomes [10, 13]. To achieve the best healthcare results proper patient-pharmacist cooperation is needed. In contrast to other countries, Polish pharmacies provide none or insufficient healthcare screenings services to improve the health promotion and education [23].

The satisfaction survey used in this study is a very important assessment tool that provides results which may translate into subsequent satisfaction of patients with the pharmacy services provided [16]. In this research, after pharmacist counselling, the patient received valuable education though counselling. The vast majority of patients were satisfied with this professional pharmacy service. They considered that the information was provided in a comprehensible way and it was useful. During the analysis of the questionnaires, it was noticed that almost all patients confirmed that the service met their expectations. Similarly, in other countries (e.g. Canada, USA or Australia), patients were satisfied with this type of services, and their satisfaction increased with the expansion of the scope of health care services [17, 25]. However, study performed by Aziz *et al.* showed that pharmacists' readiness to provide additional service is not a sufficient factor guaranteeing high patient satisfaction. Although patients appreciated attitudes services provided by the pharmacy staff, they were dissatisfied with qualification and knowledge of

pharmacists and, as a result, were not pleased with counselling services [3].

The level of patient satisfaction is dependent not only on the services provided, but also on pharmacist's interpersonal skills [6]. As a trusted and available health care professional, a pharmacist is often the first line of consultation for patients [19]. Research also indicates that appropriate counselling provided by a pharmacist positively affects understanding of the treatment process and the satisfaction of patients [14]. After the education, patients' level of knowledge and understanding is significantly increased. Research conducted in Poland showed that patients are asking for pharmacy consultations to improve their knowledge [7]. Interestingly, it was observed that alcohol abusers were less able to assess the intelligibility of education and obese people rated this service at lower level. It was suggested that effective pharmacist-patient-physician cooperation is essential in achieving the best results in health quality improvement [11].

The advancing trends in Europe demonstrate that health screening tests of many diseases that patient can perform in a community pharmacy are very common. These services include glucose, blood pressure, body weight and cholesterol [10, 14]. Early disease detection gives better chances for prevention of health complications and earlier implementation of pharmacological treatment. This is a particularly important aspect considering the accessibility of community pharmacies for patients. It is estimated that 58.0% of Europeans can reach the nearest pharmacy within 5 minutes. Therefore, a community pharmacy, because of its availability, is a great place to promote health and provide preventive

health screenings. The patient care services provided for years in other countries by a community pharmacy show that when pharmacists devote time to identify potential health problem and provide expert advice that is patient-specific and in cooperation with a physician or other healthcare professional, result in measurable benefits to patients [10].

Conclusions

In Poland, there is a great need for patient-focused health screening and counselling services in community pharmacies. This study showed that patients also value and benefit from this kind of services provided by community pharmacists. The models for blood pressure measurement and counselling services, which are already available in many countries for many years, should be used as a guide for development of community-based pharmacy services in our Polish pharmacies. Availability of a systematic blood pressure screening in a community pharmacy can significantly contribute to increase in early detection of diseases and result in more effective medication therapy, as well as savings in health care costs. The community pharmacies should develop and provide appropriate services, including the measurement of blood pressure, effective educational materials, patient counselling and direct pharmacist-patient cooperation. The outcomes of this model of pharmacy services may help to identify health problem and more knowledgeable and health conscious patient population.

Acknowledgement

This study was supported by the funding for young scientists from Poznan University of Medical Sciences (grant no. 502-14-03314429-09415).

Conflict of interest

The authors declare no conflict of interest.

References

1. Australian Commission on Safety and Quality on Health Care, www.safetyandquality.gov.au/wp-content/uploads/2012/01/PCCC-DiscussPaper.pdf.
2. Ayorinde AA, Porteous T, Sharma P, Screening for major diseases in community pharmacies: A systematic review. *Int J Pharm Pract.*, 2013; 21(6): 349-361.
3. Aziz MM, Ji W, Masood I, Farooq M, Malik MZ, Chang J, Jiang M, Atif N, Fang Y, Patient satisfaction with community pharmacies services: A cross-sectional survey from Punjab; Pakistan. *Int J Environ Res Public Health*, 2018; 15(12): 2914: 1-14.
4. Blalock SJ, Roberts AW, Lauffenburger JC, Thompson T, O'Connor SK, The effect of community pharmacy-based interventions on patient health outcomes: a systematic review. *Med Care Res Rev.*, 2013; 70(3): 235-266.
5. Carey RM, Muntner P, Bosworth HB, Whelton PK, Prevention and control of hypertension: JACC health promotion series. *J Am Coll Cardiol.*, 2018; 72(11): 1278-1293.
6. Cavaco A, Dias J, Bates I, Consumers' perceptions of community pharmacy in Portugal: a qualitative exploratory study, *Pharm. World Sci.*, 2005; 27(1): 54-60.
7. Cerbin-Koczorowska M, Waszyk-Nowaczyk M, Odor K, Michalak M, Piotrowska S, Matschay A, Simon M, Majchrzycki M, Pharmaceutical care as a chance of improving health care in areas with an average level of urbanization. *Farmacia*, 2017; 65(1): 159-166.
8. Declaration of blood pressure measuring device equivalence: [www.dablededucational.org/pdfs/equivalence_declarations/E148%20Medel%20Check%20\(95124\)%20ESH10.pdf](http://www.dablededucational.org/pdfs/equivalence_declarations/E148%20Medel%20Check%20(95124)%20ESH10.pdf).
9. Erku DA, Belachew SA, Mekuria AB, Haile KT, Gebresillassie BM, Tegegn HG, Ayele AA, The role of community pharmacists in patient counseling and health education: a survey of their knowledge and level of involvement in relation to type 2 diabetes mellitus. *Integr Pharm Res Pract.*, 2017; 19(6): 137-143.
10. European Community Pharmacy Services & Activities. PGEU Database, <https://pgeu-annual-report.eu/community-pharmacy-services.html>.
11. Gallagher RM, Gallagher HC, Improving the working relationship between doctors and pharmacists: Is interprofessional education the answer?. *Adv Health Sci Educ Theory Pract.*, 2012; 17(2): 247-257.
12. Malewski DF, Ream A, Gaither CA, Patient satisfaction with community pharmacy: comparing urban and suburban chain-pharmacy populations. *Res Social Adm Pharm.*, 2015; 11(1): 121-128.
13. Marra C, Johnston K, Santschi V, Tsuyuki RT, Cost-effectiveness of pharmacist care for managing hypertension in Canada. *Can Pharm J.*, 2017; 150(3): 184-197.
14. Melton BL, Lai Z, Review of community pharmacy services: what is being performed, and where are the opportunities for improvement?. *Integrated Pharm Res Pract.*, 2017; 6: 79-89.
15. Morgado M, Rolo S, Castelo-Branco M, Pharmacist intervention program to enhance hypertension control: a randomised controlled trial. *Int J Clin Pharm.*, 2011; 33(1): 132-140.
16. Naik Panvelkar P, Saini B, Armour C, Measurement of patient satisfaction with community pharmacy services: a review. *Pharm World Sci.*, 2009; 31(5): 525-537.
17. Nemerovski C, Young M, Mariani N, Bugdalski-Stutrud C, Moser RL, Project ImPACT: Hypertension Outcomes of a Pharmacist-Provided Hypertension Service. *Innov Pharm.*, 2013; 4(3): 126: 1-9
18. Piepoli MF, Hoes AW, Agewall S, Albus C, Brotons C, Catapano AL, Cooney MT, Corra` U, Cosyns B, Deaton C, Graham I, Hall MS, Hobbs FDR, Løchen ML, Lo`llgen H, Marques-Vidal P, Perk J, Prescott E, Redon J, Richter DJ, Sattar N, Smulders Y, Tiberi M, van der Worp HB, van Dis I, Verschuren WMM, 2016 European Guidelines on cardiovascular disease prevention in clinical practice The Sixth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representatives of

- 10 societies and by invited experts) Developed with the special contribution of the European Association for Cardiovascular Prevention & Rehabilitation (EACPR). *Eur Heart J.*, 2016; 37(29): 2315-2381.
19. Policarpo V, Romano S, António JHC, Correia TS, Costa S, A new model for pharmacies? Insights from a quantitative study regarding the public's perceptions. *BMC Health Serv Res.*, 2019; 19(1): 186: 1-11.
20. Skowron A, Bulas I, Drozd M, Karolewicz B, Machalska J, Prospects for development of pharmacy in Poland until the year 2030. The document of the national section of pharmaceutical care of the Polish Pharmaceutical Society. *Acta Pol Pharm.*, 2016; 73(1): 255-266.
21. Suligowska K, Gajewska M, Stokwizewski J, Gaciong Z, Bandosz P, Wojtyniak B, Rutkowski M, Cianciara D, Wyrzykowski B, Zdrojewski T, Insufficient knowledge of adults in Poland on criteria of arterial hypertension and its complications – results of the NATPOL 2011 Survey. *Arterial Hypertens.*, 2014; 18(1): 9-18.
22. Tobari H, Arimoto T, Shimojo N, Yuhara K, Noda H, Yamagishi K, Iso H, Physician pharmacist cooperation program for blood pressure control in patients with hypertension: a randomized-controlled trial. *Am J Hypertens.*, 2010; 23(10): 1144-1152.
23. Waszyk-Nowaczyk M, Szukalska B, Guzenda W, Michalak M, Implementation of professional pharmaceutical counselling scheme in community pharmacies in Poznan and Warsaw (Poland). *Farmacia*, 2019; 67(3): 383-550.
24. Williams B, Mancia G, Spiering W, Rosei EA, Azizi M, Burnier M, Clement DL, Coca A, de Simone G, Dominiczak A, Kahan T, Mahfoud F, Redon J, Ruilope L, Zanchetti A, Kerins M, Kjeldsen SE, Kreutz R, Laurent S, Lip GYH, McManus R, Narkiewicz K, Ruschitzka F, Schmieder RE, Shlyakhto E, Tsioufis C, Aboyans V, Desormais I, ESC Scientific Document Group, 2018 ESC/ESH Guidelines for the management of arterial hypertension The Task Force for the management of arterial hypertension of the European Society of Cardiology (ESC) and the European Society of Hypertension (ESH). *Eur Heart J.*, 2018; 39(33): 3021-3104.
25. World Health Organization. A Global Brief on Hypertension: www.who.int/cardiovascular_diseases/publications/global_brief_hypertension/en.