

## OPINIONS OF PHARMACISTS ON COMMUNITY PHARMACY-BASED HEALTH SCREENINGS FOR COMMON CHRONIC DISEASES

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**Abstract:** Rising number of chronic diseases worldwide requires improvement of patients' care system, especially in disease prevention and health promotion. Therefore it is justified to broaden the range of services in community pharmacies in Poland. The aim of this study was to evaluate pharmacists' opinion about health screenings for chronic diseases in community pharmacies. Research was based on original, anonymous questionnaire administered between July 2016 and March 2017 to pharmacists ( $n = 175$ ; 77.7% women and 22.3% men) practicing in a community pharmacy in Wielkopolska ( $n = 106$ ; 77.4% women and 22.6% men) and Zachodniopomorskie Region ( $n = 69$ ; 78.3% women and 21.7% men). The effect of age and gender on pharmacists' opinions was evaluated. Among pharmacists who responded, 93.7% agreed that patients don't have health check-ups when they don't experience bothersome symptoms of a disease. Almost three fourth of respondents considered implementation of health screening services in pharmacy as valuable as it can have positive influence on development of pharmaceutical care. Younger pharmacists ( $p = 0.019$ ) who collaborate with physicians ( $p = 0.009$ ) were most certain about it. 80.0% of pharmacist, in particular younger one, would offer their patients the screening services ( $p = 0.006$ ). 79.4% pharmacists confirmed that this new service should be reimbursed by National Health Fund. Development of new health screening services in community pharmacies may help to prevent or lower the risk of complications associated with common chronic diseases.

**Keywords:** health promotion, chronic diseases, pharmacist, community pharmacy, screening services

The alarming patients' morbidity statistics, including chronic diseases, have been identified as the plague of the 21st century. The recent literature reports show that the disease prevention and health promotion is a very frequently discussed issue in many countries. Prevention of chronic diseases is a very important component of services provided by pharmacists in many countries around the world and bring many benefits (1). The response to the high prevalence and mortality of chronic diseases is the reduction of risk factors, the diagnosis of the disease at early stage, and immediate treatment of the disease (2). Pharmacists were successful in detecting hypertension or diabetes, which results in early referral to the physician (3-5). In addition, the cost of detecting risk factors are balanced by decreased charge incurred by the health care system on treatment of chronic diseases (2).

The implementation of pharmaceutical care (PC) to Polish community pharmacies is very difficult and problematic, because of limiting requirements and many conditions that are often unattainable for an average pharmacy. It is reasonable to propose simpler solutions as a part of PC but not periodic and documented (6, 7). Based on the identified risk factors, the patient can be referred to a family doctor to diagnose a potential chronic disease. The great advantage of this screening service provided by a pharmacist is the patient education on disease prevention and promotion of healthy lifestyle. When diagnosed, this visit is completed by the most important aspects of pharmacotherapy (3). Community pharmacies are recognized as health care places where people can be counselled by pharmacists on minor ailments or symptoms that can often be associated with early signs of chronic dis-

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eases. For these reasons, community pharmacy is the right place to provide health screenings, but currently such services have not been developed and implemented in Poland.

The scope of practice provided by a pharmacist is constantly evolving, and the image of the role of a pharmacy plays in patient care is improving. Community pharmacists are no longer connected with distribution and quality assurance but also with the supervision of patients' pharmacotherapy. Patient care provided by a pharmacist is complemented by the cooperation with the physician and the medical

team as demonstrated in the project conducted by members of the Polish Pharmacist Association. In this scheme, pharmacists are involved in disease prevention and health promotion, especially in the early diagnosis of chronic diseases (8).

As evident from the world trends, it is essential and appropriate to implement health screenings in a Polish community pharmacy. There is no research data in this area therefore this is an innovative topic. The aim of the study was to collect, evaluate, and compare pharmacists' opinions about health screening services in community pharmacies.

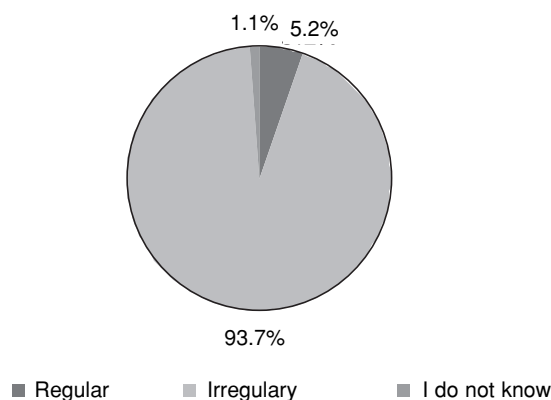


Figure 1. Pharmacists' opinion on frequency of check-ups when patients don't experience bothersome symptoms of a disease (n = 175)

Table 1. Characteristics of study participants.

| Total respondents                         | Wielkopolska Region n (%) | Zachodniopomorskie Region n (%) | Total      |
|---|---------------------------|---------------------------------|------------|
|   | 106                       | 69                              | 175        |
| Gender                                    |                           |                                 |            |
| Female                                    | 82 (77.4)                 | 54 (78.3)                       | 136 (77.7) |
| Male                                      | 24 (22.6)                 | 15 (21.7)                       | 39 (22.3)  |
| Age [years]                               |                           |                                 |            |
| 24-30                                     | 38 (35.8)                 | 16 (23.2)                       | 54 (30.9)  |
| 31-40                                     | 43 (40.6)                 | 22 (31.9)                       | 65 (37.1)  |
| 41-50                                     | 11 (10.4)                 | 13 (18.8)                       | 24 (13.7)  |
| > 50                                      | 14 (13.2)                 | 18 (26.1)                       | 32 (18.3)  |
| Length of service as a pharmacist [years] |                           |                                 |            |
| < 5                                       | 40 (37.7)                 | 17 (24.6)                       | 57 (32.6)  |
| 6-10                                      | 32 (30.2)                 | 11 (15.9)                       | 43 (24.6)  |
| 11-20                                     | 16 (15.1)                 | 15 (21.8)                       | 31 (17.7)  |
| > 20                                      | 18 (17.0)                 | 26 (37.7)                       | 44 (25.1)  |

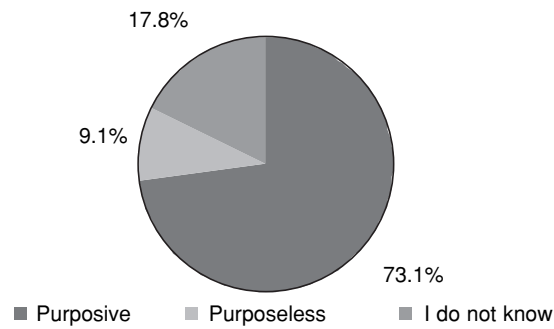


Figure 2. Pharmacists' opinion on the purpose of health screening implementation in community pharmacy (n = 175)

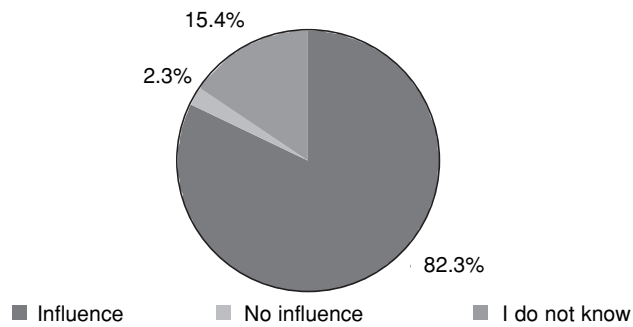


Figure 3. Pharmacists' opinion on the influence of health screenings on implementation of PC (n = 175)

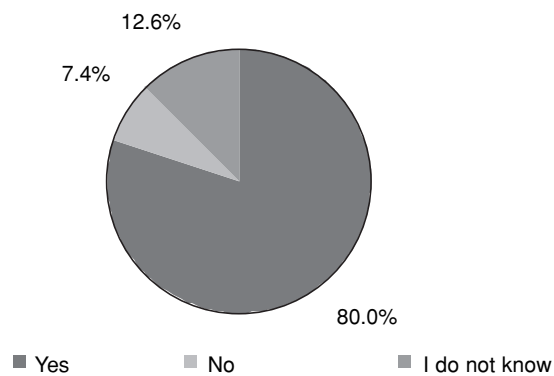


Figure 4. Pharmacists' opinion on recommending health screenings to the patient (n = 175)

## MATERIALS AND METHODS

The research was designed as cross sectional study and was carried out between July 2016 and March 2017. Study questionnaire was distributed to pharmacists in two different regions: Wielkopolska

(Poznań) and Zachodniopomorskie (Koszalin, Białogard, Kolobrzeg). The criterion for the selection of the study group was employment in a community pharmacy as a pharmacist. Participants provided voluntary consent to participate in the study. The role of age and gender was evaluated. Due to

the lack of significant differences between the age of the respondents and length in pharmacy practice, it was assumed that only the age will be analyzed in the latter part of the research.

An anonymous questionnaire was developed in Polish by the authors of the study to assess opinions about health screening services in a community pharmacy among the pharmacists. The questionnaire consist of 21 open and closed questions. The questionnaire also included a short description of health screening services. The study was approved by the ethics review board at Poznan University of Medical Sciences.

Statistical analysis of the results was performed using the Statistica 12.0 application (StatSoft®). The correlations between analyzed nominal data was performed by Chi-square test of independence ( $\chi^2$ ). U Manna-Whitney and Kruskala-Wallis tests were used to compare data. All statistical analyses were performed at  $p < 0.05$ .

## RESULTS

The questionnaire was completed by 175 pharmacists (136 women, 39 men). In the Wielkopolska Region, 106 pharmacists were included (82 women and 24 men), and in the Zachodniopomorskie Region 69 pharmacists (54 women and 15 men).

Most respondents were 31-40 years old (37.1%) and 24-30 years old (30.9%). The analysis of pharmacists' professional experience has confirmed that the largest group were respondents who worked in a community pharmacy up to 10 years (57.2%). Socio-economic data included information about gender, age and length of service as a pharmacist are presented in Table 1.

In the conducted study, 93.7% of pharmacists confirmed that patients don't have health check-ups when they don't experience bothersome symptoms of a disease. Only 5.2% of respondents stated that patients have regular tests (Fig.1). 73.1% of surveyed pointed out that implementation of a new screening services in pharmacy is purposive, while 17.8% had no opinion (Fig.2). 82.3% of pharmacists indicated that health screenings in community pharmacy can have positive influence on development of PC (Fig.3). The younger pharmacists ( $p = 0.019$ ; Tab.2) and those who collaborate with the physicians ( $p = 0.009$ ; Tab.3). were more certain of this statement. No opinion on this topic was expressed by 15.4% of respondents (Fig.3). 80% of pharmacist (Fig.4), in particular those younger ( $p=0.006$ ; Tab.4), would offer their patients the new screening service. 7.4% of surveyed wouldn't recommend introducing this new idea in a community pharmacy (Fig.4). In terms of reimbursement, 79.4% pharmacists confirmed that screening

Table 2. The effect of age on pharmacists' opinion on the positive impact of health screenings on PC implementation.

|             | Positive impact of health screenings on PC implementation |          |                     |             | p      |
|-------------|---|----------|---------------------|-------------|--------|
|             | Yes n (%)   | No n (%) | I do not know n (%) | Total n (%) |        |
| Age [years] |   |          |                     |             | 0.019* |
| 24-30       | 0 (92.6)  | 0 (0.0)  | 4 (7.4)             | 54 (100.0)  |        |
| 31-40       | 55 (84.6)   | 3 (4.6)  | 7 (10.8)            | 65 (100.0)  |        |
| 41-50       | 18 (75.0)   | 0 (0.0)  | 6 (25.0)            | 24 (100.0)  |        |
| > 50        | 22 (66.7)   | 1 (3.0)  | 10 (30.3)           | 33 (100.0)  |        |
| Total       | 145 (82.4)  | 4 (2.3)  | 27 (15.3)           | 176 (100.0) |        |

\* $p < 0.05$

Table 3. Opinions of pharmacists collaborating with physicians on the positive impact of health screening on PC implementation.

| Pharmacist collaboration with physician | Positive impact of health screenings on PC implementation |           |                     |             | P      |
|---|---|-----------|---------------------|-------------|--------|
|   | Yes n (%)   | No n (%)  | I do not know n (%) | Total n (%) |        |
| Yes                                     | 139 (90.0)  | 16 (10.0) | 0 (0.0)             | 155 (100.0) | 0.009* |
| No                                      | 16 (80.0)   | 1 (5.0)   | 3 (15.0)            | 20 (100.0)  |        |
| Total                                   | 144 (82.3)  | 4 (2.3)   | 27 (15.4)           | 175 (100.0) |        |

\* $p < 0.05$

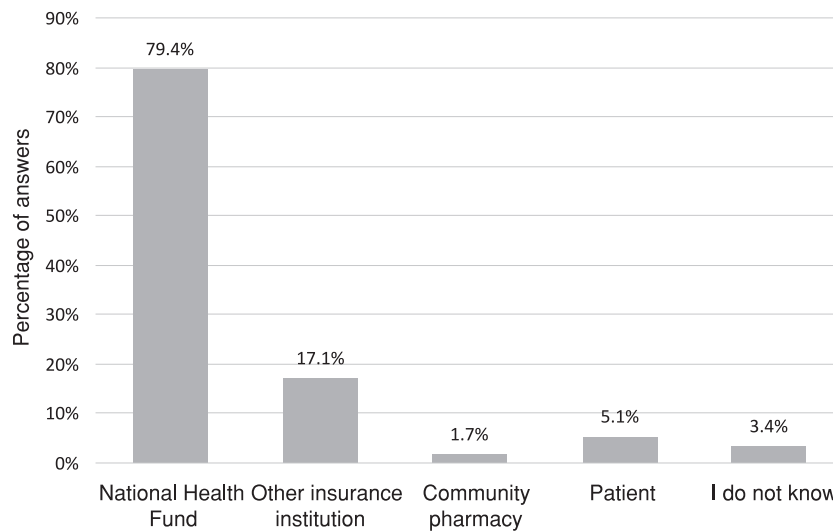


Figure 5. Pharmacists' opinion about financial sources for health screening services (multiple choice question; n = 175)

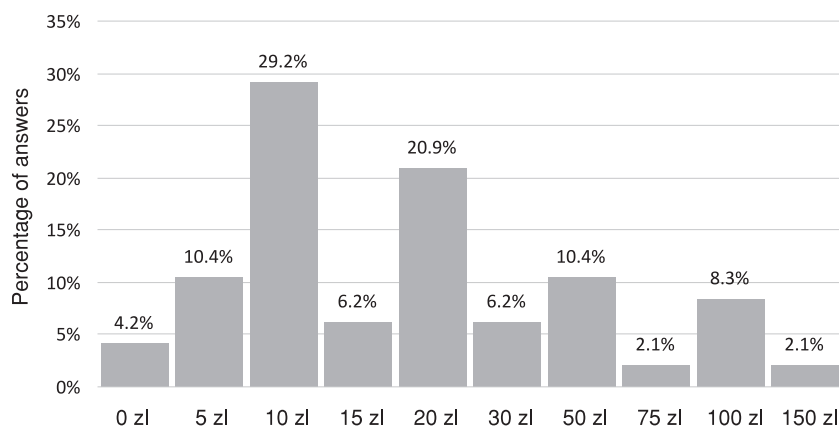


Figure 6. Pharmacists' opinion on the cost of health screening service (n = 48)

services should be paid by National Health Fund, and 17.1% respondents indicated it should be paid by other insurance institutions (Fig.5) The average proposed cost for health screening was 27.5 zł; responses ranged from 150.0 zł to – 0.0 zł (Fig.6). In the Wielkopolska Region male pharmacists more often suggested higher price than female pharmacists ( $p = 0.042$ ; Tab.5). Also in this region, no pharmacist selected community pharmacy as a refund source (Fig.7;  $p = 0.005$ ). Additional analysis of results by age and gender didn't achieve the level of statistical significance.

## DISCUSSION AND CONCLUSION

The important role of a pharmacist is to reduce the global problem of chronic diseases by engage-

ment in services directed at disease prevention and health promotion (8). According to world statistics, 1 out of 3 people are unaware of the presence of increased blood pressure (9), which can result in multiple health complications such as coronary heart disease, myocardial infarction, atherosclerosis (10). This study showed that in pharmacists' opinion, patients do not perform preventive screenings for the most common chronic diseases when there are no symptoms of the disease. In 1980, there were reported 600 million of hypertension cases and in 2008 this number increased to 1 billion (11). Moreover, one of two adults with diabetes is undiagnosed (12). Hence, it is important to improve health care in this area, by implementing new services and improvement of pharmacist-physician

cooperation, who are responsible for wellbeing and health care of patients (13).

The presented study shows that almost 3/4 pharmacists believed that the implementation of the screening service was purposeful and that it could positively affect the implementation of PC in Poland, especially according to the opinions of pharmacists working with physicians. Research shows that Polish pharmacists are very often interested in implementing new services in their pharmacies, e.g., Individual Medication Management System, which

provides patients with proper pharmacotherapy. However, very often independent barriers and conditions lead to lack of application into practice (14). The study showed that older pharmacists are more likely to be skeptical about new pharmacy services, which may be due to reluctance to make changes. The length of pharmacy practice experience has been accurately reflected in the Polish strategy of PC implementation, as in general, changes in pharmacy services are not supported by older pharmacists (15).

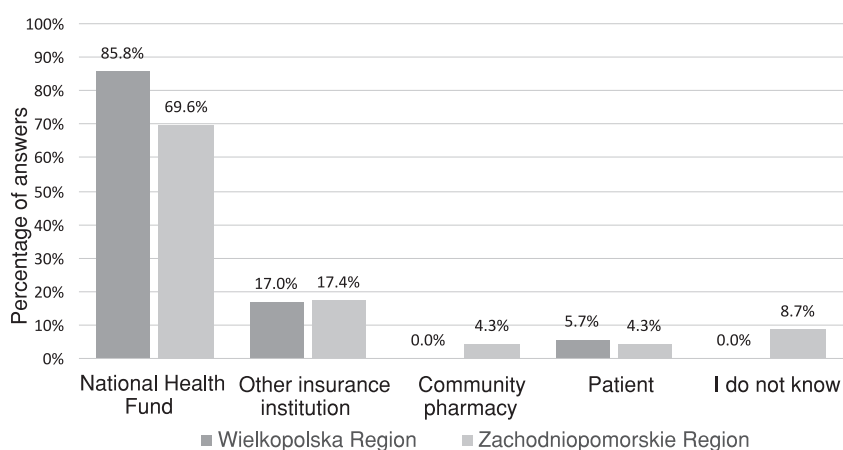


Figure 7. Comparison of pharmacists' opinion on financial sources for health screening in Wielkopolska and Zachodniopomorskie Region (multiple choice question; n = 175; p = 0,005\*

Table 4. The effect of age on pharmacists' opinion on recommending health screenings to a patient.

| Pharmacist Age | Recommendation for health screening |             |                        |                | p      |
|----------------|-------------------------------------|-------------|------------------------|----------------|--------|
|                | Yes<br>n (%)                        | No<br>n (%) | I do not know<br>n (%) | Total<br>n (%) |        |
| Age [years]    |                                     |             |                        |                | 0.006* |
| 24-30          | 49 (90.7)                           | 0 (0.0)     | 5 (9.3)                | 54 (100.0)     |        |
| 31-40          | 54 (83.1)                           | 6 (9.2)     | 5 (7.7)                | 65 (100.0)     |        |
| 41-50          | 18 (75.0)                           | 1 (4.2)     | 5 (20.8)               | 24 (100.0)     |        |
| > 50           | 19 (59.4)                           | 6 (18.7)    | 7 (21.9)               | 32 (100.0)     |        |
| Total          | 133 (75.4)                          | 17 (9.7)    | 26 (14.9)              | 76 (100.0)     |        |

\*p < 0.05

Table 5. Gender difference in opinions on the cost for health screening services (n = 48).

| Gender | Value [zł] | Average | Median | Minimum | Maximum | p      |
|--------|------------|---------|--------|---------|---------|--------|
| Female | 28         | 25.9    | 15.0   | 0.0     | 100.0   | 0.042* |
| Male   | 6          | 52.5    | 40.0   | 15.0    | 150.0   |        |

\*p < 0.05

In this study most pharmacists, in particular younger, would recommend health screening to their patients. Research confirms the interest and satisfaction of Polish people in this regard. Patients are interested in education about chronic diseases and express their willingness to participate in screening. Numerous publications confirmed that most patients are willing to accept professional advice from a pharmacist about a healthy lifestyle (16, 17). Such practices may delay or prevent development of hypertension or progression from glucose intolerance to type 2 diabetes (18, 19). Many community pharmacies around the world have successfully implemented health screenings and confirmed its efficacy. For example, studies conducted in Sweden showed that 6.9% of adults were diagnosed with type 2 diabetes and 71.5% had at least 2 risk factors for developing the disease. In addition, 54.0% of the patients had elevated blood pressure and 16.3% had established hypertension (16). The Thai Diabetes Prevention Program determined that half of studied patients had risk factors for developing diabetes and therefore each participant was provided with effective education in this area. Studies showed that this type of pharmacy service can detect up to 7.0% of patients with suspected diabetes (20). The source of funding is a very important issue affecting the real implementation of the health screening service. Literature reports indicate that screenings for diabetes and hypertension is cost-effective for patients and pharmacies (21). The average cost defined by the pharmacists for the service was 27.5 zł. Male pharmacists from the Wielkopolska Region offered higher price than female pharmacists. A slightly lower amount (23.0 zł) was reported in a study conducted among Polish patients in 2016, where the most interested in financing were patients up to 30 years old and 51-60 years old with higher education (22). Krass and colleagues determined the cost of such a screening service for diabetes. Their calculations show a value of 23.0 zł (AUS \$ 11.83) (23). This study confirmed that the National Health Fund was the most frequently identified source of financing the health screenings. An interesting observation is that none of the pharmacists from the Wielkopolska Region indicated the pharmacy as a potential payer. This may be due to the financial status of the pharmacies, which is worse in the Wielkopolska Region (24). Research shows that Polish patients choose National Health Fund as a source of funding for health care costs (22).

Experiences from other countries shows that pharmacist involved in disease prevention and pro-

motion of health in cooperation with physicians and other members of the medical team, can have measurable benefits for patients. Implementing a new screening service to a Polish pharmacy should contribute to improving the patient's health and quality of life. Expanding the range of pharmacy services through the health screening can also help to increase the prestige of the pharmacist as a health care professional engaged in patient care.

### Acknowledgment

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