

## ***Integrating pharmaceutical care into geriatric health strategies: a needs analysis and strategic recommendations for local senior health policy***

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### **Abstract**

**Background.** Population ageing is accelerating multimorbidity and polypharmacy, increasing the risk of adverse drug events and drug–drug interactions. Pharmaceutical care is a key strategy to optimize pharmacotherapy and enhance patient safety. **Objective.** To assess polypharmacy among older adults in Gdynia city, focusing on medication knowledge, acquisition sources, and perceptions of healthcare coordination. **Methods.** A cross-sectional survey was conducted among individuals aged  $\geq 60$  years through Municipal Senior Clubs and online platforms. A total of 127 questionnaires were analysed (86 paper-based, 41 online). The survey included questions on chronic conditions, medication use (prescription and OTC), and attitudes toward pharmaceutical care. **Results.** Most respondents reported fewer than four chronic conditions; the maximum was seven. The highest medication count was 19 (12 prescription, 7 OTC), indicating prevalent self-medication and potential interaction risks. Better adherence correlated with residence in higher socio-economic districts. Notably, 94% supported physician–pharmacist collaboration, 72% expressed trust in pharmacists, and 71% were willing to participate in a municipal pharmaceutical care program. **Conclusions.** Findings underscore the need for integrated pharmaceutical care models to improve medication safety and support patient-centred healthcare in aging populations. *Geriatrics* 2025;19:217-222. doi: 10.53139/G.20251935

*Keywords: pharmaceutical care, geriatric health, medication management, needs assessment*

### **Introduction**

Poland, with a population of approximately 37 million, is experiencing rapid demographic aging, with individuals aged  $\geq 65$  years currently representing nearly one-quarter of the population [1,2]. Projections indicate that by 2060, this proportion will rise to 30%, with an increase of 2.5 million older adults compared to 2022 [3]. This demographic shift poses substantial economic and healthcare challenges, necessitating systemic modernization and targeted interventions for seniors [4]. Pharmaceutical care, when implemented at a high standard, is recognized as an effective strategy to support older adults and mitigate adverse consequences of accelerated aging [5-7].

Pharmacological management in geriatric populations is inherently complex due to age-related changes in pharmacokinetics and pharmacodynamics, multimorbidity, and the widespread phenomenon of polypharmacy. Polypharmacy significantly elevates the risk of drug–drug interactions, which may compromise the-

therapeutic efficacy or increase toxicity [8-10]. Addressing these risks requires a structured approach encompassing risk–benefit assessment, preventive strategies, and active pharmacist involvement in optimizing and monitoring pharmacotherapy. Pharmacists' expertise in pharmacokinetics, pharmacodynamics, and interaction management is critical within multidisciplinary care teams. Collaborative models integrating physicians, pharmacists, and nurses enable individualized treatment planning, rationalization of medication regimens, and early identification of potential risks, thereby improving patient safety and clinical outcomes [9,10].

The primary objective of the study was to collect and analyze data on polypharmacy's problem among the senior population of Gdynia, with particular emphasis on the level of knowledge among older adults regarding the medications they use and their ongoing pharmacological treatment; the number and types of medications taken based on medical prescriptions as well as those purchased independently, both in pharmacies and out-

side them; the perception of care coordination by older individuals within the context of the functioning healthcare system; the opinions of Gdynia's senior residents on the planned pilot pharmaceutical care program to be implemented by the city. Furthermore, during the course of the study, direct interaction was carried out with older adults living in Gdynia to enhance their understanding of the pharmacist's role and to emphasize the potential benefits of appropriately delivered pharmaceutical care. These benefits were considered both in relation to individualized patient therapy and in terms of improving the overall performance of the healthcare system.

## Materials and methods

Within the framework of the study, a structured series of informational and educational sessions was implemented for the geriatric population residing in Gdynia. A total of seven meetings were conducted across selected districts of the city. The participants primarily consisted of active members of local senior clubs. Attendance was voluntary, resulting in variable participation rates influenced by the location and timing of each session. A key component of the intervention involved administering an anonymous, structured questionnaire to attendees. The survey was designed to capture perceptions, needs, and expectations related to polypharmacy and pharmaceutical care (Appendix 1). The study population consisted of older adults 60–89 years of age. The median age of study participants was 74 years for women and 77 years for men. The interquartile range (IQR) for the age of the female participants was 9 years, for the age of the male participants was 6.5 years, calculated based on the first quartile (Q1) and the third quartile (Q3) using interpolation within grouped intervals.

To ensure reliable results, educational sessions were primarily conducted in senior clubs in Gdynia, where a high concentration of individuals from the target age group allowed for effective outreach to the intended population. The questionnaire was developed using Microsoft Word and comprised 45 items, including closed-ended questions (single- and multiple-choice) as well as open-ended questions. During sessions conducted in Municipal Senior Centers, the questionnaires were distributed in paper format. Throughout the field data collection process, participants received clarifications regarding question content to ensure accurate interpretation and facilitate responses aligned with the study objectives. Assistance was provided either during the

meetings or while completing the questionnaire, with support offered by the pharmacist leading the session or a pharmacy student member of the research team. To maximize survey reach and facilitate participation among individuals unable to attend in-person sessions, an online version of the questionnaire was deployed using the Microsoft Forms platform. This digital survey distribution formed part of a broader digital outreach strategy aimed at enhancing community engagement. The electronic format was disseminated through multiple official and community-based channels, including the Gdynia Health Center, the city's official website ([www.gdynia.pl](http://www.gdynia.pl)), the Senior Activity Center (<https://cas.gdynia.pl>), and the Facebook pages of individual Municipal Senior Clubs. Statistical analyses and the presentation of results were performed using the latest version of Microsoft Excel (Microsoft Excel 2024). The data processing employed the software's built-in analytical tools, including statistical functions, pivot tables, and advanced visualization options, ensuring compliance with current computational and methodological standards and guaranteeing high accuracy and transparency of the results.

For the purpose of data analysis, a customized spreadsheet tool was developed to enable efficient data management, including systematic organization of responses, generation of summary tables, and creation of graphical representations. This approach facilitated structured data handling and visualization, supporting accurate interpretation of the findings.

## Results

In total, 127 questionnaires were completed as part of the study. Of these, 86 responses were obtained through in-person sessions, while 41 were collected via the online survey. This distribution reflects the effectiveness of employing mixed data collection modalities—combining face-to-face engagement with digital outreach—to enhance accessibility and participation among the target geriatric population.

To facilitate interpretation of the survey findings, the initial step involved an analysis of the demographic profile of the study population (figure 1). The data indicate that the majority of respondents were female (89.84%). Regarding age stratification, the largest subgroup comprised individuals aged 70–74 years (24.4%). The survey targeted older adults aged 60 years and above; however, despite this inclusion criterion, seven respondents who did not meet the age requirement completed

the online questionnaire, representing a minor deviation from the predefined eligibility criteria. Individuals who did not meet the inclusion criteria were excluded from the analysis in accordance with the established study protocol.

Among the 14 conditions listed in the questionnaire, the maximum number of comorbidities reported by a single patient was seven, while the majority of respondents indicated fewer than four conditions. Analysis of the collected data indicates that older adults in the study group commonly use multiple medications concurrently (figure 2). The mean number of medications per patient was six, including four prescription drugs and two self-

-purchased preparations. The substantial proportion of over-the-counter medications highlights the prevalence of self-medication. In the next section of the survey, respondents were asked to assess their satisfaction with healthcare in Poland. Findings show that 68% of seniors perceived the flow of information between healthcare professionals as insufficient (figure 3), with most indicating that communication is poorly coordinated. The study revealed that the vast majority of respondents (94%) believe that primary care physicians and pharmacists should closely collaborate. This finding reflects a high level of awareness among the surveyed population regarding the need for a coordinated healthcare system

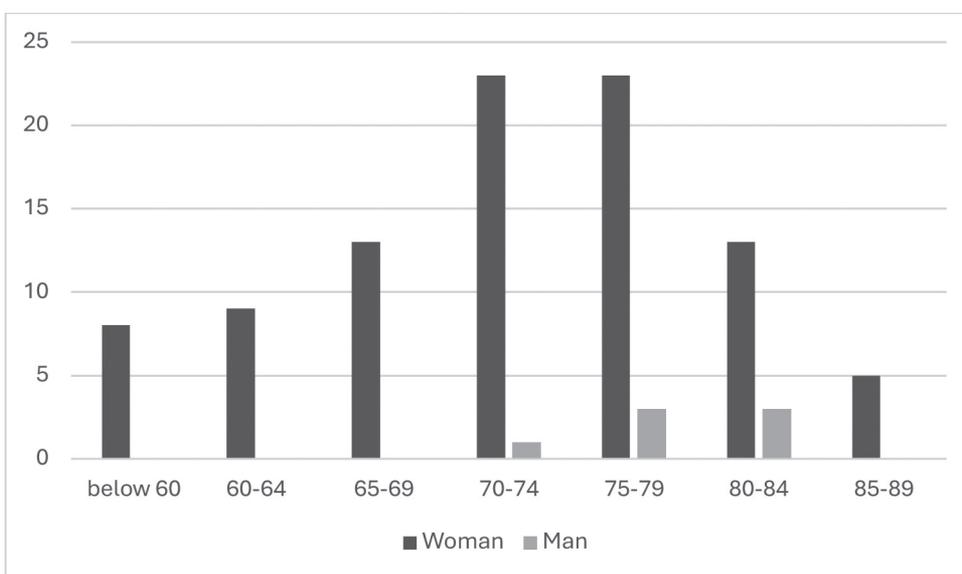


Figure 1. Number of older adults assessed with demographic characteristics: age and sex

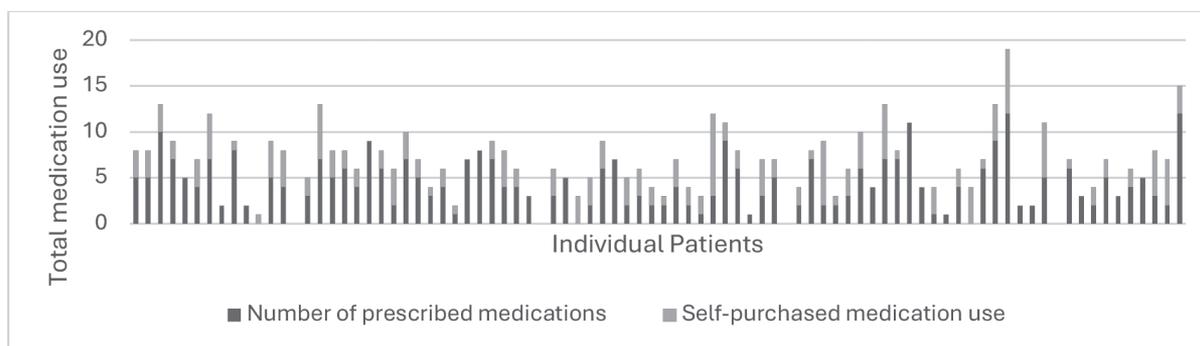


Figure 2. Number of prescription and over-the-counter medications per patient

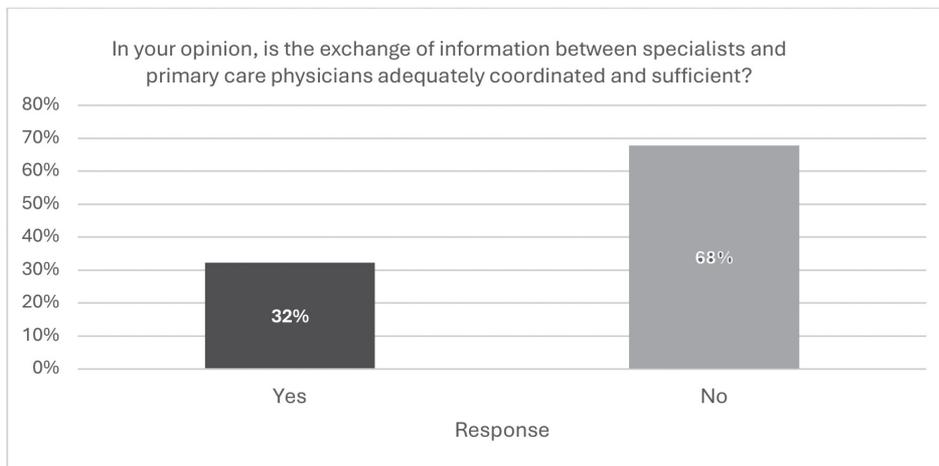


Figure 3. Perceived coordination of information exchange between specialists and primary care physicians

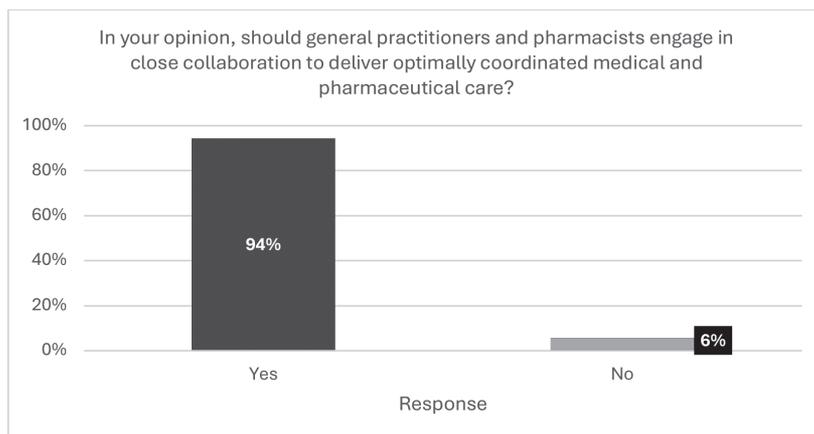


Figure 4. Perceived need for pharmacist-general practitioner collaboration

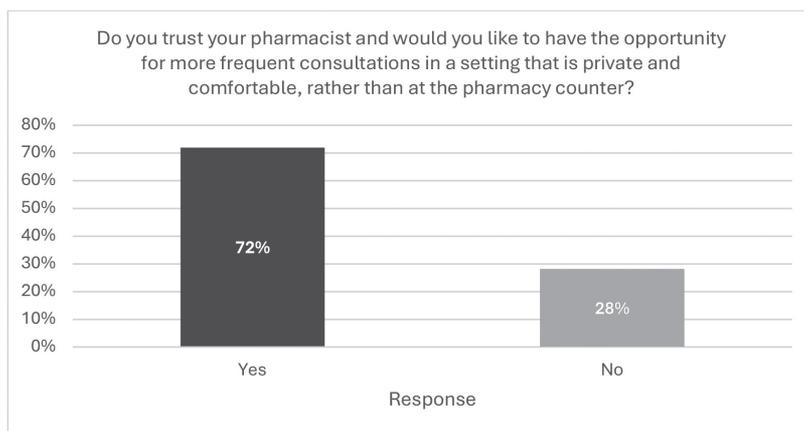


Figure 5. Respondents' assessment of trust toward pharmacists

focused on patient well-being (figure 4). Participants were also asked about their level of trust in pharmacists. The majority expressed high trust and indicated a preference for having access to private and confidential pharmacist consultations (figure 5). These findings underscore the strong pharmacist–patient relationship and highlight the perceived importance of confidential counselling services within integrated care models.

## Discussion

The comprehensive scope of topics included in the questionnaire enabled a multidimensional assessment of the needs of older patients and provided valuable insights into medication-related challenges. The phenomenon of polypharmacy is further exacerbated by the growing trend of self-medication—defined as the purchase and use of medicinal products without prior consultation with a physician or pharmacist. The increased consumption of such preparations is largely attributable to their widespread availability. A comprehensive risk–benefit assessment is essential to balance the potential therapeutic advantages for the patient against the risks associated with polypharmacy [9,11].

During the in-person sessions, it was observed that although many participants possessed a list of their medications or were able to recall their names, a substantial proportion could not indicate the therapeutic purpose or rationale for taking specific drugs. Furthermore, analysis of the online questionnaires revealed that responses to the question regarding a complete list of medications were frequently incomplete or omitted. This issue may be attributed to the difficulty of compiling such a list when completing the survey via a phone or computer without prior preparation or access to medication packaging (home medicine cabinet). The lack of knowledge among older adults regarding their prescribed medications may lead to inappropriate medication use, potentially worsening health outcomes and increasing the risk of hospitalizations [10]. These findings underscore the need for implementing pharmaceutical care interventions, particularly for the geriatric population, to mitigate this problem. Participants per-

ceived the healthcare system as insufficiently organized and emphasized the need for improved coordination and efficient information flow between institutions. They highlighted the importance of close collaboration among all stakeholders involved in patient care, particularly strengthening pharmacist–physician cooperation to ensure comprehensive management of older patients.

## Conclusions

Tailoring treatment regimens to the needs, cognitive abilities, and daily living conditions of older patients is essential to ensure high levels of compliance and adherence.

Insufficient communication and poor information flow between primary care physicians, specialists, and pharmacists hinder therapy coordination, increase the risk of medication errors, and negatively affect care quality, particularly in multimorbid older adults.

Active involvement of pharmacists in therapy planning and monitoring can significantly improve the safety and effectiveness of pharmacotherapy in geriatric populations.

Integrating pharmaceutical care into the Local Health Strategy is justified from both epidemiological and systemic perspectives, given the aging population and the need for comprehensive, coordinated care for older patients.

Further investigations in larger cohorts of older adults, including a detailed analysis of their medication profiles, are warranted.

### Conflict of interest

None

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## References

1. Leszko M, Zając-Lamparska L, Trempala J. Aging in Poland. *The Gerontologist*. 2015;55(5):707-15. Available: [https://www.researchgate.net/publication/281484518\\_Aging\\_in\\_Poland](https://www.researchgate.net/publication/281484518_Aging_in_Poland).
2. Słońska ZA, Borowiec AA, Aranowska AE. Health literacy and health among the elderly: status and challenges in the context of the Polish population aging process. *Anthropologic AI review*. 2015;78(3):297-307. Available: <https://czasopisma.uni.lodz.pl/ar/article/view/11061/10704>.

3. Gryglewska B, Grodzicki T, Mossakowska M, et al. Zjawisko wielochorobowości, [w:] P. Błędowski, T. Grodzicki, M. Mossakowska, T. Zdrojewski (red.), *PolSenior 2 Badanie poszczególnych obszarów stanu zdrowia osób starszych, w tym jakości życia związanej ze zdrowiem*, Wydawnictwo Gdański Uniwersytet Medyczny, Gdańsk 2021. Available: [https://polsenior2.gumed.edu.pl/attachment/attachment/82370/PolSenior\\_2.pdf](https://polsenior2.gumed.edu.pl/attachment/attachment/82370/PolSenior_2.pdf).
4. Wierucki Ł, Kujawska-Danecka H, Mossakowska M, et al. Health status and its socio-economic covariates in the older population in Poland - the assumptions and methods of the nationwide, cross-sectional PolSenior2 survey. *Arch Med Sci*. 2020;18(1):92-102. Available: <https://pubmed.ncbi.nlm.nih.gov/35154530/>.
5. Błędowski P. Potrzeby opiekuńcze osób starszych. In: Mossakowska M, Więcek A, Błędowski P, editors. *POLSENIOR. Aspekty medyczne, psychologiczne, socjologiczne i ekonomiczne starzenia się ludzi w Polsce*. Termedia Wydawnictwa Medyczne: Poznań 2012. 449-66. Available: [https://www.researchgate.net/publication/235971825\\_Aspiekty\\_medyczne\\_psychologiczne\\_socjologiczne\\_i\\_ekonomiczne\\_starzenia\\_sie\\_ludzi\\_w\\_Polsce](https://www.researchgate.net/publication/235971825_Aspiekty_medyczne_psychologiczne_socjologiczne_i_ekonomiczne_starzenia_sie_ludzi_w_Polsce).
6. Sobczak E, Bartniczak B, Raszkowski A. Aging society and the selected aspects of environmental threats: evidence from Poland. *Sustainability*. 2020;12(11):4648. Available: <https://www.mdpi.com/2071-1050/12/11/4648>.
7. Polakowska D, Wrzosek N, Zimmermann AE. Badanie opinii farmaceutów i studentów farmacji na temat organizacyjno-prawnych form wykonywania zawodu farmaceuty, przewidzianych ustawą o zawodzie farmaceuty. *Farm Pol*. 2021;77(1), 9-16. Available: [https://web.archive.org/web/20210308092218id\\_/https://www.ptfarm.pl/download/?file=File%2FFarmacja+Polska%2F2021%2F1%2F02\\_OG\\_Formy\\_organizacyjno\\_prawne\\_n.pdf](https://web.archive.org/web/20210308092218id_/https://www.ptfarm.pl/download/?file=File%2FFarmacja+Polska%2F2021%2F1%2F02_OG_Formy_organizacyjno_prawne_n.pdf).
8. Błeszyńska E, Wierucki Ł, Zdrojewski T, Renke M. Pharmacological interactions in the elderly. *Medicina*. 2020;56(7):320. Available: <https://www.mdpi.com/1648-9144/56/7/320>.
9. Błeszyńska-Marunowska E, Jagiełło K, Grodzicki T, et al. 2022. Polypharmacy among elderly patients in Poland: prevalence, predisposing factors, and management strategies. Available: <https://pubmed.ncbi.nlm.nih.gov/36169051/>.
10. Chowdhury SR, Das DC, Sunna TC, et al. Global and regional prevalence of multimorbidity in the adult population in community settings: a systematic review and meta-analysis. *EClinicalMedicine*. 2023;57. Available: [https://www.thelancet.com/pdfs/journals/eclinm/PIIS2589-5370\(23\)00037-8.pdf](https://www.thelancet.com/pdfs/journals/eclinm/PIIS2589-5370(23)00037-8.pdf).
11. Srivastava SB. Polypharmacy, Unintended Consequences, and Impact of Lifestyle Medicine. *American Journal of Lifestyle Medicine*. 2024;18(1):54-7. Available: <https://pubmed.ncbi.nlm.nih.gov/39184275/>.