Annals of Pharmacy Practice and Pharmacotherapy
ISSN: 3062-4436
2024, Volume 4, Page No: 146-153

Available online at: www.galaxypub.co/page/journals

Galaxy Publication

Pharmacist-Guided Consultations Promote Rational Self-Medication Practices with Over-the-Counter (OTC) Drugs in Bulgaria

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Received: 05 August 2024; **Revised:** 19 October 2024; **Accepted:** 23 October 2024

ABSTRACT

Over-the-counter (OTC) medication use has expanded globally as a result of increased accessibility, escalating healthcare costs, and a growing emphasis on patient autonomy. In Bulgaria, community pharmacies frequently serve as the primary point of entry into the healthcare system for adult patients, thereby assigning pharmacists a central role in promoting rational self-medication practices. This study investigated patterns of OTC drug utilization among adult pharmacy clients and examined the extent to which pharmacist counseling influences purchasing decisions and medication safety. A cross-sectional survey was conducted in several Bulgarian cities among adults acquiring non-prescription medicines, using a structured questionnaire to gather data on demographic characteristics, commonly used OTC medication categories, motivations for purchase, sources of drug-related information, and perceptions of pharmacist-provided advice. The results indicated that analgesics, cold and cough preparations, and gastrointestinal agents were the most frequently purchased OTC products. A substantial proportion of respondents reported that pharmacist counseling significantly affected their final product selection, especially with regard to appropriate dosing, therapeutic suitability, and awareness of potential drug interactions. These findings underscore the indispensable role of pharmacists in ensuring the rational and safe use of OTC medications. Enhancing pharmacist–patient communication and strengthening public health education initiatives may further improve self-medication practices and medication safety within the primary healthcare context.

Keywords: Self-medication, Community pharmacy, Health literacy, Consumer behavior, OTC counseling, Medication safety

How to Cite This Article: Baker E, Wilson J, Green C. Pharmacist-Guided Consultations Promote Rational Self-Medication Practices with Over-the-Counter (OTC) Drugs in Bulgaria. Ann Pharm Pract Pharmacother. 2024;4:146-53. https://doi.org/10.51847/1vOK8YqVZm

Introduction

During the twentieth century, the pharmacist's traditional responsibilities of compounding, preparing, and dispensing medications began to evolve into a broader professional scope. This shift was formally conceptualized by Charles Hepler and Linda Strand, who characterized pharmaceutical care as a collaborative and patient-centered practice wherein the pharmacist assumes responsibility for ensuring optimal therapeutic outcomes that enhance the patient's quality of life [1]. The idea originated in the United States in the early 1980s, spurred by socioeconomic progress and legislative reforms [2]. In alignment with this evolution, the International Pharmaceutical Federation (FIP) established the "Good Pharmacy Practice" standard in 1992, which was subsequently endorsed by the World Health Organization (WHO) [3]. Cipolle and colleagues later defined pharmaceutical care as a structured, documented, and remunerated professional service focused on medication management [4].

In this framework, the pharmacist's role extends beyond mere dispensing; it involves building a relationship rooted in mutual trust, open communication, and shared decision-making with the patient. Such interaction enhances patient satisfaction and fosters adherence to therapy [5]. The patient, in turn, becomes an informed and active participant in managing their own health [6]. Moreover, pharmacists are responsible for monitoring

therapeutic outcomes through clinical measurements such as blood pressure, glucose, and cholesterol levels [7]. Pharmaceutical care also encompasses the identification, prevention, and resolution of actual or potential drug-related issues, including those associated with narcotic medications [8]. According to Ng *et al*. (2020) [9], both the informational and emotional aspects of pharmacist-patient interactions significantly influence patient perceptions, emphasizing the importance of empathy and communication during consultations.

In the realm of non-prescription products, pharmaceutical care remains vital to ensuring that over-the-counter (OTC) medications are used appropriately and safely. These medications, which consumers may obtain without a physician's prescription, are typically indicated for minor self-diagnosable conditions such as headaches, colds, or digestive discomfort [10]. The U.S. Food and Drug Administration (FDA) classifies a drug as OTC when it can be used safely and effectively under the directions provided on its label, without the need for professional supervision [11].

Globally, the range of OTC drugs continues to expand, with numerous prescription medications being reclassified to increase accessibility. However, this growing availability has also raised concerns regarding misuse and inappropriate self-medication. Consequently, pharmacists serve a critical role as accessible healthcare professionals who provide accurate guidance, ensure rational medication use, and determine when physician consultation is warranted [12, 13]. Numerous investigations have underscored the positive contributions of pharmaceutical care and the pivotal function of pharmacists in the responsible dispensing of OTC products [14].

The present study aims to highlight the importance of pharmaceutical care in the context of OTC medication dispensing, emphasizing the pharmacist's essential role in promoting patient safety and enhancing quality of life.

Materials and Methods

Study design

This study employed a sociological approach through a cross-sectional design involving adult pharmacy clients across Bulgaria from February to April 2025. Data collection was facilitated through an online questionnaire created via Google Forms and distributed electronically through smartphone applications and social media channels. The questionnaire's introductory section outlined the study's objectives and included an assurance of participant anonymity, as no identifying information, such as personal data or email addresses, was collected. Participation was entirely voluntary, with respondents indicating their consent before proceeding.

Research instrument

The survey instrument comprised 33 questions categorized into four sections. The first section collected demographic data, including gender, age, educational attainment, social status, and place of residence. The remaining sections addressed patterns of OTC medication use, sources of information influencing purchasing decisions, and adherence to Good Pharmacy Practice (GPP) principles during non-prescription drug dispensing.

Responses were recorded using a five-point Likert scale: "yes," "rather yes," "no," "rather no," and "cannot answer." This scaling method was chosen to capture nuanced respondent attitudes and yield more detailed insights. The questionnaire's content validity and overall structure were reviewed and approved by academic and professional experts specializing in pharmaceutical care.

Questionnaire validation

The preliminary 33-item version of the questionnaire underwent assessment by a three-member expert panel consisting of two adult community pharmacy clients and one academic specialist in social pharmacy to ensure both face and content validity. A pilot test was subsequently conducted with 20 participants, whose responses were excluded from the final analysis. Reliability testing produced a Cronbach's α of 0.81 for the counseling dimension and 0.78 for the barriers dimension, demonstrating satisfactory internal consistency. Minor revisions in wording were incorporated prior to the official survey deployment.

Statistical analysis

Data were analyzed using IBM SPSS software, focusing primarily on descriptive statistics, including summary measures, univariate frequency distributions, and bivariate cross-tabulations. Hypothesis testing was performed via the chi-square test. Logistic regression analysis revealed that pharmacists with ten or more years of professional experience were 2.3 times more likely to provide regular counseling (OR = 2.30; 95% CI: 1.12–4.70;

p = 0.023). Conversely, managing workloads exceeding 150 clients per day was associated with significantly lower odds of frequent counseling (OR = 0.54; 95% CI: 0.30–0.98; p = 0.042).

Target population and sampling

The study targeted adults aged 18 years and older during the February–April 2025 data collection period. According to the National Statistical Institute, the total adult population in Bulgaria was 5,210,000. A power analysis determined the minimum required sample size, assuming a 10% difference in OTC medication reference sources among demographic subgroups, a significance level (α) of 0.10, and a statistical power of 80%. Based on these parameters, a minimum of 154 participants was needed to identify a statistically meaningful effect.

In processing the survey data, missing responses were addressed using the pairwise deletion approach integrated within SPSS, ensuring that each statistical computation utilized all available valid data for the variables analyzed.

Ethical considerations

The research was conducted in accordance with Good Pharmacy Practice standards and the ethical principles of the World Medical Association's Declaration of Helsinki, alongside relevant national regulations. Participation by pharmacy clients was entirely voluntary, and respondents were required to indicate their consent prior to completing the questionnaire.

Results and Discussion

Demographic characteristics

A total of 195 individuals voluntarily participated in the survey through a self-selection method. Respondents represented diverse residential settings, including district cities, smaller towns, and villages across Bulgaria. Their demographic characteristics are summarized in **Table 1**. Women comprised the majority of participants (80%; n = 156), while men represented 20% (n = 39). The median age of the respondents was 41 years, ranging from 18 to 78 years. The most common age group was 21 years, accounting for 6.9% of the total sample.

Table 1. Demographic data of the participants in the study (n = 195).

Characteristics	n (%)
Gender	
Male	20.0
Female	80.0
Age	
up to 19	1.6
20 – 29	24.5
30 – 39	21.3
40 – 49	22.9
50 – 59	19.7
over 60	10.1
Education	
Primary	0.5
Secondary	26.2
Professional Bachelor	7.7
Bachelor	22.6
Master	39.0
Doctor	4.1
Social status	
Student	17.9
Employed	74.4
Unemployed	1.5
Retired	4.1
Housewife	1.5
Other	0.5

Place of residence	
A district city	69.2
A small town	19.5
A village	11.3

Individuals with higher education levels constituted the majority of the study sample, representing 73.4% (n = 143), among whom 4.1% (n = 8) possessed a doctoral (PhD) academic and scientific qualification.

Most frequently purchased over-the-counter (OTC) medications (categorized by symptoms)

Findings from the study revealed that the most commonly purchased OTC products were those used to treat flu and cold symptoms (64.1%). This was followed by medications for pain relief (54.4%), sore throat (52.8%), nasal congestion (51.8%), and fever (44.1%) **(Figure 1)**. The least frequently bought OTC drugs were contraceptives (2.6%) and treatments for anemia (1.5%), which can be attributed to the fact that these conditions generally require physician-prescribed medications. Data concerning the respondents' sources of reference when selecting OTC medications are presented in **Table 2**. These references were assessed using a five-point Likert scale with the options "yes," "rather yes," "rather no," "no," and "cannot answer."

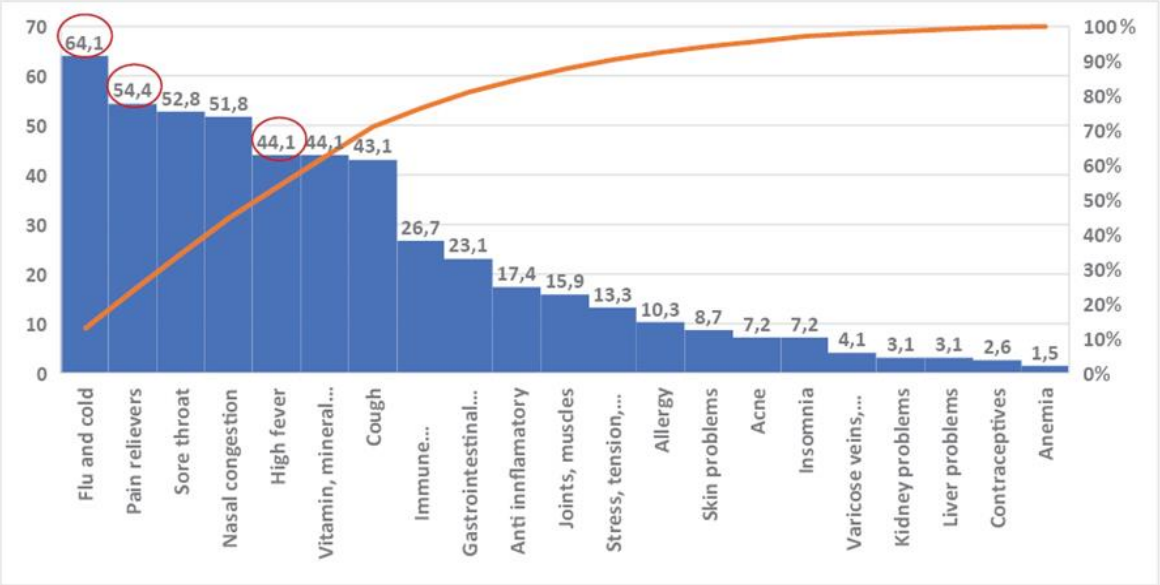

Figure 1. Categories of over-the-counter (OTC) medications purchased. Participants were allowed to select multiple categories.

Table 2. Sources of reference when purchasing over-the-counter (OTC) medications (n = 195).

Statement	Yes (%)	Rather yes (%)	Rather no (%)	No (%)	Cannot answer (%)
I usually buy OTC medications suggested by a pharmacist.	48.2	27.2	10.8	8.2	5.6
I tend to buy OTC medications that are promoted through advertisements.	10.3	15.9	28.2	24.6	21.0
I select OTC medications based on my own prior experience.	62.1	28.7	1.5	3.6	4.1
I choose OTC medications after conducting my own online research.	17.9	28.7	16.9	21.0	15.4
I purchase OTC medications following the recommendation of a healthcare provider.	73.3	15.4	1.5	2.6	7.2

Multivariate findings

In the adjusted regression model, participants aged 40 years and older were 2.3 times more likely to seek advice from a pharmacist (OR = 2.30; 95% CI: 1.12–4.70; p = 0.023), while serving more than 150 clients daily was

associated with a decreased likelihood of providing such counseling (OR = 0.54; 95% CI: 0.30–0.98; p = 0.042). After adjustment, education level no longer showed a statistically significant relationship (p = 0.11).

A considerable proportion of respondents (73.3%) reported purchasing OTC medications based on recommendations from healthcare professionals. When asked specifically about pharmacists, who play a central role in medication dispensing, more than half of the participants expressed confidence in their guidance—48.2% responded "yes," and an additional 27.2% selected "rather yes." The decision to purchase non-prescription medications is shaped by a multifaceted set of influences, including cultural, social, economic, and psychological factors [15]. Interestingly, despite the pervasive presence of marketing, only 10.3% of respondents stated that advertising significantly affected their choice.

Analysis of demographic factors indicated that individuals with higher education were more inclined to select non-prescription medicinal products based on prior personal experience than those with lower educational attainment ($\chi^2 = 39.008$, p = 0.007).

Standards of good pharmacy practice in dispensing over-the-counter (OTC) medications and self-medication

A substantial majority of participants reported that pharmacists inquired about key aspects before dispensing OTC medications. The most frequent questions included: "Who is the medication for?" (71.3%), "What symptoms are being treated?" (62.6%), and "Are you currently taking other medications?" (49.7%). More than half of the respondents answered "yes" or "rather yes" to the remaining questions regarding pharmacists' inquiries during OTC dispensing, as detailed in **Table 3.**

Table 3. Questions commonly asked by pharmacists when dispensing over-the-counter (OTC) medications (n = 195).

Question	Yes (%)	Rather yes (%)	Rather no (%)	No (%)	Cannot answer (%)
Who is the medication intended for?	71.3	14.4	5.1	5.6	3.6
What symptoms are you experienet alcing?	62.6	13.3	10.3	8.2	5.6
How long have these symptoms persisted?	44.1	22.1	14.9	9.2	9.7
Have you taken any measures or treatments so far?	41.5	22.1	14.4	13.3	8.7
Are you currently using any other medications?	49.7	16.4	11.3	14.9	7.7
Do you have any known allergies to medications?	43.1	15.9	14.9	17.9	8.2
Does the pharmacist inform you about possible adverse or side effects of the medication dispensed?	35.9	23.1	14.4	16.9	9.7
Does the pharmacist provide warnings about potential interactions between the dispensed medication and other drugs and/or foods?	38.5	19.5	13.3	15.9	12.8

Over one-third of respondents (38.5%) indicated that their pharmacist had cautioned them about potential interactions between OTC medications and other drugs or foods. Similarly, 35.9% affirmed that they had been informed about possible adverse or unwanted effects related to the OTC medications they purchased.

This study underscores the critical role of pharmaceutical care in the dispensing of OTC medications, ensuring their safe and effective utilization. Providing professional advice and assisting patients in selecting suitable non-prescription drugs represents a fundamental aspect of pharmacy practice. The present research illustrates one of the core components of good pharmacy practice standards [16], specifically the evaluation of self-medication needs, demonstrated through the questions pharmacists asked their clients. Adherence to such standards is essential for enhancing the quality and efficiency of pharmaceutical care, which in turn has a positive impact on patients' overall well-being, as also discussed by Sepp *et al*. (2021) [17].

The study revealed that OTC products most frequently purchased by participants were intended for flu and cold relief (64.1%) and pain management (54.4%). These findings align with those of a Canadian study, where self-medication practices primarily involved OTC products for mild conditions such as headaches (79%), athlete's foot (73%), and coughs or colds (70%) [18]. Similar trends were also reported by Kamal *et al*. (2023) [19], who found that cold and cough preparations were among the most commonly used OTC drugs.

Prior to purchasing OTC products, 73.3% of participants reported consulting a healthcare professional, with 48.2% specifically relying on pharmacist recommendations. This emphasizes the high level of trust patients place in pharmacists and their professional guidance on appropriate OTC medication use. Comparable findings were observed in an Australian study, where pharmacy customers were most influenced by advice from in-store pharmacists (56.9%), followed by physicians (19.9%), relatives or friends (11.3%), and advertisements (6.2%) [20].

In line with these findings, our respondents also attributed minimal importance to advertising influence—only 10.3% reported being strongly swayed by it—closely mirroring results from the Australian study. A 2015 investigation conducted in Estonia similarly demonstrated that advertisements had a limited effect on consumer purchasing behavior, whereas recommendations from healthcare professionals remained the dominant influence, cited by 57% of participants. Furthermore, 62.1% of our respondents reported buying OTC medications based on prior personal experience, suggesting familiarity with the products, although this does not necessarily preclude improper use, such as dosing errors or incorrect treatment duration [21].

The present study also confirmed that pharmacists provided counseling about common side effects and potential interactions of OTC medications with other drugs and foods. Consistent with good pharmacy practice standards, pharmacists are expected to gather individualized patient information to recommend suitable medications or therapies. Our findings confirm adherence to these standards, as over two-thirds of participants stated that pharmacists engaged in direct communication prior to dispensing OTC medications **(Table 3)**. This dialogue plays a vital role in minimizing risks associated with incorrect medication selection, dosage, or duration of treatment [12, 22]. Ultimately, the pharmacist's foremost duty remains ensuring patient safety by preventing any harm that might arise from the improper use of OTC medications [23, 24].

Limitations

This study has several limitations. First, the use of convenience and self-selection sampling restricts the extent to which findings can be generalized to the broader population. Second, conducting the survey online may have inadvertently excluded older individuals or those with limited digital proficiency, potentially biasing the age distribution. Third, as a cross-sectional study, the data reflect associations rather than causal relationships; longitudinal research would be necessary to track behavioral changes over time. Additionally, although the questionnaire was reviewed by experts, it was not validated against an external benchmark, which could lead to measurement inaccuracies.

While in-person interviews might have yielded more nuanced and detailed insights, they also carried the potential for social desirability bias. The anonymous online format helped mitigate this issue, though it restricted the opportunity for follow-up questioning and deeper exploration of participant attitudes.

This investigation underscores the vital role of adult pharmacy customers and highlights the significance of pharmaceutical care in facilitating responsible self-medication with OTC drugs. Nonetheless, it does not address operational barriers—such as limited time, staff shortages, and communication challenges—that may compromise the quality of pharmaceutical care in OTC medication provision. These factors will be examined in greater depth in a forthcoming study.

Conclusion

This pioneering national survey provides evidence that pharmacist counseling plays a crucial role in promoting the safe and appropriate use of OTC medications among Bulgarian consumers. Future research should further investigate systemic challenges such as workload pressures and documentation requirements.

The evolving role of the pharmacist increasingly centers on patient care, marking a shift from product-oriented to patient-focused practice. This transformation benefits not only individual patients but also the wider healthcare system and society. Ensuring that pharmacists deliver comprehensive, high-quality pharmaceutical care—beyond the mere dispensing of OTC medications—is essential.

However, in certain situations, pharmacists face practical barriers that limit their ability to devote adequate time and attention to patients during OTC consultations. These challenges will be analyzed in subsequent research.

Acknowledgments: None

Conflict of Interest: None

Financial Support: None

Ethics Statement: None

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