



# The Knowledge and Attitude of Patients About Drugs They Use

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## SUMMARY

**Introduction:** Although numerous effective drugs are available on the market, the effects of the therapy are often missing. Possible reasons include problems with access to health care, lack of compliance or a tendency to self-medicate.

**Aim:** The aim of the study was to analyze the structure of the drugs dispensed to patients in the pharmacy, as well as the knowledge and attitudes of patients towards the drugs they use.

**Material and Methods:** Research has been conducted in 2 pharmacies - pharmacy „Gal-enpharm” and pharmacy „Janković” in Kula, during 10 working days, 3 hours each day at randomly selected terms during March 2023. The number and type of drugs dispensed were recorded, and the respondents were interviewed according to a questionnaire prepared in advance.

**Results:** During the observed period, the largest number of drugs dispensed was from the group of drugs used for the treatment of disorders of the cardiovascular system. In 89% of cases, patients take medicines according to the doctor's recommendation. Patient's knowledge about the correct use of medications, dosing and taking them in relation to meals is satisfactory. The knowledge about side effects of drugs and possible interactions is minimal, although over 90% of respondents read the instructions for the drug from the original packaging of the drugs.

**Conclusion:** Patient's knowledge about the drugs they take is limited. By not taking medications correctly, patients are undertreated, regardless of the correct diagnosis and well-chosen medications. Their knowledge about drugs is a stumbling block in successful pharmacotherapy.

**Keywords:** Pharmacotherapy, Outpatient Use Of Drugs, Compliance, Self-Medication

## INTRODUCTION

In the second half of the 20<sup>th</sup> century, curative medicine developed, with the appearance of numerous effective drugs. Mainly, progress has been achieved in the field of treatment of infectious diseases that have become curable

with the development of antibacterial drugs and vaccines, that is diseases that can be prevented [1].

Significant moments in modern medicine include the discovery of antibacte-

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rial drugs [2], with Paul Ehrlich's introduction of the term „magic bullet” to target disease-causing microorganisms specifically [3,4]. Antibacterial drugs reduced infectious disease mortality rates and increased life expectancy. The „Human Genome” project, which started in 2000, also marked a milestone [5]. Deciphering the human genome has revolutionized disease study and the development of personalized medicine [6], tailoring treatments to a patient's genetic characteristics, environment, and lifestyle. Examples of early personalized medicine include dosing warfarin based on the patient's genotype, considering genes like VKORC1 and CYP2C9 [7]. Primaquine, used to treat malaria, may cause side effects in patients with glucose-6-phosphate dehydrogenase deficiency due to gene variations [8]. Imatinib, used for chronic myeloid leukemia, is effective in patients with a „Philadelphia chromosome” gene mutation[9].

Today, the use of personalized medicine has changed the prognosis of various types of cancer, neurodegenerative diseases as well as genetic diseases, and these are only some of the diseases in which the introduction of personalized therapy significantly changed the prognosis [6].

Although numerous effective drugs are available on the market, it happens that the effects of the therapy are missing. Possible reasons include problems with access to health care, lack of compliance or a tendency to self-medicate [10,11].

Pharmacy is the last instance where patients can get information about the therapy they use, and the pharmacist's conversation with the patient is often focused on the drug, which is why patients tend to self-medicate [12,13,14,15].

In pharmacies patients can get without a prescription numerous drugs that are on the market in the Republic of Serbia, which results in self-medication without a confirmed diagnosis, sufficient information about the treatment and professional supervision.

## AIM

The aim of the study was to analyze:

1. The structure of the drugs dispensed to patients in the pharmacy;
2. The origin of the information that patients receive about the therapy they use;
3. The origin of the initiative to treat health

problems with pharmacotherapy;

4. The knowledge and attitudes of patients towards the medications they use;
5. Information that patients receive from pharmacists about their therapy.

## MATERIAL AND METHODS

Research has been conducted in 2 pharmacies – pharmacy „Galenpharm” and pharmacy „Janković” in Kula, as a academic (non-commercial) prospective study, IV fase, during 10 working days, 3 hours each day at randomly selected terms during March 2023.

The number and type of drugs dispensed with or without a prescription were recorded. Drugs are grouped according to ATC (anatomical therapeutic chemical) drug classification groups.

The respondents were interviewed according to a questionnaire prepared in advance:

1. Name of the medicine (they are taking);
2. Is the medicine prescribed by a doctor, or is it self-initiated taking (self-medication);
3. If it is a self-medication - the origin of the information that led the patient to start self-medication;
4. Is the patient familiar with:
  - a. the way of taking the medicine;
  - b. drug dosing interval;
  - c. taking medicine in relation to meals (food effect);
  - d. taking in relation to other medicines (interactions).
5. Is the patient aware of the side effects of the drug - are they able to count the side effects of the drug;
6. Do they take medication regularly;
7. Do they read the instructions for the patient from the original packaging of the medicines;
8. From whom they received information about how to take the medicine - doctor, pharmacist, nurse, someone else;
9. When they receive information from pharmacists, what information do they receive.

Results were expressed as numbers and percentages, presented in tables.

## RESULTS

The structure of the drugs dispensed to patients in the observed period is shown in Table 1.

**Table 1.** The structure of the drugs dispensed to patients in the observed period

Drug groups	Percent (%)
A - Alimentary track and metabolism	10.90
B - Blood and blood forming organs	3.76
C - Cardiovascular system	43.23
D - Dermatologicals	0.56
G - Genito urinary system and sex hormones	0.56
H - Systemic hormonal preparations, excluding sex hormones	1.50
J - Antiinfective for systemic use	5.45
M - Musculo-skeletal system	0.56
N - Nervous system	25.38
P - Antiparasitic products	0.19
R - Respiratory system	1.32
S - Sensory organs	1.13
V - Various	5.45
IN TOTAL	100.00

**Table 2.** The most frequently dispensed drug groups

Drug group	Percent (%)
<b>C - Cardiovascular system</b>	
ACE inhibitors	22.17
Beta adrenergic blockers	14.78
Calcium channel blockers	17.39
Diuretics	20.00
Angiotensin receptor blockers (ARBs)	9.45
Combination of antihypertensive drugs	8.72
Others	7.48
IN TOTAL	100.00
<b>N - Nervous system</b>	
Nonsteroidal anti-inflammatory drugs	60.00
Benzodiazepines	30.37
Others	9.63
IN TOTAL	100.00
<b>A - Alimentary tract and metabolism</b>	
Antacids	8.62
Antidiabetics	39.66
H2 receptor blockers	32.76
Antiemetics	5.45
Antidiarrheals	5.11
Vitamins and minerals	4.90
Others	6.95
IN TOTAL	100.00

Looking at the structure of the drugs that patients get at the pharmacy, the most frequently dispensed drugs are drugs for disorders of the cardiovascular system, drugs for disorders of the nervous system, and drugs for

disorders of the digestive tract (Table 1).

A more detailed analysis of the structure of drugs dispensed in the observed period, for drug groups that were dispensed the most frequently is shown in Table 2.

The most commonly used drugs for the treatment of cardiovascular diseases are: ACE inhibitors, diuretics, Calcium channel blockers, while the fourth most common are beta adrenergic blockers. At the same time, more than half of the drugs used to treat nervous system disorders are NSAIDs. Patients often used them on their own initiative. Most common drugs used for the treatment of gastrointestinal tract disorders are antidiabetics, H2 receptor blockers and antacids.

Table 3 shows the analysis of respondent's answer to questions regarding the implementation of therapy, knowledge about possible drug interactions and their side effects, the origin of information about the drugs.

In 89% of cases, patients take medicines that are recommended by their doctors. In the remaining cases, patients who take drugs on their own initiative mostly take drugs from the group of NSAIDs, oral antiseptics, vitamins, and information about these drugs is usually obtained from a doctor.

Patients showed a high level of knowledge about the correct way to take medicines as well as the dosing intervals. However, not all respondents knew how to define the exact dosage intervals, but answered the question in the affirmative, with the explanation that they have dosage instructions in written form from the doctor and that they take the medication

Question	Percent (%)
Medicine prescribed by doctor/self-initiated use	89.0/11.0
If self-initiative - information about the drug obtained from the doctor/pharmacist	82.0/18.0
Do you know how to take medicine YES/NO	96.0/4.0
Do you know how often you should take your medicine YES/NO	96.0/4.0
Do you regularly take medications YES/NO	88.8/11.2
Do you know how to take medications in relation to meals YES/NO	71.4/28.6
Do you know how to take medicines in relation to other medicines YES/NO	27.5/72.5
Do you know the side effects of the medications you are taking YES/NO	9.3/90.7
Do you read the instructions on the medicine box YES/NO	95.1/4.9
Who informed you about the correct way to take medicine?	Percent (%)
Doctor	66.7
Pharmacist	2.9
Doctor and Pharmacist	29.4
No one	1.0

**Table 3.** Respondent’s knowledge about the medications they use

accordingly.

Regarding taking medicines in relation to meals, a large number of respondents stated that they were familiar with this information. However, that should not be taken for granted because numerous patients answered that the food does not impact the therapy they are taking. Due to the volume of work, we were not able to verify every single claim that the influence of food does not exist. The respondents who used antacids, H2 receptor blockers and drugs from the NSAID group were informed the most.

Respondent’s knowledge about the simultaneous intake of several drugs and the possible interaction of drugs is weak. Less than 30% indicated some awareness of the potential drug interactions.

Although 95% of respondents stated that they read the instructions on the medication box, only the minority were aware of the side effects of the medication they were taking. They most often mentioned general side effects such as gastrointestinal complaints, while specific side effects are known extremely rare. Therefore, it can be assumed that the information about side effects in the instruction for medicines is not adequate, that patients often do not understand them, and it might be good to consider simplifying the information about side effects presented to patients.

## DISCUSSIONS

The most frequent dispensing of drugs for the treatment of cardiovascular system disorders

is in agreement with the data on the prevalence of mass non-communicable diseases [16] as well as with the data on the consumption of drugs [17].

It is interesting that a certain number of patients buy medicines that can be obtained by prescription with minimal participation. The reasons they most often state are the long wait for an appointment with the doctor in order to get a prescription, unregulated health insurance with a lack of funds to go to a private doctor’s office, strict work regime in companies they work so they cannot set aside time to go to the doctor, etc. The stated reasons have also been quoted in the investigated populations of other researchers, in studies conducted in Colombia [11] and other countries [12].

On the other hand, due to the limited availability of general practitioners, who, for objective or subjective reasons, do not pay enough attention to the patient, side effects of drugs are often treated as new ailments [4,10,11]. Patients who usually use several drugs and who often experience side effects, without recognizing them, take new drugs on their own initiative, which will contribute to the appearance of new side effects and so on [19].

Over 90% of respondents from our study stated that they regularly take the prescribed therapy. These data should be taken with a grain of salt, because previous studies showed that this percentage was as low as 30% [11,18].

In most cases, respondents learned how to take medicines from a doctor or a doc-

tor and a pharmacist. Patients state that the doctors from whom they receive information are almost always specialists and that the specialist's report on which the therapy is indicated serves as an instruction for therapy. This represents a major problem in the provision of health services, where the role of the general practitioner, which should be the basis of any well-organized healthcare system, is reduced to prescribing medicines as recommended by a specialist [20].

The last instance, that could be useful for improving the level of knowledge of patients in the field of pharmacotherapy, are pharmacists. During our research, unfortunately, there was no case with a recommendation/information about possible side effects and drug interactions. The information that the respondents received from the pharmacist was mainly related to the dosage regimen and possible substitutes for the prescribed medicine, similar to the study conducted in Jordan [21].

## CONCLUSION

The structure of drugs dispensed in pharmacies in the observed period corresponds to the data on the prevalence of mass non-communicable diseases as well as the data on the consumption of drugs at the national level.

The propensity of respondents to self-medicate is not high, given that almost 90% of respondents take medication based on a doctor's recommendation.

Patient's knowledge about the way of taking medicines, dosing intervals and taking medicines in relation to meals is satisfactory, however, in order to gain a more precise insight, it would be necessary to carry out further tests and check the statements of the respondents individually.

The amount of knowledge about the side effects of drugs and possible interactions is minimal, although 95% of respondents read the instructions from the original packaging of the drugs.

Patient's knowledge about the drugs they take is limited. By not taking medications correctly, patients are undertreated, regardless of the correct diagnosis and well-chosen medications. Their knowledge about drugs is a stumbling block in successful pharmacotherapy.

## CONFLICTS OF INTEREST

All authors declare no conflict of interest.

## REFERENCES

1. O'Mahony S. After the golden age: what is medicine for? *Lancet*. 2019;393(10183):1798-9.
2. Hutchings MI, Truman AW, Wilkinson B. Antibiotics: past, present and future. *Curr Opin Microbiol*. 2019;51:72-80.
3. Zipfel PF, Skerka C. From magic bullets to modern therapeutics: Paul Ehrlich, the German immunobiologist and physician coined the term 'complement'. *Mol Immunol*. 2022;150:90-8.
4. Prathapan P. Magic bullets, magic shields, and antimicrobials in between. 2023;1(1):100002.
5. Nurk S, Koren S, Rhie A, Rautiainen M, Bzikadze AV, Mikheenko A, et al. The complete sequence of a human genome. *Science*. 2022;376(6588):44-53.
6. Goetz LH, Schork NJ. Personalized medicine: motivation, challenges, and progress. *Fertil Steril*. 2018;109(6):952-63.
7. Lee MT, Klein TE. Pharmacogenetics of warfarin: challenges and opportunities. *J Hum Genet*. 2013;58(6):334-8.
8. Luzzatto L, Seneca E. G6PD deficiency: a classic example of pharmacogenetics with ongoing clinical implications. *Br J Haematol*. 2014;164(4):469-80.
9. O'Dwyer ME, Druker BJ. Status of bcr-abl tyrosine kinase inhibitors in chronic myelogenous leukemia. *Curr Opin Oncol*. 2000;12(6):594-7. 14
10. McCahon D, Duncan P, Payne R, Horwood J. Patient perceptions and experiences of medication review: qualitative study in general practice. *BMC Primary Care*. 2022;23(1):293.
11. Legido-Quigley H, Camacho Lopez PA, Bala-banova D, Perel P, Lopez-Jaramillo P, Nieuwlaat R, Schwalm JD, McCreedy T, Yusuf S, McKee M. Patients' knowledge, attitudes, behaviour and health care experiences on the prevention, detection, management and control of hypertension in Colombia: a qualitative study. *PLoS One*. 2015 Apr 24;10(4):e0122112. doi: 10.1371/journal.pone.0122112. PMID: 25909595; PMCID: PMC4409332.
12. Maes KA, Ruppanner JA, Imfeld-Isenegger TL, Hersberger KE, Lampert ML, Boeni F. Dispensing of Prescribed Medicines in Swiss Community Pharmacies Observed Counselling Activities. *Pharmacy (Basel)*. 2018;7(1).
13. Packeiser PB, Castro MS. Evaluation of simulated drug dispensing and patient counseling in the course of pharmaceutical improvement: 2009 to 2015. *Pharm Pract (Granada)*. 2020;18(4):1865.

14. Janatolmakan M, Abdi A, Andayeshgar B, Soroush A, Khatony A. The Reasons for SelfMedication from the Perspective of Iranian Nursing Students: A Qualitative Study. *Nurs Res Pract.* 2022;2022:2960768.
15. Rathod P, Sharma S, Ukey U, Sonpimpale B, Ughade S, Narlawar U, Gaikwad S, Nair P, Masram P, Pandey S. Prevalence, Pattern, and Reasons for Self-Medication: A Community-Based Cross-Sectional Study From Central India. *Cureus.* 2023 Jan 18;15(1):e33917. doi: 10.7759/cureus.33917. PMID: 36819304; PMCID: PMC9936784.
16. Institute of public health of Serbia, Dr Milan Jovanovic Batut” Health statistical yearbook of Republic of Serbia 2021. 2022. Available from <https://www.batut.org.rs/download/publikacije/pub2021a.pdf>
17. ALIMs. Promet i potrošnje lekova za upotrebu u humanojoj medicini u 2021. godini. 2022. Dostupno na <https://www.alims.gov.rs/wpcontent/uploads/2022/08/promethumanih-2020-publikacija-1.pdf> 15
18. Khatib R, Schwalm JD, Yusuf S, Haynes RB, McKee M, Khan M, Nieuwlaat R. Patient and healthcare provider barriers to hypertension awareness, treatment and follow up: a systematic review and meta-analysis of qualitative and quantitative studies. *PLoS One.* 2014 Jan 15;9(1):e84238. doi: 10.1371/journal.pone.0084238. PMID: 24454721; PMCID: PMC3893097.
19. Figueiras A, Caamaño F, Gestal-Otero JJ. Sociodemographic factors related to selfmedication in Spain. *Eur J Epidemiol.* 2000;16(1):19-26.
20. Stirbu I, Kunst AE, Mielck A, Mackenbach JP. Inequalities in utilisation of general practitioner and specialist services in 9 European countries. *BMC health services research.* 2011 Dec;11:1-8.
21. Albsoul-Younes AM, Jabateh SK, Abdel-Hafiz SM, Al-Safi SA. Awareness and frequency of potential side effects on nonsteroidal anti-inflammatory drugs among the Jordanian patient population. *Saudi medical journal.* 2004 Jul 1;25(7):907-11.

## Upotreba lekova i odnos pacijenata prema lekovima

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### KRATAK SADRŽAJ

**Uvod:** Iako je na tržištu dostupan veliki broj efikasnih lekova, dešava se da izostanu efekti terapije. Mogući razlozi uključuju probleme sa pristupom zdravstvenoj zaštiti, nepoštovanje ili sklonost samolečenju.

**Cilj:** Cilj istraživanja bio je da se analizira struktura lekova koji se izdaju pacijentima u apoteci, kao i znanja i stavovi pacijenata prema lekovima koje koriste.

**Materijal i metode:** Istraživanje je sprovedeno u 2 apoteke - apoteci „Galenpharm” i apoteci „Janković” u Kuli, tokom 10 radnih dana po 3 sata svakog dana u slučajno odabranim terminima tokom marta 2023. godine. Evidentiran je broj i vrsta izdatih lekova, a ispitanici su intervjuisani prema unapred pripremljenom upitniku.

**Rezultati:** Tokom posmatranog perioda, najveći broj izdatih lekova bio je iz grupe lekova koji se koriste za lečenje poremećaja kardiovaskularnog sistema. U 89% slučajeva pacijenti uzimaju lekove prema preporuci lekara. Poznavanje pacijenata o pravilnoj upotrebi lekova, doziranju i uzimanju u odnosu na obroke je zadovoljavajuće. Količina znanja o neželjenim efektima lekova i mogućim interakcijama je minimalna, iako je preko 90% ispitanika pročitao uputstvo za lek sa originalnog pakovanja lekova.

**Zaključak:** Znanje pacijenata o lekovima koje uzima je ograničeno. Nepravilnim uzimanjem lekova pacijenti su nedovoljno lečeni, bez obzira na tačnu dijagnozu i dobro odabrane lekove. Njihovo znanje o lekovima je kamen spoticanja u uspešnoj farmakoterapiji.

**Ključne reči:** farmakoterapija, ambulantna upotreba lekova, komplians, samolečenje

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