

Drug interactions – a cross-section of the situation at the primary level of healthcare in Montenegro

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Introduction

Polypharmacy, the simultaneous use of several drugs by one person, is becoming more common among the elderly. That is due to the presence of multiple comorbidities in such patients, which requires a more complex treatment regimen. As much as polypharmacy is justified in some situations, it in itself carries a risk. The frequency of side effects and drug interactions is higher, and the compliance is worse. When you use more than five drugs together, in theory, there is a 50% probability that an interaction will occur, and when using more than seven drugs, the odds increase to 100%. 20% of these interactions consider having clinical significance. A clinically significant interaction is the one where a particular therapeutic combination leads to an unexpected change or condition in the patient. They most often occur at the level of metabolism (pharmacokinetic interaction) or at the level of the target site of action (pharmacodynamic interaction), which can increase or decrease the activity of the drug, which can result in either side effects or lack of therapeutic effect. Given that these are interactions that can seriously endanger the patient's condition, it is necessary to take adequate measures to prevent them, in which pharmacists can play an important role. Due to the growing popularization of "nutrients, dietary supplements" in the media, patients often take additional preparations in addition to prescribed medications. That is why it is crucial to know what the patient uses from over-the-counter (OTC) medications since these medications can also have a high potential for interacting with prescribed medications. Considering the above, we wanted to examine the frequency of drug interactions in patients in Podgorica. The research was conducted in 2018 and 2021 on patients in the primary level of health care (PHC) in Podgorica to correlate the frequency of interactions.

Results

Table 1. Comparative analysis of the characteristics of the study populations from 2018 and 2021

Parameter	Value (mean ± SD or number) 2018 year	Value (mean ± SD or number) 2021 year
The number of participants	106	110
Sex (M/F)	40/66	68/42
Age (years)	68±12	62.3±8.7
Number of participants ≥65 years	66	53
Average age of participants ≥65 years	75.4±6.1	69.3±3.9
Sex (M/F) of participants ≥65 years	23/43	32/21
Average number of drugs used by participants ≥65 years	7.2±2.7	7.9±2.5
Number of participants <65 years	40	57
Average age of participants <65 years	55.8±8.8	55.8±6.7
Sex (M/F) of participants <65 years	17/23	36/21
Average number of drugs used by participants <65 years	5.3±1.9	6±2.2

Table 2. Comparative analysis of the frequency and type of CSI from 2018 and 2021

Parameter	Value (mean or number) 2018	Value (mean or number) 2021
Total number of participants with CSI	29	15
Total number of CSI	50	18
Number of participants ≥65 years with CSI	23	10
Number of participants <65 years with CSI	6	5
The number of CSI per participant ≥65 years	1.7	1.3
The number of CSI per participant <65 years	2	1
Minimum number of CSI registered in Participants ≥65 years	1	1
Minimum number of CSI registered in Participants <65 years	1	1
Maximum number of CSI registered in participants ≥65 years	4	3
Maximum number of CSI registered in participants <65 years	5	1

Materials and methods

The prospective study was conducted on patients in PHC in Podgorica in the period November 2018 - February 2019 and May 2021 - April 2022. The inclusion criteria for the study were that respondents voluntarily agreed to participate and that they were confident in the type of drug they used on the day of the survey. After that, they started filling out a questionnaire in which they had to state: their gender, age in years, medicines, supplements, and herbal medicines they use. After obtaining the data, we split the respondents into two groups those who were older (≥65) and those who were younger than 65 years old (<65). Then we enter the data from the questionnaire into an excel spreadsheet. After that, for each respondent individually at the website www.drugs.com, Interaction checker section, we enter the complete therapy that the respondent was using. Only the so-called major interactions, clinically significant interactions (CSI) that could be even life-threatening, were taken into account. After that, we processed the data in Microsoft Excel.

Figure 1. Frequency of interactions

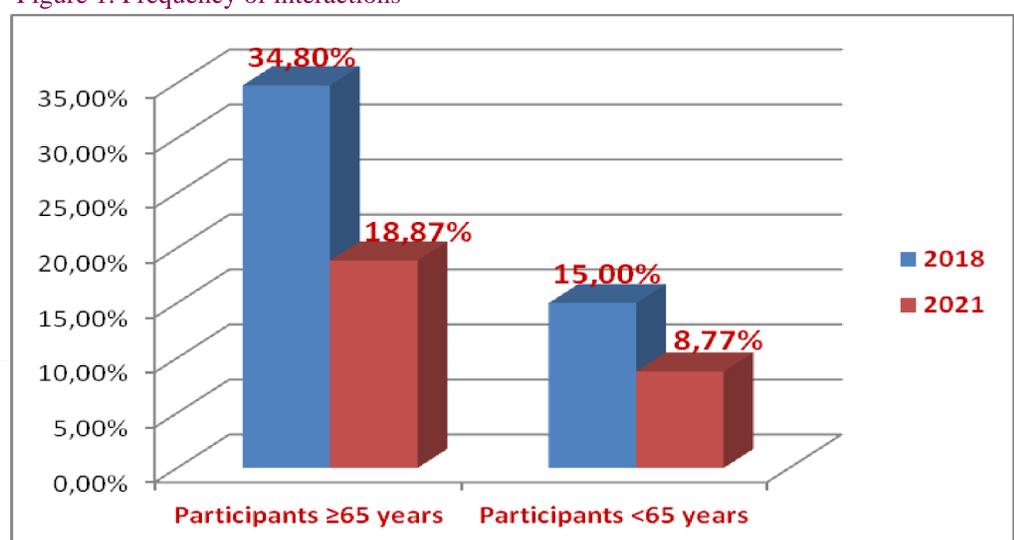


Figure 2. Representation of types of interactions in 2018 and 2021.

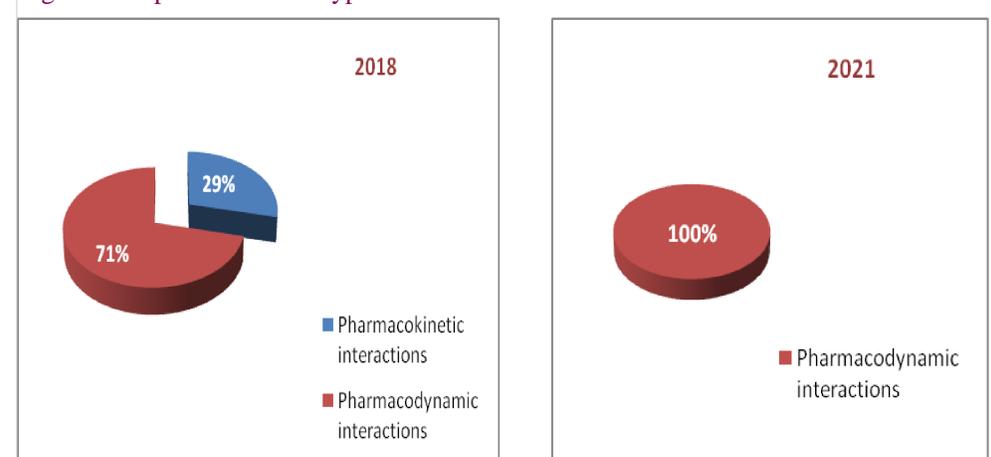


Table 3. The most common CSI found in our study

spironolactone + angiotensin-converting enzyme inhibitors (increased the level of potassium in blood)
spironolactone + angiotensin receptor antagonists (increased the level of potassium in blood)
antiplatelet drugs + anticoagulants (increased the risk of bleeding)
amiodarone + diuretics (increased the risk of an irregular heart rhythm)
amiodarone + simvastatin (amiodarone increases the blood levels of simvastatin by decreasing metabolism)

Conclusion

The results of this research indicate that the frequency of CSI in PHC is still higher among respondents ≥65 years, with the fact that compared to the results from 2018, this percentage is significantly lower. The reason may be a higher degree of adherence to EU therapeutic guidelines when prescribing therapy, better cooperation and communication between doctors and also, doctors and pharmacists. The results of our research indicate the need to create a database that would include reference institutions such as the Institute of Medicines and Medical Devices of Montenegro, the Institute of Public Health, and primary health care institutions for further monitoring and reducing the incidence of CSI to a minimum, and thus savings in health care.