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**Pharmaceutical care in community pharmacies during COVID-19 pandemic:
pharmacists experience in Serbia**

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**Pharmaceutical care in community pharmacies during COVID-19 pandemic:
pharmacists experience in Serbia**

The importance of the pharmacist's role in health care has become more pronounced during the COVID-19 pandemic as they were accessible and frontline healthcare professionals, who significantly contributed to ensuring uninterrupted access to essential healthcare services. This research aimed to examine the experiences of community pharmacists regarding the quality and extent of pharmaceutical care and patient counseling during the COVID-19 pandemic in relation to the pre-pandemic period. Also, this research aimed to investigate the informative role of community pharmacists considering the COVID-19 pandemic (possibility of infection, symptoms, protection, treatment, supplementation, etc.). In addition, the study examined whether the need for counseling and pharmacy services was greater during the period of high infection rates or not. A cross-sectional, quantitative study was conducted among community pharmacists, who accessed and filled out the online survey anonymously and voluntarily through a link on the Google platform. The obtained results showed that pharmacists who worked near COVID-19 clinics or hospitals more likely perceived that pharmaceutical care was significantly or completely compromised during the pandemic compared to other community pharmacists (38.78% vs. 21.88%, $p=0.005$), while 40% of all respondents said that adequate information was provided to most patients compared to usual practice, including additional information they requested. Of all, 86% of pharmacists reported that many patients required additional information about COVID-19. The findings suggested that pharmacists who worked near COVID-19 clinics or hospitals perceived a lower increase in the requirement for counseling and pharmacy services during high infection rates periods compared to other pharmacists (53% vs 69%, $p<0.001$).

Key words: pharmaceutical care; patient counseling; community pharmacy; COVID-19;

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**Farmaceutska zdravstvena zaštita u javnim apotekama tokom pandemije COVID-19:
iskustvo farmaceuta u Srbiji**

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Farmaceutska zdravstvena zaštita u javnim apotekama tokom pandemije COVID-19: iskustvo farmaceuta u Srbiji

Važnost uloge farmaceuta u zdravstvenoj zaštiti je postala dodatno izražena tokom pandemije COVID-19, budući da su oni bili dostupni profesionalci na prvoj liniji zdravstvene zaštite, koji su značajno doprineli održavanju nesmetanog pristupa osnovnim zdravstvenim uslugama. Ovo istraživanje je imalo za cilj da ispita iskustva farmaceuta u javnim apotekama u vezi sa kvalitetom i obimom farmaceutske zdravstvene zaštite (FZZ) i savetovanja pacijenata tokom pandemije COVID-19 u odnosu na period pre pandemije. Takođe, svrha ovog istraživanja bila je ispitivanje informativne uloge farmaceuta u vezi sa pandemijom COVID-19 (mogućnost infekcije, simptomi, preventivne mere, lečenje, suplementacija, itd.). Dodatni cilj istraživanja bio je da se utvrdi da li je potreba za savetovanjem i farmaceutskim uslugama bila veća tokom perioda visoke incidence zaražavanja ili ne. Sprovedena je kvantitativna, studija preseka među farmaceutima u javnim apotekama, koji su anonimno i dobrovoljno popunjavali onlajn anketu preko linka na Google platformi. Rezultati su pokazali da su farmaceuti koji su radili blizu COVID-19 ambulanti ili bolnica smatrali da je kvalitet FZZ bio znatno ili potpuno narušen tokom pandemije u poređenju sa farmaceutima koji nisu radili u blizini COVID-19 ambulanti (38,78% vs. 21,88%; $p=0,005$), dok je 40% svih ispitanika izjavilo da su adekvatne informacije pružene većini pacijenata u odnosu na uobičajenu praksu, uključujući dodatno tražene informacije. Od ukupnog broja, 86% farmaceuta je istaklo da su pacijenti zahtevali dodatne informacije o COVID-19. Rezultati su ukazali da su farmaceuti koji su radili blizu COVID-19 ambulanti ili bolnica zabeležili manji porast potrebe za savetovanjem i farmaceutskim uslugama tokom perioda visoke incidence zaražavanja u poređenju sa ostalim farmaceutima (53% vs. 69%; $p<0,001$).

Ključne reči: farmaceutska zdravstvena zaštita; savetovanje pacijenata; javna apoteka; COVID-19;

Introduction

The discovery of a novel coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), in China at the end of 2019 led to the emergence of Coronavirus Disease 2019 (COVID-19). The declaration of the COVID-19 pandemic has brought major changes in the lives of people worldwide. Also, the pandemic has had a profound impact on healthcare systems across the globe, which had to be reorganized to address all the tasks and challenges posed by the pandemic [1, 2]. Considering these circumstances, the importance of the pharmacist's role has become more pronounced, as they were accessible and frontline healthcare professionals, who significantly contributed to ensuring uninterrupted access to essential healthcare services [3]. They have played a vital role in educating and supporting patients in various aspects of COVID-19, including prevention measures, disease control, symptoms, prescribed therapy, particularly antimicrobial treatment, supplementation, and vaccination process as well as provided them with reliable and timely information to counter the large number of contradictory and unverified sources [4-6]. The uncertainties in the treatment of COVID-19 increased the use of over-the-counter (OTC) drugs and made patients look for alternative treatment options and natural health products. Therefore, pharmacists secured adequate supplies of drugs and other products but also guided patients on self-care, self-medication, and medication adherence during these challenging times [7,8]. Furthermore, community pharmacists have contributed widely by providing pharmaceutical care and counseling to individuals with chronic diseases who were unable to visit their primary care physicians or general practitioners, especially during the early period of the pandemic. The concept of pharmaceutical care involves services and functions of community pharmacists towards promoting and supporting rational drug use and patient counseling as an imperative [9]. In addition, the work of physicians was reorganized during the pandemic. Many doctors have been designated in the „red zone“, while certain clinics and hospital wards were transformed into specialized COVID clinics or hospitals. This situation made it very difficult for many patients to access preferred doctors and necessary healthcare, particularly the elderly population [4,10]. The International Pharmaceutical Federation (FIP) underlined the significance of community pharmacists during the pandemic and published guidelines to clarify pharmacists' roles in the healthcare system [5,11,12]. This research aimed to examine the experiences of community pharmacists regarding the quality and extent of

pharmaceutical care and patient counseling during the COVID-19 pandemic in relation to the pre-pandemic period. Also, this research aimed to investigate the informative role of community pharmacists considering the COVID-19 pandemic (possibility of infection, symptoms, protection, treatment, supplementation, etc.). In addition, the study examined whether the need for counseling and pharmacy services was greater during the period of high infection rates or not.

Methods

Study design. A quantitative, non-experimental, cross-sectional study was conducted between February and June 2023 among community pharmacists in Serbia. The questions within the survey were in Serbian, closed-ended, mostly with a choice of one answer, while some were open-ended and contingency questions. Community pharmacists were able to access and fill out the online survey questionnaire anonymously and voluntarily through a link on the Google platform. The study protocols were approved by the Ethics Committee of the Faculty of Medicine, University of Nis (No 12-1258-2/2 from 2 February 2023).

Respondents. The respondents were pharmacists working in the community pharmacies in the Republic of Serbia territory. The inclusion criteria were employment in a community pharmacy before and during the COVID-19 pandemic as a licensed pharmacist. The exclusion criterion was two or more completed questionnaires by one respondent. This was ensured by response matching analysis. The respondents were contacted directly, through their employer service, or through professional organizations. The respondents did not receive any incentive for participating in the study. Of all approached pharmacists, 232 in total were enrolled based on the inclusion criteria and their willingness to answer questions from the survey. The respondents were not obligated to answer each question from the survey. Personal data of enrolled respondents (name and surname, city, e-mail and IP address, racial, religious and ethnic affiliation, and sexual orientation) were not collected. Demographic data and other respondents' answers were presented as a group, without respondents' personal data. An electronic database of respondents was formed. Access to the data in the electronic database was only granted to the principal investigator or a research team member designated by the principal investigator due to statistical analysis.

Survey development. The first phase of the survey development included question selection based on the previous research and personal experience of the research team. The first version of the survey had 21 questions. The second phase of the survey development was a focus group interview aimed to further define the survey. The focus group was composed of 4 members: a principal investigator (Ph.D. Pharmacotherapy specialist) and three experts in the field of pharmacology, pharmacotherapy, phytotherapy, clinical pharmacy, and pharmaceutical practice. Their task was to determine the content of the survey. Some questions were reformulated during the expert panel discussion, and some were added. The pre-final version of the survey included 23 questions grouped in 5 domains. The third phase was meant to test the validity and adequacy of the questions. In order to make the terms used in the survey clear to the target population, an additional interview was conducted with 10 pharmacists from the practice. The respondents were asked to comment on the precision and clarity of all included questions within the survey. Hence, the final version of the survey was created.

Structure and content of the survey. A description and aim of the study were presented at the beginning of the survey. The participant's agreement to fill out the online survey was considered as giving consent to participate in the research. The survey consisted of 5 domains. Domain 1 included questions regarding the demographic characteristics of the participants, such as gender, age, professional experience, the proximity of the pharmacy in relation to the COVID clinic/hospital, etc. Domain 2 gathered data on the pharmacists' perception regarding the quality of pharmaceutical care and patient counseling, including chronic diseases during the pandemic. Domain 3 consisted of patient counseling regarding the pandemic itself and the immunization process against SARS-CoV-2. Domain 4 referred to the use of dietary supplements and OTC preparations during the COVID-19 pandemic from the perspective of pharmacists. Domain 5 consisted of questions related to the desire of patients to obtain antibiotics without a prescription, the difference in patient counseling during pandemic waves and between waves, as well as the perception of pharmacists regarding how their role was recognized during pandemics. Questions from Domains 4 nor all questions from Domains 3 and 5 were not the subject of the analysis in this paper. The survey instrument is presented in Appendix A.

Statistical analysis. Data is presented as absolute and relative numbers (percentages) for categorical variables and as mean \pm standard deviation and median (interquartile range) for continuous variables. The χ^2 (Chi-square) independence test was performed to compare categorical variables between defined groups of pharmacists. The significance level was set at $p < 0.05$ for all analyses. Statistical analysis was done using the IBM SPSS Statistics ver. 22.

Results

The characteristics of the study population are given in Table 1.

Table 1. Characteristics of the study population

Characteristic	Value
Sample size	232 (100%)
Sex (female/male)	206/26 (88.8%/11.2%)
Age (years)	35.52 \pm 8.05 34 (28-38)
Work experience (years)	9.81 \pm 7.38 8 (3-13)
Education (licensed pharmacist/pharmacist with specialization or doctorate)	184/48 (79.3%/20.7%)
The community pharmacy is located in:	
a town/municipality with up to 10,000 inhabitants	20 (8.6%)
a city/municipality between 10,000 and 50,000 inhabitants	30 (12.9%)
a city between 50,000 and 100,000 inhabitants	34 (14.7%)
a city with over 100,000 inhabitants	148 (63.8%)
The pharmacy is located near a COVID-19 clinic or hospital:	
Yes	98 (42.2%)
No	134 (57.8%)

Results are presented as number (frequency) or mean \pm standard deviation and median (interquartile range);

Of all enrolled community pharmacists, 89% were women, whereas 79% were master or graduated pharmacists (five-year integrated studies) and 21% had academic/professional specialization or doctorate. The median age of the respondents was 34 years with a median professional experience of 8 years. In addition, 64% of the pharmacists worked in the city of more than 100,000 inhabitants, while 2 out of 5 pharmacists worked in the community pharmacy near a COVID-19 clinic or hospital. In further analysis, patients were divided into two groups based on the vicinity of the COVID-19 clinics or hospitals, pharmacists who worked near the COVID-19 clinic/hospital and those who did not.

For the purpose of this study, community pharmacists were asked to share their experiences and compare the range of their activities before and during the COVID-19 pandemic period. Table 2 provides the pharmacists' experience regarding the quality of pharmaceutical care during the COVID-19 pandemic in relation to the pre-pandemic period.

Table 2. Comparison of pharmaceutical care in community pharmacies before and during the pandemic from the pharmacists' perspective

How do you evaluate the impact of the COVID-19 pandemic on the quality of pharmaceutical care services in a public pharmacy?	Entire study group (n=226)*	Pharmacist-near COVID-19 clinic or hospital (98)	Pharmacist-not near COVID-19 clinic or hospital (128)	Test and sig.
Improved	58 (25.66%)	22 (22.45%)	36 (28.12%)	Pearson Chi-square=12.827; p=0.005
Slightly compromised	72 (31.86%)	32 (32.65%)	40 (31.25%)	
Significantly or completely compromised	66 (29.20%)	38 (38.78%)	28 (21.88%)	
It did not have an impact	30 (13.28%)	6 (6.12%)	24 (18.75%)	

Results are presented as a number and percent of pharmacists *6 out of 232 pharmacists did not answer this question.

The obtained results showed that pharmacists who worked near COVID-19 clinics or hospitals rather significantly perceived that pharmaceutical care was significantly or completely compromised during the pandemic compared to other community pharmacists (38.78% vs. 21.88%, $p=0.005$). Also, community pharmacists were asked about the quality (scope) of patient counseling in the community pharmacy before and during the pandemic. Pharmacists should have considered quality in terms of duration, quantity of gathered/provided information, and/or patients' information needs (Table 3.)

Table 3. Quality (scope) of patient counseling process before and during the pandemic from the community pharmacists' perspective

Do you believe that the quality (scope) of patient counseling processes in the pharmacy has changed during the COVID-19 pandemic compared to the pre-pandemic period?	Entire study group (n=232)	Pharmacist-near COVID-19 clinic or hospital (98)	Pharmacist-not near COVID-19 clinic or hospital (134)	Test and sig.
Patient counseling was mostly comparable to the pre-pandemic period.	16 (6.90%)	4 (4.08%)	12 (8.96%)	Pearson Chi-square=6.624; p=0.157
Adequate information was provided to most patients compared to usual practice, including additional information they requested.	92 (39.66%)	34 (34.69%)	58 (43.28%)	
Adequate information was provided to most patients compared to usual practice, but their increased information demands were not adequately addressed.	26 (11.21%)	14 (14.29%)	12 (8.86%)	
Most patients received less information compared to usual practice.	22 (9.48%)	8 (8.16%)	14 (10.45%)	

Depending on the individual situation, some patients received less information compared to usual practice, while others received additional information if they requested it.	76 (32.76%)	38 (38.78%)	38 (28.36%)	
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Results are presented as a number and percent of pharmacists

Although there was an evident difference in the perception of patient counseling quality (scope) between pharmacists who worked near COVID-19 clinics or hospitals and those who did not (statements 2 and 5, a difference of 8.6% and 10.4%, respectively), a statistically significant difference was not reached.

Considering the number of non-COVID patients seeking pharmacist advice, the obtained results showed that the entire study population perceived an increased number of non-COVID patients requiring patient counseling/medication review during the pandemic compared to the pre-pandemic period. Still, pharmacists did not differ in relation to pharmacy proximity to COVID-19 clinic: N=230 respondents 2 missing answers; Pearson Chi-square=0.790; p=0.674) (Figure 1).

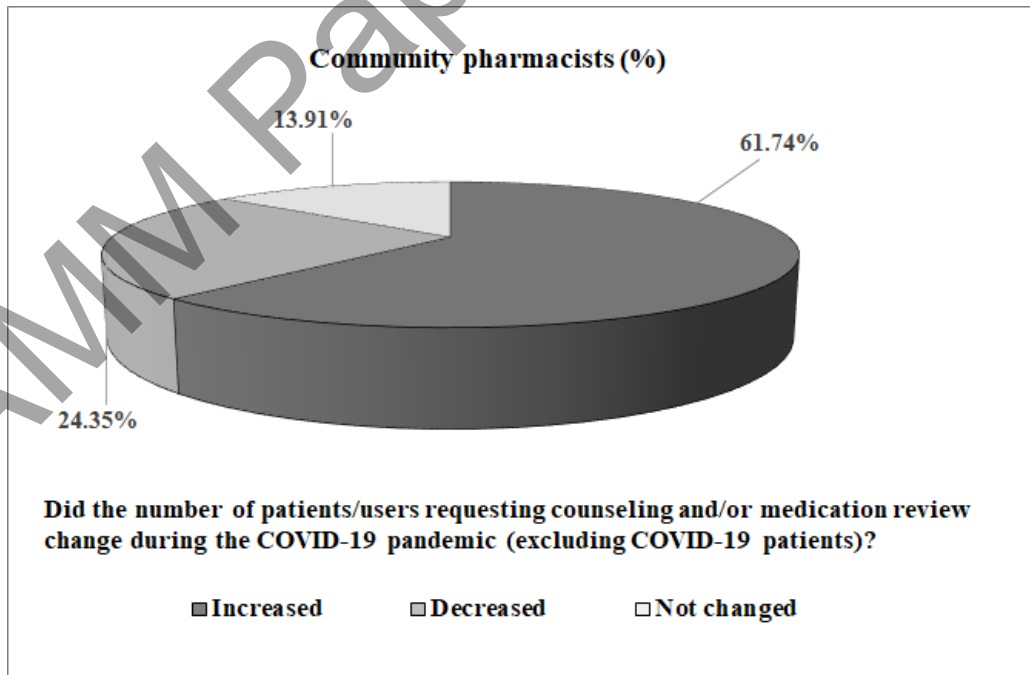


Figure 1. Comparison of the number of non-COVID patients requiring patient counseling/medication review before and during the pandemic from the pharmacists' perspective

Furthermore, community pharmacists were asked to rate whether or not there was a change in frequency regarding patient counseling on chronic diseases (Table 4).

Table 4. Community pharmacists' perception of change in the frequency of counseling for patients with chronic diseases

Did the frequency of counseling for patients with chronic diseases change during the COVID-19 pandemic?	significantly decreased	slightly decreased	no change	slightly increased	significantly increased
Cardiovascular diseases	5.22	21.74	24.35	25.22	23.48
Respiratory diseases	0.88	13.16	10.53	26.32	49.12
Diabetes and other endocrine disorders	4.39	18.42	29.82	25.44	21.93
Anemia and other endocrine disorders	8.77	20.18	38.60	23.68	8.77
Neurological diseases	6.09	20.87	32.17	26.09	14.78
Psychiatric diseases	11.40	14.91	29.82	21.93	21.93
Musculoskeletal system disorders	6.96	17.39	33.04	26.09	16.52
Kidney diseases	10.53	27.19	44.74	12.28	5.26

Results are presented as percent of pharmacists chose one out of five given statement

Analyzing the obtained results, 40-50% of surveyed pharmacists perceived that the frequency of counseling was slightly or significantly increased compared to pre-pandemic in cases of cardiovascular, respiratory (even 75% of enrolled pharmacists), diabetes, neurological, psychiatric, and musculoskeletal disease. Considering kidney diseases, more than 82% of pharmacists thought there was no change or the number of patients who required advice decreased.

In addition, pharmacists were asked about their perception of whether or not patients were seeking information regarding the COVID-19 pandemic (possibility of infection, symptoms, protection, treatment, supplementation, etc.) (Figure 2).

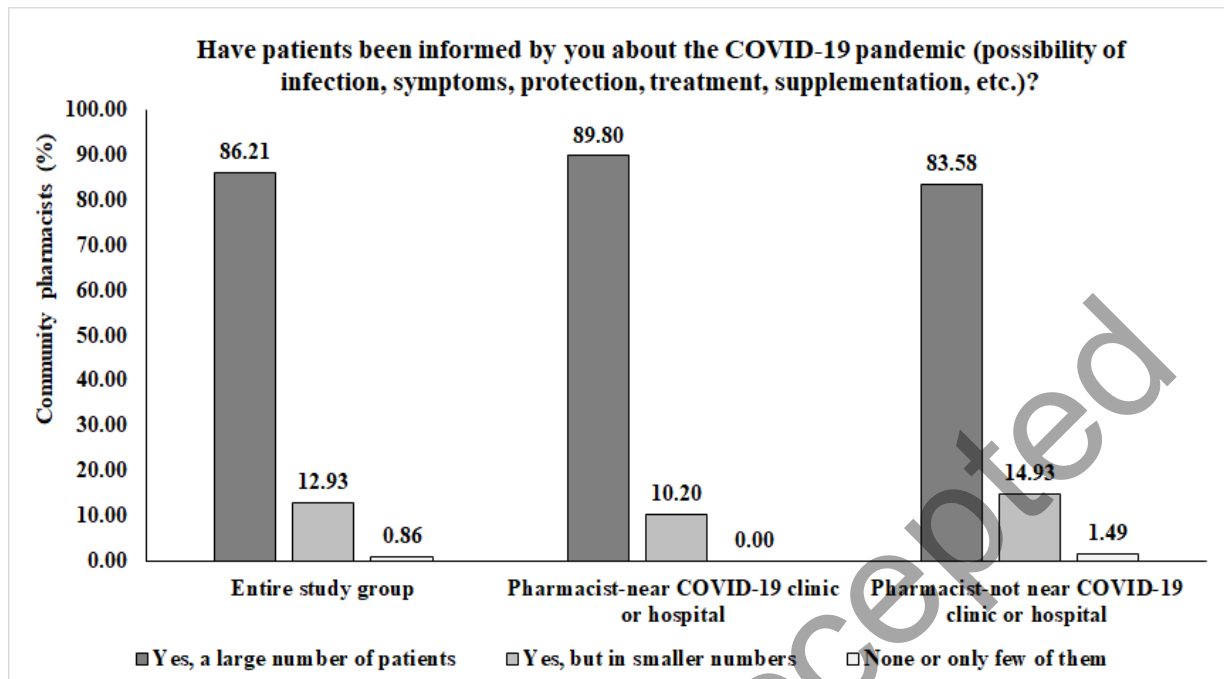


Figure 2. Pharmacists' perception regarding the number of patients seeking advice about the COVID-19 pandemic

Considering COVID-19, 86% of pharmacists had an impression that a large number of patients required additional information in the pharmacy during the pandemic. The obtained results did not show a difference in relation to the proximity of the community pharmacy to the COVID-19 clinic/hospital (Pearson Chi-square=2.692; $p=0.260$). Furthermore, pharmacists were asked to assess whether the need for counseling and pharmacy services was greater during the period of high infection rates ("pandemic wave") or between the pandemic "waves"? (Figure 3)

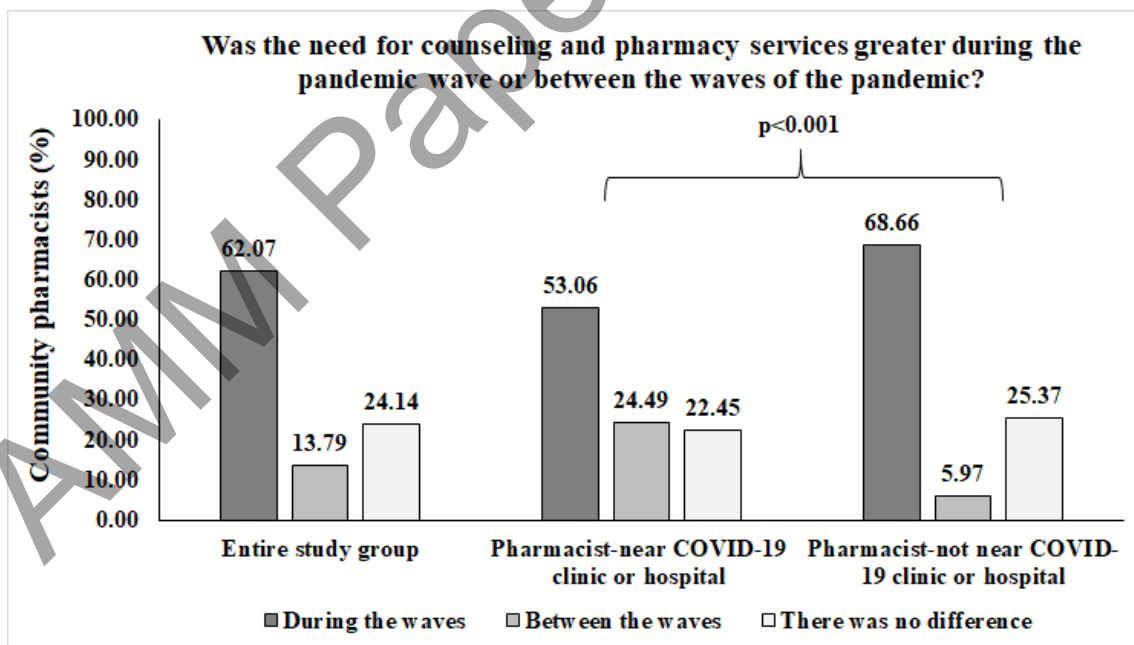


Figure 3. Pharmacists' perception of the requirement for counseling and pharmacy services during periods characterized by high infection rates?

The results of the study showed that pharmacists who worked near COVID-19 clinics or hospitals perceived a lower increase in the requirement for counseling and pharmacy services during periods characterized by high infection rates compared to other pharmacists (53% vs. 69%, $p < 0.001$).

Discussion

During the COVID-19 pandemic, healthcare services in Europe, including Serbia, faced significant challenges. Visacri et al. highlighted several key responsibilities of pharmacists during the pandemic, such as prevention and infection control, provision, storage, and supply of personal protective equipment (PPE) and drugs, patient care, and support for other healthcare professionals [4]. Community pharmacists played a pivotal role in directly addressing the challenges posed by COVID-19. They ensured the dissemination of information and education regarding personal and environmental hygiene, supplied and dispensed drugs, and implemented anti-COVID-19 measures within their pharmacies to create a safe environment for pharmacists, pharmacy technicians, and patients [10]. In the initial phase of the pandemic and during lockdown in Serbia, routine check-ups and medication reviews provided by chosen physicians were postponed, while prescription validity and duration were automatically extended for three months [13]. Moreover, many primary health centers and hospitals were transformed into COVID-19 clinics, posing challenges for patients to access proper care, particularly for the elderly. Consequently, community pharmacists often became the primary source of reliable information and advice on medications for both COVID-19 and non-COVID-19 patients [9]. According to the findings of this study, approximately 30% of the enrolled community pharmacists reported a significant or complete decline in the quality of pharmaceutical care during the COVID-19 pandemic compared to the pre-pandemic period (Table 2). The percentage was significantly higher among pharmacists working near COVID-19 clinics or hospitals in comparison to others. This can be attributed to the overwhelming number of COVID-19 patients they had to deal with on a daily basis, which likely resulted in a decline in the quality of other pharmacy activities, such as counseling for non-COVID patients. However, it is important to emphasize that pharmaceutical care remains crucial, particularly for patients with chronic diseases, and its relevance was further amplified during the COVID-19 pandemic due to drug-related concerns and problems, which were observed in many patients [9]. In a

photovoice study conducted by Watson et al., the roles and experiences of 21 community pharmacists during the COVID-19 pandemic were examined [14]. The participants highlighted the information role of community pharmacists, emphasizing their accessibility to the public. However, it was observed that the demand for pharmacists' advice increased exponentially throughout the pandemic. As a result, the participants felt that their information role took precedence over their other duties and activities, such as proper patient-centered medication reviews and care planning for their patients [14]. It appears that providing information and patient counseling were deemed crucial and time-consuming activities for community pharmacists during the pandemic. Furthermore, the present study revealed some differences, although not statistically significant, between pharmacists working near COVID-19 clinics or hospitals and those who did not (Table 3). In addition, the present study found that only 35% of pharmacists who worked near COVID-19 clinics or hospitals believed that adequate information was provided to most patients, including additional information requested by patients. Comparatively, 43% of pharmacists who did not work near COVID-19 clinics or hospitals shared the same opinion. This finding is in accordance with the earlier observation regarding the quality of pharmaceutical care.

Previous studies indicated that COVID-19 tests performed by pharmacists were also time-consuming, which could have potentially affected regular pharmaceutical activities [15]. Another study by Georgina Silva-Suárez et al., which involved 302 community pharmacists in Puerto Rico, revealed that most participants considered patient education as their primary role during the pandemic and viewed themselves as a reliable source of accurate information [16]. In addition, Kanaani et al. suggested that the increased workload, shortage of supplies, and frequent updates on COVID-19 management put significant pressure on community pharmacists' duties in Australia [17]. Consistent with these findings, our study indicated that nearly 62% of all participating pharmacists perceived an increased number of non-COVID patients requiring patient counseling and medication review.

Furthermore, our survey showed that 40% or more of the pharmacists reported a slight or significant increase in the frequency of counseling for patients with specific chronic conditions, including cardiovascular, respiratory, endocrine, neurological, psychiatric, and musculoskeletal diseases. However, over 82% of pharmacists reported no change or a decrease in the number

of patients requiring advice related to kidney disease. It is important to note that patients with chronic diseases are at a higher risk during the pandemic, as COVID-19 is best combatted by a strong immune system [13].

Studies have demonstrated the positive impact of pharmacist-led interventions during the COVID-19 pandemic. For instance, Li et al. showed that pharmacist-led telemedicine medication management for hypertension resulted in better blood pressure control and improved medication adherence compared to usual care, leading to a reduction in adverse cardiovascular events [18]. Similarly, a study conducted in Italy found that pharmacists working in high COVID-19 incidence regions provided more information on symptomatic medications for respiratory tract infections, such as antitussives and antipyretics, compared to other regions. These pharmacists also received a higher number of requests for information related to blood oxygen meters [19]. Ahmed et al. demonstrated that pharmacist-led telemedicine activities could lead to optimal outcomes in diabetic patients during the COVID-19 pandemic [20]. Still, during the pandemic pharmacists offered accessibility, weighing patient outcomes against what they can do, as well as building trust and relationships with patients and feeling pressured to provide new services [21]. In accordance with our study, whereas 86% of pharmacists perceived patients required additional information about COVID-19, Pantasri reported that 96.4% of surveyed pharmacists educated their patients about COVID-19 prevention and treatment [22]. Similarly, in the paper of Merks, et al. the corresponding number was 64.5% [23]. Over 80% of community pharmacists questioned in the recent research reported an increasing number of consultations regarding COVID-19 management [24]. The results of our study showed that counseling and pharmacy services were significantly higher during pandemic waves, particularly in the pharmacies that were not near COVID-19 clinics or hospitals. The single study we found available for comparison demonstrated that seeking COVID-related information was mainly increased during the first two periods of the pandemic (from May 2020 to September 2020) [25]. The observed disparity between pharmacies in the vicinity of COVID-19 clinics or hospitals could have been potentially attributed to the consistently high workload experienced by pharmacies near such clinics, as the pandemic persisted, and those clinics or hospitals remained operational.

The study has a few limitations that should be acknowledged. The small number of participants may limit the generalizability of the results. However, this is an ongoing study, and it is expected that more participants will be enrolled in the future. In addition, the study primarily captures pharmacists' subjective experiences, which can introduce some degree of subjectivity and potential bias. However, the data analysis and presentation are done at the group level, focusing on overall trends and patterns rather than individual experiences. Another limiting factor was information bias due to recollection.

In conclusion, the role of community pharmacists emerged as crucial in the frontline response to the COVID-19 pandemic. Furthermore, community pharmacists experienced an increased workload due to COVID-19 and the additional care for non-COVID patients. Of all, 60% of the pharmacists reported a slight or significant decline in the quality of pharmaceutical care during COVID-19, while 40% of all respondents said that adequate information was provided to most patients compared to usual practice, including additional information they requested. The conducted study demonstrated that 86% of pharmacists perceived that patients required additional information about COVID-19. The findings suggested that pharmacists who worked near COVID-19 clinics or hospitals perceived a lower increase in the requirement for counseling and pharmacy services during periods of high infection rates compared to other pharmacists.

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Appendix A. Online survey: „Pharmaceutical care during the COVID-19 pandemic“

Dear colleagues,

In front of you is a survey with questions related to pharmaceutical care during the COVID-19 pandemic. The aim of this research is to assess the role of pharmacists in public pharmacies, their activities, and the scope of those activities compared to the period before the pandemic. This research is part of the scientific research work of the professors and associates from the Integrated Academic Studies of Pharmacy at the Faculty of Medicine, University of Niš.

We appreciate your time in completing the survey.

Questions

1. Gender:

- a. Male
- b. Female

2. Age (enter):

3. Years of professional experience (enter):

4. Education:

- a. Graduated Pharmacist/Master of Pharmacy
- b. Graduated Pharmacist /Master of Pharmacy with specialization (academic/health) or doctorate

5. I work in a pharmacy located in:

- a. a town/municipality with up to 10,000 inhabitants
- b. a city/municipality with up to 50,000 inhabitants
- c. a city with up to 100,000 inhabitants
- d. a city with over 100,000 inhabitants

6. The pharmacy is located near a COVID clinic/hospital:

- a. Yes
- b. No

7. How do you evaluate the impact of the COVID-19 pandemic on the quality of pharmaceutical care services in a public pharmacy?

- a. It did not have an impact on the quality of pharmaceutical healthcare services.
- b. The quality of pharmaceutical care services was slightly compromised.
- c. The quality of pharmaceutical care services was significantly compromised.
- d. The quality of pharmaceutical care services was completely compromised/changed.
- e. The quality of pharmaceutical care services improved.

8. Do you believe that the quality (scope) of patient counseling processes in the pharmacy has changed during the COVID-19 pandemic compared to the pre-pandemic period? NOTE: You can consider the quality in terms of duration, quantity of gathered/provided information, and/or patients' information needs. Circle one answer.

- a. Patient counseling was mostly comparable to the pre-pandemic period.
- b. Adequate information was provided to most patients compared to usual practice, but their increased information demands were not adequately addressed.
- c. Most patients received less information compared to usual practice.
- d. Adequate information was provided to most patients compared to usual practice, including additional information they requested.

e. Depending on the individual situation, some patients received less information compared to usual practice, while others received additional information if they requested it.

9. Did the number of patients/users requesting counseling and/or medication review change during the COVID-19 pandemic (excluding COVID-19 patients)?

a. There was no change in the number of non-COVID patients.

b. There was an increase in the number of non-COVID patients requesting counseling/medication review.

c. There was a decrease in the number of non-COVID patients requesting counseling/medication review.

10. During the COVID-19 pandemic, were there any changes in the frequency of counseling for patients with chronic illnesses? Rate the frequency on a scale of 1-5, where 1 - significantly decreased, 2 - slightly decreased, 3 - no change, 4 - slightly increased, 5 - significantly increased:

11. Did the frequency of counseling for patients with chronic illnesses change during the COVID-19 pandemic? Rate the frequency on a scale of 1-5

Cardiovascular diseases

Respiratory diseases

Diabetes and other endocrine disorders

Anemia and other endocrine disorders

Neurological diseases

Psychiatric diseases

Musculoskeletal system disorders

Kidney diseases

12. Have patients been informed by you about the COVID-19 pandemic (possibility of infection, symptoms, protection, treatment, supplementation, etc.)?

a. Yes, a large number of patients.

b. Yes, but in smaller numbers.

c. None or only few of them.

13. Have patients been informed by you about the importance of immunization against SARS-CoV-2?

a. Yes, a large number of patients.

b. Yes, but in smaller numbers.

c. None or only few of them.

14. Have patients been informed by you about the choice of SARS-CoV-2 vaccine?

a. Yes, a large number of patients.

b. Yes, but in smaller numbers.

c. None or only few of them.

Have patients been informed by you about the side effects of the SARS-CoV-2 vaccine?

a. Yes, a large number of patients.

b. Yes, but in smaller numbers.

c. None or only few of them.

15. Do you believe that patients have been using over-the-counter (OTC) products and/or dietary supplements to a greater extent during the COVID-19 pandemic compared to the period before the pandemic?

a. Yes, to a significant extent.

b. Yes, but not to the extent it may seem.

c. No.

If the answer to the previous question was a or b, please proceed and ask the next question.

16. What, in your opinion, has had the most significant impact on the increased use of OTC medications/dietary supplements during the COVID-19 pandemic?

a. Influence of media, family, friends, etc.

b. Recommendation of doctors (after examination in a COVID clinic)

c. Recommendation of pharmacists at the pharmacy

d. Fear for one's own health and the health of loved ones

17. What do you think has had the most significant impact on the choice of a specific OTC medication/dietary supplement during the COVID-19 pandemic?

- a. Influence of media
- b. Influence of family, friends, colleagues, etc.
- c. Recommendation of doctors (after examination in a COVID clinic)
- d. Recommendation of pharmacists at the pharmacy

18. According to you, has the influence of media on the choice of OTC medication/dietary supplement changed compared to the period before the COVID-19 pandemic?

- a. It has increased.
- b. It has decreased.
- c. There is no significant change or it doesn't exist.

19. Have patients sought your advice on the proper use and potential interactions of OTC medications/dietary supplements during the COVID-19 pandemic?

- a. More frequently than before the pandemic
- b. Slightly more frequently than before the pandemic
- c. No difference in the period before or during the pandemic
- d. Less frequently than before the pandemic

20. Which OTC medications/dietary supplements were most commonly used during the COVID-19 pandemic? Select up to three answers.

- a. Vitamins and minerals
- b. Antihistamines
- c. Non-opioid analgesics, antipyretics
- d. Topical and systemic nasal decongestants
- e. Expectorants and mucolytics
- f. Non-opioid antitussives
- g. Dental and oral care products
- h. Antacids
- i. Digestive aids
- j. Laxatives
- k. Anti-diarrheals
- l. Topical antimicrobials
- m. Medications for local treatment of venous diseases
- n. Medications for vaginal therapy
- o. Ophthalmic vasoconstrictors
- p. Herbal preparations, herbal teas

21. To what extent have you encountered patients intending to purchase antibiotics at the pharmacy without a doctor's prescription/medical report?

- a. More frequently than before the pandemic
- b. Slightly more frequently than before the pandemic
- c. No difference compared to the period before or during the pandemic

22. In your opinion, was the need for counseling and pharmacy services greater during the period of high infection rates (during the pandemic wave) or between the waves of the pandemic?

- a. There was no difference
- b. During the waves
- c. Between the waves

23. Rate the following statement on a scale of 1-5, where 1 - strongly disagree, 2 - mostly disagree, 3 - neither agree nor disagree, 4 - mostly agree, 5 - strongly agree:

The role and importance of pharmacists during the pandemic should have been more recognized by our healthcare system.

1 2 3 4 5