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RESEARCH

Pharmacists' role, work practices, and safety measures against COVID-19: A comparative study

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ABSTRACT

Background: The coronavirus disease 2019 (COVID-19) pandemic poses a great challenge to health systems and their most accessible assets—community pharmacies. Pharmacists faced many challenges such as incorporating safety measures, changes in working schedule and workload, and meeting specific patients' needs.

Objectives: This study aimed to explore and compare the community pharmacists' roles, practices, implemented safety measures, and psychological toll in Croatia and Serbia during the COVID-19 pandemic.

Methods: A cross-sectional study employing an online survey was conducted in 2 countries over a period of 6 weeks during 2020. The survey consisted of 65 items that explored socio-demographic characteristics of participants and their workplaces, including safety measures, pharmaceutical care, and their psychology while working during the COVID-19 pandemic.

Results: In total, 574 pharmacists participated in the study, of which, 90% were female, with a mean age of 38 years (interquartile range 30.5–47). The study identified new pharmacists' roles that evolved during the COVID-19 pandemic: manufacturing hand sanitizers in community pharmacies, online patient counseling, and home delivery of medicines. Croatian and Serbian pharmacists exhibited disparities in their incorporated safety measures (higher for Croatia; $P \leq 0.001$) and satisfaction with work organization and counseling activities (higher for Serbia; $P < 0.001$). Serbian participants were less satisfied with the public perception of their role during the pandemic, and overall satisfaction was low, with a negative impact on mood and productivity.

Conclusions: The study revealed the implications for community pharmacists during the pandemic in both countries. The extent of systematic and logistical support provided to them during the pandemic could be an explanation for the highlighted differences. It is imperative to develop a more effective strategy to counter potential health crises to ensure a better response from primary care pharmacists in the future.

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Background

Community pharmacies had to respond quickly to the coronavirus disease 2019 (COVID-19) outbreak as frontline health care workers scrambled to support patients even after the introduction of lockdown measures.¹ Besides the established duties, they had to also supply personal protective equipment (PPE) such as masks, disinfectants, hand sanitizers, face shields, gloves, and dietary supplements. At the beginning of the pandemic, mass panic led to higher demand for PPEs,

causing shortages of these products. Moreover, they had to educate patients about precautionary measures to prevent the spread of the virus, detect suspected cases early, and provide referrals to appropriate hospitals.²

Therefore, new responsibilities evolved for pharmacists during the COVID-19 pandemic, because they are the most accessible health professionals at the primary health care level. They had to make changes in care of patients with chronic diseases, along with the new roles. Therefore, it is of great importance to examine the work organization, implementation of precautionary measures, provision of pharmaceutical care, and psychological aspects of pharmacy staff during the COVID-19 pandemic, because all these affect the quality of services provided by the pharmacists.

Several reports have discussed the roles, preparedness, response,^{3–8} and stress^{9,10} of pharmacists during the COVID-19 pandemic. However, no study has covered all the aspects of

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Key Points**Background:**

- Community pharmacies had to respond quickly to the coronavirus disease 2019 (COVID-19) outbreak as frontline health care workers.

Findings:

- The role of pharmacists evolved during the COVID-19 pandemic and also included manufacturing hand sanitizers in community pharmacies, online patient counseling, and home delivery of medicines, apart from their established roles.
- Increased workload and threat of infection due to exposure at workplace have an effect on the psychological states of community pharmacists, regardless of the country where they practice.
- The extent of systematic and logistical support for the pharmacists during the pandemic could be responsible for the difference between the responses and satisfaction of the pharmacists in the 2 countries.

interest or involved a comprehensive analysis such as the one in this article. In particular, the data on primary care pharmacists in European and American countries are lacking, when compared with the data from Asian and African countries.

This is the first study to explore and compare the role of community pharmacists in 2 European countries; the Republic of Croatia and the Republic of Serbia. Croatia and Serbia are bordering countries and were once part of the same Republic, explaining the similarities in languages, culture, and educational system. Currently, Croatia, the high-income country, is a European Union (EU) member state, and Serbia, an upper-middle income country, is a candidate for accession to the EU. Health care systems of both countries operate on the Bismarck model. In Serbia, unlike in Croatia, there is no legally regulated demographic-geographic criterion for setting up a pharmacy, and community pharmacies are predominately private, which influences the different pharmacy service provisions in the 2 countries. Moreover, the 2 countries responded differently to the pandemic and adopted different measures for their community pharmacists, as presented in [Table 1](#). Therefore, comparing the measures undertaken in these 2 countries could enable us to identify good and bad practices during the COVID-19 pandemic, which may also be applicable globally. This study investigates the causes of differences in the response to the pandemic between 2 countries and in what way their respective responses could have been better, drawing global implications from the findings.

Objectives

This study aimed to explore and compare community pharmacists' roles, practices, implemented safety measures, and psychological toll in Croatia and Serbia during the COVID-19 pandemic.

Methods

A cross-sectional study involving registered community pharmacists from Croatia and Serbia was conducted. An online survey to collect data on their role during the outbreak was developed and distributed to sample pharmacists in the 2 countries, aiming to include participants representing both rural and urban areas.

Survey

The survey items were constructed by conducting a review of the available literature on the role of pharmacists in the COVID-19 pandemic (by May 15, 2020) as well as online interviews with them. With the guidance from International Pharmaceutical Federation (FIP),¹¹ recommendations from the Croatian Chamber of Pharmacists, the Croatian Institute of Public Health, and the Ministry of Health, the identified literature covering the topics related to the aim of the study,^{2,12} as well as the content of the interviews, themes were identified for this survey design.

The survey comprised 4 separate sections, with 61 items in total. Section A consisted of 12 questions on the pharmacists' general demographics and characteristics of their workplace. Section B consisted of 20 questions; 4 questions on work organization during the COVID-19 pandemic and 16 questions on the safety measures incorporated in their workplace. Data included working hours before the pandemic, the number of teams working in the pharmacy during the outbreak, and number of working days during the rotation of 1 team, safety measures at the workplace (i.e., wearing face masks, gloves, acrylic glass shields, temperature checks, disinfecting process etc.), and their general satisfaction with the work organization and corresponding safety measures measured on a scale of 1-5 (1 indicating very dissatisfied and 5 indicating very satisfied). Section C consisted of 22 questions on the provision of services during the pandemic, chronic disease management, medication supply, patient consultation, and additional services offered, and 2 questions on satisfaction with the prevailing public perception. The last section, Section D, consisted of 7 questions on the psychological effects of the pandemic (i.e., how the pharmacists felt, the presence of fatigue and anxiety, etc.).

The designed questionnaire was then tested in a pilot studies, in Croatia and subsequently in Serbia, over a 1-week period. First, 20 participants in Croatia were questioned on the clarity of each question, to judge if all the questions were necessary and to identify any potentially omitted themes. On the basis of their responses, the survey was adjusted into a final version. The adaptation involved the omission of 3 questions owing to similarity in meaning along with several small changes, including offering additional answers in 2 questions related to work organization. A panel of expert judges (2 faculty members) checked the readability and face validity of the items.

The final Croatian questionnaire was adapted for data collection in Serbia and was piloted with 8 participants in the country. It incorporated only small changes in line with local practice investigating the type of pharmacy, its location, its work in accordance with the guidelines of official bodies, the types of work shifts, and practice during and after total lockdown. After these changes and pilot testing, principal

Table 1
Overview of the situation during the pandemic in Croatia and Serbia and each country's response

<p>CROATIA:</p> <ul style="list-style-type: none"> • The first confirmed case of SARS-CoV-2 infection was on February 25, 2020.²⁶ • The highest number of daily new cases during the “first” wave was 96 (total population 4,096,659; 23.43 new cases per 1 million) on April 1, 2020.²⁷ • Neighboring Italy, where Europe's focal point was, Croatian authorities implemented very strict measures during March 2020, including school closure, cancellation of public events, restrictions on gatherings and internal movements of people, and recommendations to stay at home. Under the Article 197 of the Health Care Act¹³ and following the Health Minister's decision on March 11, 2020, to officially declare COVID-19 a pandemic, the Ministry of Health Crisis Headquarters adopted mobilization measures for health care workers, including pharmacists. • The Croatian Pharmacy Chamber responded promptly to the crisis and made specific recommendations for the pharmacists in Croatia. These recommendations included detailed safety measures as well as restrictions concerning the dispensation of specific prescription and nonprescription medicines and PPE to prevent shortages of these products. • Working hours of community pharmacies during pandemic were defined by Crisis headquarter, and all pharmacies should work part time (from 8 AM to 5 PM), except on-duty pharmacy. <p>Because of the compromised availability of PPE, authorities only prescribed the mandatory use of face masks for all pharmacy employees and all users of the pharmacy services much later (July 13, 2020). At the beginning of the pandemic, this equipment was mostly available for health professionals, whereas patients found alternative means of protecting themselves.</p> <p>SERBIA:</p> <ul style="list-style-type: none"> • The first confirmed case of the SARS-CoV-2 infection was on March 6, 2020.²⁶ • The highest number of daily new cases was 445 (total population 8,725,434; 51 new cases per 1 million) on April 16, 2020.²⁷ • Authorities enacted nationwide lockdown measures on March 15, 2020, which remained in place until May 6, 2020.^{28,29} During this time, they also imposed strict curfews from late evening until the early morning hours and sometimes for consecutive days, the longest of which lasted 4 days. The movement restrictions affected the entire population except for necessity, work, and health emergencies where special licenses were issued. • All community pharmacies remained operational without working hours restrictions, except those located in shopping malls. • Pharmacists initially did not have enough PPE; therefore, they used various means to prevent viral transmission (by adjusting work practice, workplace, the size of teams working different shifts, using handmade PPE such as face shields, and sewing face masks etc.). The work practice was not uniform and differed among the pharmacy chains. • The Pharmaceutical Chamber of Serbia, the Institute of Public Health of Serbia, and the Ministry of Health provided most of the information related to COVID-19. Because there was a lack of more detailed information about the management of the pandemic, the Center for Pharmacy and Biochemical Practice Development (at the University of Belgrade, Faculty of Pharmacy) and the Pharmaceutical Chamber of Serbia translated the FIP guidelines on COVID-19¹¹ into the local Serbian language.
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Abbreviations used: COVID-19, coronavirus disease 2019; FIP, International Pharmaceutical Federation; PPE, personal protective equipment; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2.

investigators were consulted to achieve consensus on all changes.

Data collection

Google Forms, a survey administration application, was used to configure the survey and collect data. The data were collected over a 10-week period starting in June 2020 and July 2020, in Croatia and Serbia, respectively.

Potential participants were invited through interest groups on social media, for example, the Croatian Pharmaceutical Society Facebook page. In addition, e-mail invitations were sent to the largest community pharmacy chains in Serbia and community pharmacies in Croatia using the available pharmacy database. Potential participants in Serbia were also invited through the Pharmaceutical Chamber of Serbia.

Before participation in the survey, a short description of the study, including the information that the participation in a study would remain anonymous and voluntary, and that the inputs of participants would remain confidential, was specified, and each pharmacist was asked whether they agree to voluntary participate or wanted more information about the study. In case of selection of the second option, more detailed information about the specific study aims were provided, followed by a question to agree on voluntary participation. Only pharmacists who agreed to participate, based on information provided, could continue to the survey questions.

Ethics considerations

In Croatia, the Ethical Committee of the Faculty of Pharmacy and Biochemistry, at the University of Zagreb, exempted

this research from the need to obtain ethical approval, clarifying that there were no ethical dilemmas in any segment of the research while scientific contribution of the work was reasonable and assumed. In Serbia, the Ethical Committee of the Pharmaceutical Chamber of Serbia (No. 396-2, issued on July 8, 2020) issued ethical approval.

Data analysis

The results were reported using descriptive statistics; that is to say, the sample characteristics were described, and the results summarized on all explored aspects using mean (SD), median (interquartile range [IQR]), or percentages, as appropriate. To analyze differences between the Croatian and Serbian sample, the *t* test, Mann-Whitney-U, or Chi-square tests were used, depending on the variable type and data distribution. *P* values < 0.05 were considered to be statistically significant, and statistical analysis was performed using IBM's SPSS Statistics version 25 (SPSS v.25; IBM Corp., Armonk, NY). Microsoft Excel (Microsoft Corporation, Redmond, WA) was used for the graphical presentation of data.

Results

Participants and community pharmacy characteristics

There were 574 participants in the study, of which, 328 (57%) were from Croatia and 246 (43%) from Serbia. In line with representation of community pharmacists in the participating countries, approximately 90% of participants were female. Median age (IQR) was 38 years (30.25–47 years), and working experience was 11 (5–20 years) years.

Table 2
Sociodemographic characteristics of the participants and their respective pharmacies

Variable	Overall	Croatia (n = 328)	Serbia (n = 246)	P
Participants' characteristics				
Age (y, median [IQR])	38 (30.5–47)	38 (29.75–46)	38 (32–49)	0.066 ^a
Gender (female, %)	89.7	90.5	88.6	0.451 ^b
Working experience (y, median [IQR])	11 (5–20)	12 (5–20)	10 (5–21)	0.637 ^a
Education (%)				
■ MPharm	87.8	89.0	86.2	0.303 ^b
■ Postgraduate level ^c	12.2	11.0	13.8	
Living with children in the household (%)	55.2	52.4	58.9	0.121 ^b
Living with older in the household (%)	29.1	29.9	28.0	0.633 ^b
Living with chronic patients in the household (%)	41.6	45.7	36.2	0.022 ^b
Pharmacy characteristics				
Ownership (%)				
■ State-owned	27.7	32.9	19.5	<0.001 ^b
■ Private ownership	72.8	67.1	80.5	
Type (%)^d				
■ Independent	10.5	11.9	8.5	
■ Small chain	17.8	24.4	8.9	<0.001 ^b
■ Medium chain	12.0	14.9	8.1	
■ Large chain	59.8	48.8	74.4	
Location (%)				
■ Urban area	83.8	83.2	84.6	
■ Suburban and rural area	16.2	16.8	15.4	0.671 ^b
Working hours before pandemic (%)				
■ Two shifts (open morning–evening) ^e	84.7	80.2	90.7	0.003 ^b
■ On-call (open 24 h)	9.9	12.8	6.1	
■ One shift (8 AM–2 PM or 2 PM–8 PM)	5.4	7.0	3.3	

Abbreviation used: IQR, interquartile range.

^a P value obtained by Mann–Whitney test.

^b P value obtained by Chi-square.

^c Additional postgraduate education (postgraduate studies, specialization, PhD).

^d Independent pharmacy (1 community pharmacy); small chain (2–4 pharmacies); medium chain (5–9 pharmacies); large chain (>10 pharmacies).

^e Differing operating hours (i.e., 8 AM–8 PM, 7 AM–9 PM, 7 AM–8 PM, 8 AM–9 PM, 10 AM–10 PM, 8 AM–10 PM, etc.).

Sociodemographic characteristics did not differ between Croatian and Serbian samples (Table 2), except that the Croatian participants were more likely to live with chronic patients (45.7% vs. 36.2%; $P = 0.022$). The characteristics of the community pharmacies in which the participants worked differed statistically significantly by type ($P < 0.001$), ownership ($P < 0.001$), and working hours before pandemic ($P = 0.003$), and there was no statistically significant difference in their respective locations. Table 2 details these characteristics.

Organizational and safety measures due to COVID-19

Most pharmacies in both countries implemented various safety measures, although more statistically significantly in Croatia than in Serbia, such as wearing protective gloves or working behind acrylic glass partitions (Table 3). More than 95% of the participants in both countries wore face masks at work. However, body temperature checks before starting work were less common, particularly in Serbia (67.7% vs. 15.4% in Croatian and Serbia, respectively; $P < 0.001$). Table 3 provides data on all the explored organizational changes and precautionary measures, including a comparison between the 2 countries.

Individual pharmacies in Croatia, in accordance with the recommendations of the Croatian Institute of Public Health and the Croatian Chamber of Pharmacists, organized teams that did not meet each other, ensuring that the illness of 1 member of a team never led to the pharmacy's closure. On the

basis of the participants' responses, most of the outlets organized work in 7-day rotations; each member of the team worked for 7 days and spent the following 7 days at home. In addition, they checked the medical status of the people entering the pharmacy, with the central health database enabling the procedure. Of the Croatian participants, 88.7% reported checking the status of every visitor, whereas 10.7% did that only occasionally. Notably, 44.2% reported being in contact with a person in self-isolation at their workplace.

Serbian participants had needed to self-isolate at a rate higher than their Croatian counterparts (9.3% vs. 2.4%; $P < 0.001$).

Moreover, pharmacists expressed lower level of satisfaction with the work organization and safety measures at their workplace in Serbia (mean value 3.67 ± 1.132 to 3.86 ± 1.098) than in Croatia (mean value 4.13 ± 0.842 to 4.52 ± 0.721) ($P < 0.001$; Figure 1).

Providing pharmaceutical care and public health activities during COVID-19

Approximately two-thirds of the participants reported providing frequent counseling activities related to public health issues such as preventive measures against COVID-19 infection. In addition, they dedicated significant amounts of time counseling on pre-existing chronic conditions; half to one-third of the participants reported paying equal attention to chronic disease management as before, although more

Table 3
Work organization and precautionary measures due to COVID-19 in Croatia and Serbia

Variable	Croatia (n = 328)	Serbia (n = 246)	P
Organization of work			
No. teams (%)			
■ One	8.2	NA	—
■ Two	91.2		
■ Three	0.6		
Working days (%)			
● 2-wk rotations	9.8	NA	—
■ 7-d rotations	43.9		
■ 3-d rotations	7.3		
■ 1-d rotations	14.3		
■ Half-day rotations	12.2		
■ Other	12.5		
Safety measures			
Working behind Plexiglas partitions (%)	97.3	81.3	< 0.001 ^a
Wearing protective gloves (%)	95.1	87.4	0.001 ^a
Wearing protective face masks (%)	95.1	97.2	0.219 ^a
Wearing a visor (face and eye protector) (%)	19.5	40.2	< 0.001 ^a
Dispensation through the window (%) ^b	29.9	17.9	0.001 ^a
Complete disinfection of working area (%)	92.7	67.9	< 0.001 ^a
Provision of hand sanitizer for patients before entry (%)	99.4	70.3	< 0.001 ^a
Body temperature checks prior starting work (%)	67.7	15.4	< 0.001 ^a

Abbreviations used: NA, not applicable; COVID-19, coronavirus disease 2019.

^a P value obtained by Chi-square test.

^b Small window normally used only for on-call visits during the night shifts.

statistically significantly in Serbia than Croatia (78.4% vs 55.5%; $P < 0.001$). Overall, Serbian pharmacists reported on conducting statistically significantly more counseling activities than their Croatian counterparts ($P < 0.001$ for all activities; Figure 2).

Moreover, the participants' perception of patients' queries on medication was explored regarding COVID-19, which could have been an additional challenge, thus increasing their workload. One-third reported responding to frequent inquiries about the potential noxiousness of certain drugs in preventing COVID-19 infection (e.g., ACE-inhibitors, nonsteroidal anti-inflammatory drugs, corticosteroids), and more than two-thirds (71.0% in Croatia and 88.2% in Serbia) reported frequent queries on the drugs with potential curative or preventive properties (e.g., certain antibiotics, antivirals, chloroquine). Up to 22% of community pharmacists in this study did not feel competent in providing up-to-date information on the effect of certain drugs against the virus. The majority in both countries (more than 90%) believed that the media influenced the patients' demand for medication to a large extent. More than 97% reported that patients purchased certain medication over the counter more often than they usually do (e.g., immune boosters, paracetamol), and 76.2% and 56.1% of Croatian and Serbian participants, respectively, believed that patients excessively demanded PPE (i.e., face masks, gloves, disinfectants, and alcohol). Furthermore, patients sought advice on their usual chronic conditions less frequently, especially in Croatia (46.1% vs. 69.9%, in Croatia and Serbia, respectively).

As reported by 60% of the participants, queues affected the quality of patient consultations in both countries. Moreover, 29.9% were dispensing medication and communicating exclusively through a small window, normally reserved for

night shift, and 46.0% of them expressed that such a communication was difficult.

Faced with supply issues, they had to manage shortages, as presented in Figure 3. More participants in Croatia reported that they had been rationing certain drugs (90.2% vs. 58.9%; $P < 0.001$) and PPE (97.0% vs. 93.1%; $P = 0.031$; Figure 3). Most of the pharmacists in both countries reported to have provided patients or physicians with counseling on therapeutic alternatives because of shortages of certain medicines (91.8% and 95.5% in Croatia and Serbia, respectively; $P = 0.073$; Figure 3).

In both countries, participants reported providing additional services; approximately 30.7% had started manufacturing hand sanitizers, and 17.8% provided online counseling (Figure 4). However, the Serbian sample provided home delivery of medicines at a statistically significantly higher rate (22.0% vs. 32.9%; $P = 0.003$; Figure 4).

Concerning public perception of their role, there was a sentiment of dissatisfaction, especially among the Serbian sample (2.90 ± 1.78 vs. 2.05 ± 1.276 ; $P < 0.001$).

Psychological aspects

The changes at work and daily life and their effects on emotions, mood, and mental state of the pharmacists were also explored. A total of 38.3% expressed a fear of infection at their workplace, and 72.8% feared infecting a loved one as a result of exposure at work (Figure 5). With 77.3% reporting more fatigue than usual, they considered that working in shifts negatively impacted their psychological state (42.2%), mood (37.3%), and productivity (24.3%; Figure 5). Both samples expressed these sentiments at a comparable rate, but the Serbian participants expressed statistically significantly more fear for their loved ones ($P = 0.017$) and a higher impact on their mental health and mood ($P = 0.020$).

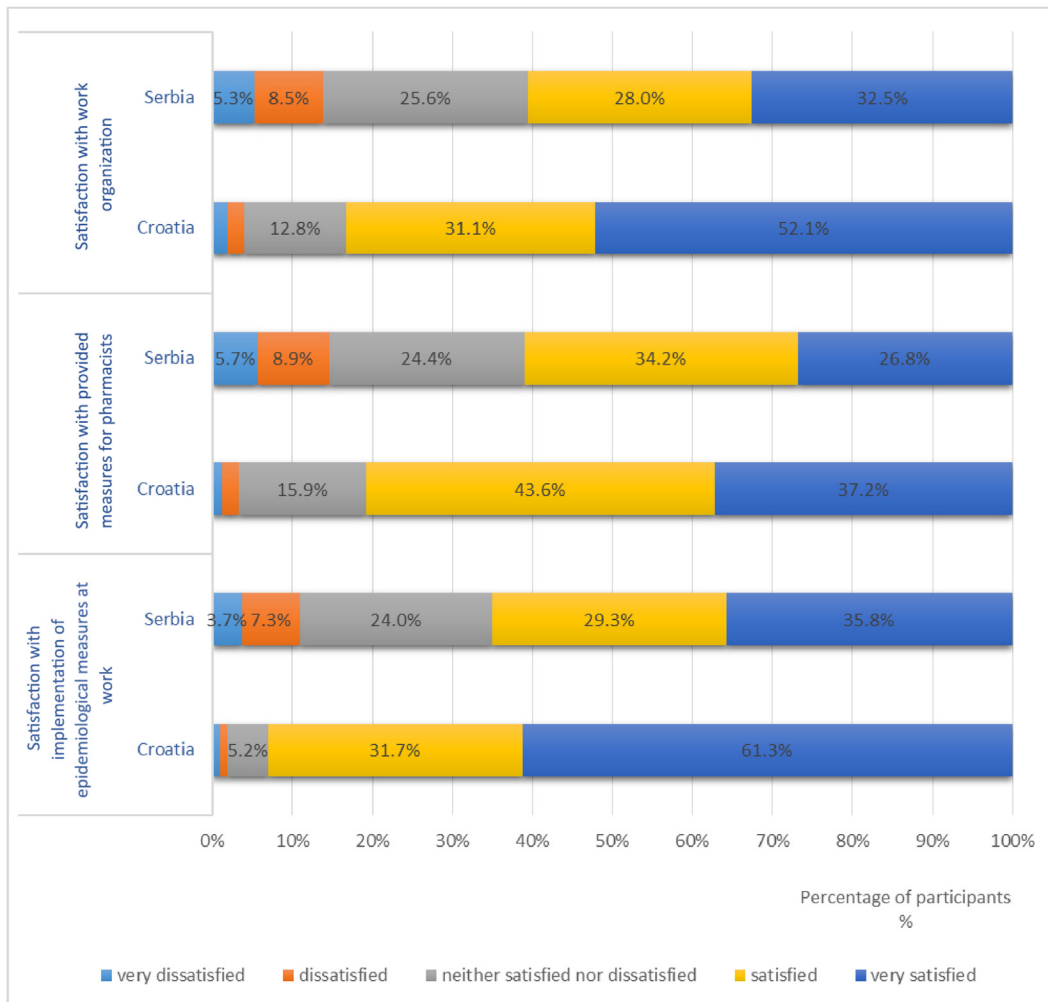


Figure 1. Pharmacists' satisfaction with work organization and precautionary measures during the COVID-19 pandemic. Abbreviation used: COVID-19, coronavirus disease 2019.

Discussion

Over the last decades, pharmaceutical practice in Serbia and Croatia has undergone numerous changes. Currently, privately owned pharmacies are predominant in Serbia, and several regulatory acts governing pharmacy practice have either been amended or introduced. Changes in ownership have also led to positive changes such as quick decision-making and faster adaptation to new working conditions; however, the results of this study show that that was not the case in this pandemic, and we observed better implementation of safety measures in Croatian community pharmacies. In Croatia, changes in pharmaceutical practice preceded other adjustments necessary for accession to the EU. Despite these changes, private ownership was not as pronounced as it is in Serbia.

On the basis of the results of the study, 2 models of emergency preparedness and response could be identified: In the Croatian model, systemic decisions were made at the global level; in the Serbian model, decisions were made at a micro level (at the institutional level). Analysis of each separate

measure revealed that both countries acted in accordance with global guidelines,^{13,14} while differing in practice. According to previously published studies, pharmacies in both countries fulfilled all required roles and activities (in prevention, preparedness, response, and recovery).^{2,14-17}

In line with the study results there are differences in the use of PPE and safety measures in community pharmacies. Pharmacies in both countries implemented all listed measures at a rate of over 50% except wearing a visor, dispensation through the nightshift window (in both countries), and measuring the body temperature of employees before starting work (in Serbia). The only safety measure that both samples comparably followed was wearing protective masks. The Croatian sample more rigorously implemented wearing of protective gloves, complete disinfection of their working areas, provision of hand sanitizer to patients before entry, and the measurement of employees' body temperature. Both countries faced operational crises during the first few weeks of the pandemic regarding medicines, PPE supply, and the collapse of delivery of remunerated prescription medicines, which was similar to other countries.¹⁸⁻²⁰ Recent studies by Shrestha

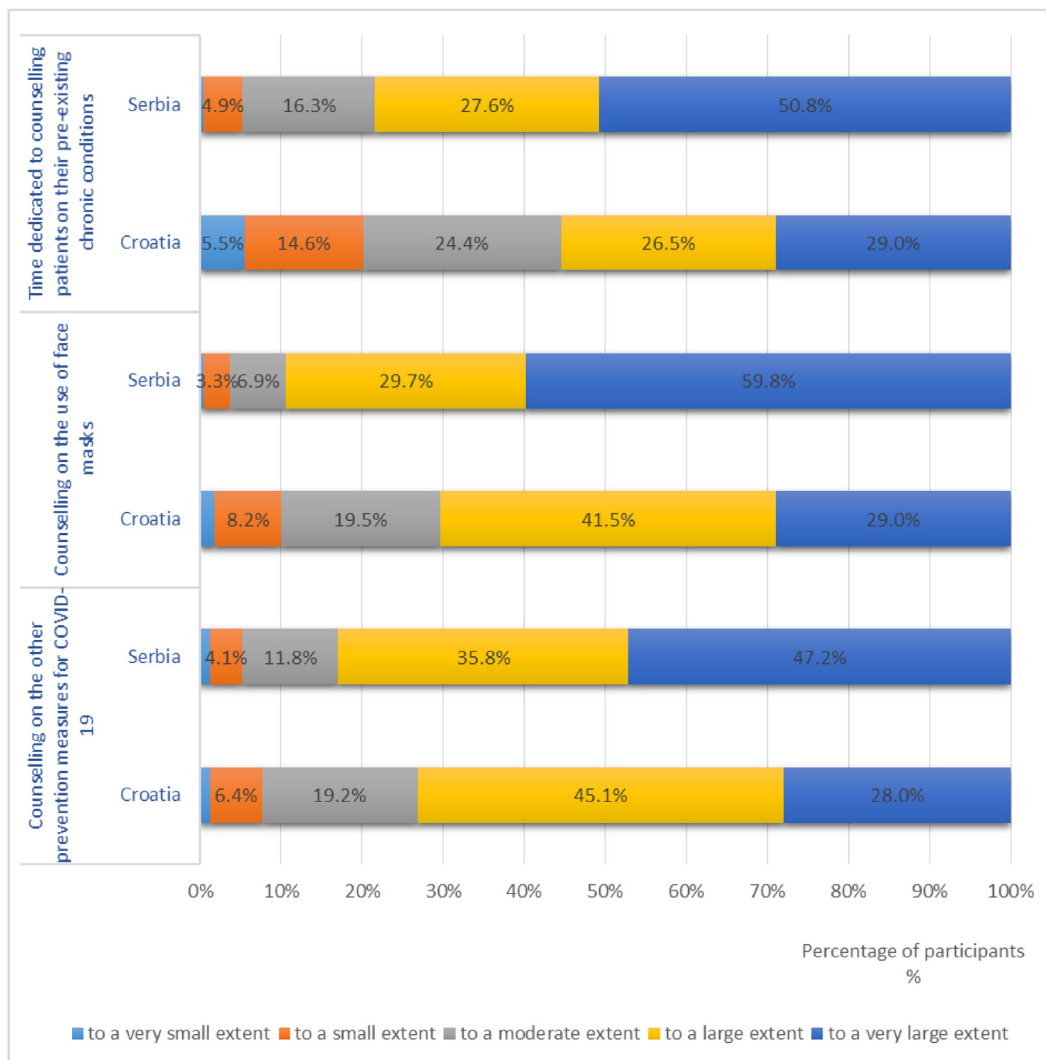


Figure 2. Pharmacists' counseling activities during COVID-19 pandemic. Abbreviation used: COVID-19, coronavirus disease 2019.

et al.,³ Hussain et al.,⁴ Bahlol and Dewey,⁵ and Kasahun et al.,⁶ described good preparedness and response of pharmacists to pandemic, similar to our results.

Moreover, it was observed that pharmacists in Croatia were more satisfied with the work organization, incorporated safety measures, and had support from professional bodies such as the Croatian Pharmaceutical Chamber, in drafting frameworks to respond to the crisis on a national scale. Serbia, however, did not make official stipulations for pharmacies. Recommendations of the Serbian Institute of Public Health, Ministry of Health, and the Pharmaceutical Chamber of Serbia were too general, and the onus was on the individual pharmacies to organize themselves. Hence, there were variations in work organization, with some pharmacists working for 12 hours every alternate day in extreme cases. Moreover, the results of this study suggest that support from international professional societies, such as FIP is valuable. For instance, FIP guidelines on COVID-19¹¹ were valuable for managing the response in Serbia, where detailed guidelines for pharmacists or support from professional bodies were unavailable at the time.

The initial response to the pandemic in Croatia can be further attributed to the country's long tradition of public health, owing to the legacy of Andrija Štampar, one of the most charismatic and beloved figures in 20th century public health.²¹ Interestingly, tradition may be one of the factors that play a role in responding to the pandemic.

Another important aspect explored in this study was the delivery of pharmaceutical care in this current environment. We assumed that the aggravated conditions and the diversity of patients' needs could disturb the delivery of traditional pharmaceutical care. Conversely, it was observed that most of the pharmacists continued to manage chronic diseases and patient consultations in addition to their new roles. Increased patient needs due to the unavailability of other health care services could explain this tendency. This emphasized the importance of community pharmacies and indicates the need for the preparedness of the whole health care system during a pandemic. Through their management of shortages, online counseling, home delivery of drugs, and even manufacturing hand sanitizer, the participants from both countries showed a

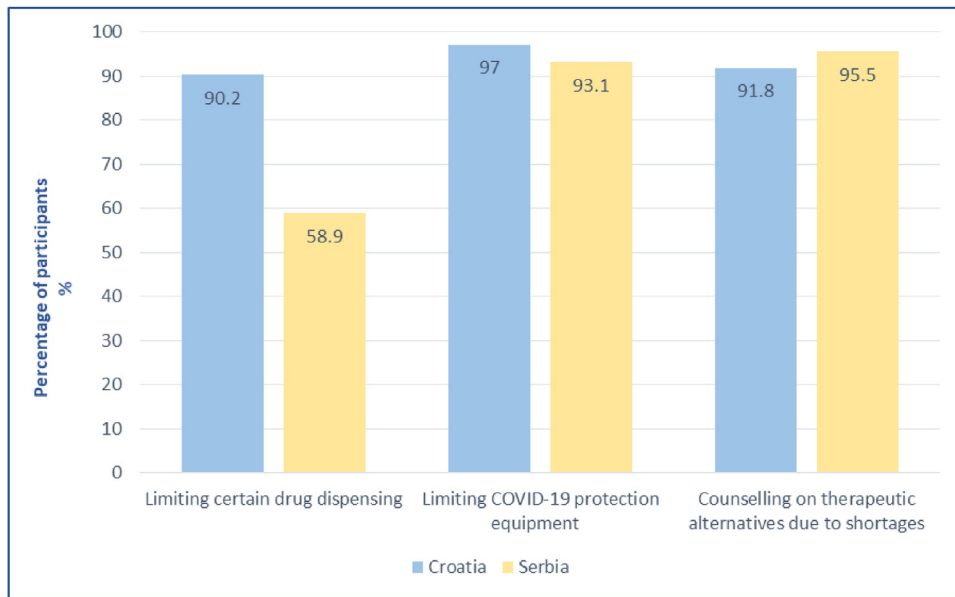


Figure 3. Management of shortages. Abbreviation used: COVID-19, coronavirus disease 2019.



Figure 4. Providing additional services.

willingness to readily respond to the current circumstances and their contingent demands.

Time dedicated to patients' consultations illustrated the important role of community pharmacists as public health advisors, especially at a time when other health professionals were not available. As people faced difficulties accessing general practitioners (GPs), dentists, and hospitals, the drastic increase in demand for pharmacy services compounded their plight. According to the Royal College of General Practitioners, face-to-face consultations with GPs decreased from more than 70% in mid-March to 23% in early April.²² Therefore, the role of community pharmacists expanded to include chronic disease

management like ensuring the availability of chronic disease medication, supporting rational medicine use, medication adherence, medication review, and follow-up services.¹⁵ These conditions altered their working hours and work practices leading to work overload, with increased risk of infection and extreme stress.⁵

Current information is crucial for the adequate provision of pharmaceutical care. Getting reliable information at the beginning of the outbreak was quite challenging, because a large proportion of the news in the mass media lacked scientific sources. For example, after public media published the hypothesis that ACE-inhibitors and

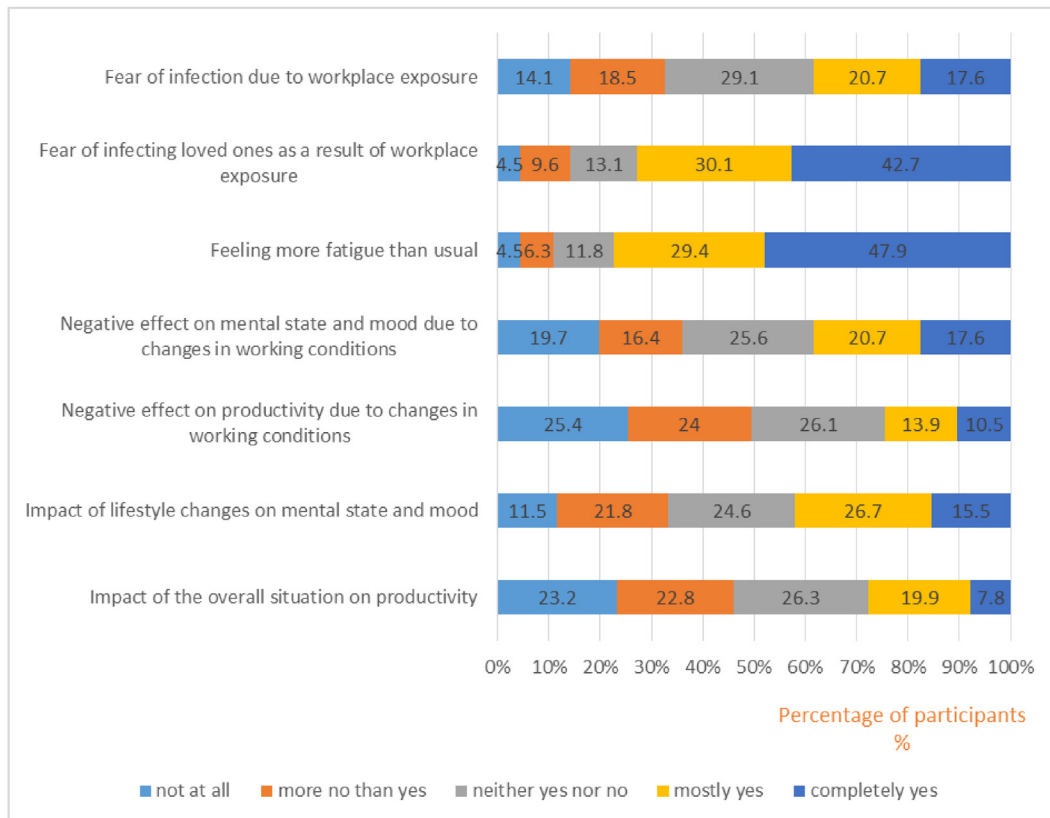


Figure 5. Extent of psychological effects due to the COVID-19 pandemic. Abbreviation used: COVID-19, coronavirus disease 2019.

nonsteroidal anti-inflammatory drugs could have negative effects on the treatment of COVID-19, both patients and pharmacists had reservations about these therapies. Up to 22% of the sample expressed that they did not feel competent in providing up-to-date information on the effect of certain drugs in the treatment of COVID-19. This indicates the need for urgent support of professional bodies in the provision of evidence-based information in such circumstances.

During the COVID-19 virus outbreak, pharmacists have suffered from prolonged stressful situations and increased workloads, which pose a risk to the health system in terms of increasing errors and greater likelihood of infection resulting in absence from the workplace. A psychological burden was detected, particularly fear of infection and fear for the health of their loved ones. This fear, according to recently published data, is justified because primary care workers are at an increased risk of infection due to their occupational exposure.²³ Similar findings were reported by Lange et al.,⁹ where up to 35% of pharmacists had psychological disturbances as a result of the pandemic, while Ashiru-Oredope et al.¹⁰ found that more than 65% participants were very worried or extremely worried about the impact of COVID-19.

To the best of our knowledge, this is the first study to explore multiple dimensions of community pharmacy organization during the COVID-19 pandemic in 2 neighboring European countries. Although pharmacists have successfully implemented protective measures, maintaining a stable

supply of medication and PPE, and responding to patients' specific demands, other challenges have risen. First, the system was not prepared for the management of this outbreak. Second, pharmacists exhibited a high psychological burden and were dissatisfied with the recognition of their role in the eyes of the public. Regulatory authorities and professional bodies should recognize the shortcomings raised in this study to improve the pharmacy sector from both professional and public health perspectives. The pharmacists as individuals, also need support.

The pandemic has shown the need for a strategy to manage the sector during major crises, which would allow for rapid and effective adaptation to threats. In addition, it is an opportunity for pharmacists to become more involved in crisis management and avail their competencies in a range of new services.^{24,25}

Limitations of the study

Using an online survey as a method of data collection could have been a source of selection bias. Specifically, nonresponse bias, as the common type of selection bias, could be the limitation of this study. We could not determine the response rate with certainty, because the recruiting was conducted via interest groups on social media, and the exact number of pharmacists who were reached by the used method is unknown. However, the characteristics of our sample (gender proportion, level of education etc.) correspond to those of the population of interest; hence, we believe that selection bias is minimal in this study. Moreover, we reached approximately 10% of the

overall community pharmacists' population in each country, which is satisfactory, especially in the circumstances of the onset of the pandemic. Another limitation of the study is that questions in section D could not be validated completely. The questions on psychological aspects are specific for the COVID-19 pandemic, a new and unknown situation, and there was no previously validated questionnaire available to explore the aspects of interest. The design of our questionnaire was time consuming, consisting of previous literature search and interviews with the community pharmacists to identify specific themes, which was subsequently piloted in Croatian and Serbian population and validated for the content. These processes, in the circumstances of the pandemic, did not allow for extra time and sample to be used for complete validation. However, that enables collecting data at the beginning of the outbreak with reduced recall bias.

Conclusions

This study suggests that the threat of infection due to workplace exposure has an effect on the psychological state of the health workers, regardless of the country where they practice. Despite these challenges, they have taken on an important role in the health care system and responded dutifully to the pandemic by implementing safety measures, managing supply, and providing pharmaceutical care to the population. The extent of systematic and logistical support provided to the sector during the pandemic could explain the differences between the 2 nations' responses and pharmacists' satisfaction. A more coordinated response from primary care health workers in the future will require better support from regulatory bodies and professional societies. It is necessary to gather the experiences of other countries and prepare strategies to respond to future crises, based on best practices.

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