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Original Research

The influence of SARS-COV-2 pandemic in the pharmaceutical service in ALBANIA

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Abstract

Objective: In the second year of the COVID-19 pandemic, the role of the pharmacists was confirmed as central at the territorial level. The purpose of this study was to assess knowledge, attitudes, and practices of pharmacists in Albania, critical changes in the Albanian pharmaceutical market during the COVID-19 pandemic and evaluate factors influencing the quality of the pharmaceutical service. **Methods:** A nationwide survey was conducted, using an online questionnaire targeting Albanian pharmacists during 2021. **Results:** Most of the respondents were females (86.2%), belonged to the 30-39 age group (51.7%) and worked in community pharmacies (73%). Although most of the respondents did participate in training courses (62.8%), only about 38% of them had good knowledge about COVID-19 (score 5/8). Moreover, the level of knowledge increases the possibility to apply the rules. 65% of the pharmacists who were very afraid of getting infected with COVID -19, stated that they followed the WHO rules compared to 37 % of those who were not afraid. Regarding the medicines offered, 64% of the respondents claimed that there have been difficulties in ensuring the adequate medicines during the pandemic. Furthermore, although 61% of the pharmacists declared that the price of medicines during the pandemic has not changed, 58% of them thought that the revenues of all pharmaceutical sectors have risen. **Conclusion:** From this study it is concluded that although the pharmacists in Albania have demonstrated strength, professionality, and commitment to offer pharmaceutical service to the highest level, they faced numerous challenges during this difficult time. In the future, the pharmacist's role can be extended in the community to provide successful medical service and their collaboration within and between pharmacists and physicians is essential.

Keywords: COVID-19; Albania; pharmacist; knowledge; attitude; practice

INTRODUCTION

COVID-19 is an infectious disease caused by a high transmittable coronavirus, known as SARS-CoV-2 (Severe Acute Respiratory Syndrome-Related Coronavirus 2).[1] Even after two years from the first case identified in Wuhan, China, the COVID-19 pandemic is still considered a public health emergency with more than 565 million confirmed cases and 6 million deaths worldwide, as of July 22th, 2022.[2]

In Albania, the first case was reported on March 9th, 2020. Since then, the virus has rapidly spread across the country reaching 292,456 confirmed cases and 3,517 deaths nationwide until July 14th, 2022.[3]

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In the second year of the pandemic, the role of the pharmacists as the first point of contact was confirmed as central at the territorial level, in terms of providing services to support treatment, therapeutic adherence, prevention, raising community awareness and offering counseling.[4,5] The valuable service that pharmacists provide to the community and their important contribution in alleviating the enormous pressure is exerting on our health systems worldwide during the current pandemic, is now clearer than ever. Their key-role is furthermore highlighted by the fact that they have been widely engaged in SARS-CoV-2 diagnostic testing and even vaccination programs in some countries.[6,7] This pandemic further demonstrated how important it is to have a crisis-resistant system and ensure the availability of medicines.[8]

However, like other healthcare workers, pharmacists had also faced significant human and economic challenges and risks due to their frequent exposure to infected individuals and keeping up to date with quality health information that is rapidly changing.[9]

For this purpose, several authorities have published detailed technical guidelines to assist pharmacists and their teams as key partners in this global health crisis. The International Pharmaceutical Federation (FIP) which represents over 150 pharmaceutical organizations in countries around the world, issued a guideline providing clinical information and treatment guidelines for the pharmacy workforce as well as calls on governments and other stakeholders in their support.[10] At the same time, the World Health Organization (WHO) published a set of technical working guidance papers to support pharmacists with COVID-19 outbreak related issues,

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give practical information and resources to decision makers as well as policy recommendations to strengthen the health system response.[11] However, despite the presence of these guidelines, it remains to be clarified whether these indications are implemented by health professionals.[12]

In the recent years, Albania has seen a rapid increase in the number of community pharmacies with a total of 1700 pharmacies serving in 36 districts of Albania. About 800 of them are in the capital of Albania, Tirana, making it the city with the highest number of pharmacies in the country. The Law on Medicines and Pharmaceutical Service in Albania does not provide restrictions on the distance between pharmacies, or the number of habitants covered by one pharmacy.[13] While 92% of the pharmacies are in urban areas, the rural parts of Albania remain usually uncovered by the pharmaceutical service, risking the equitable access to medicines. Moreover, considering the hindering factors that render almost impossible for people residing in these areas to access specialized health care, the role of the pharmacist becomes even more crucial.

In Albania there are approximately 108 pharmacists per 100 000 inhabitants, while across the European Union (EU), the number of pharmacists per inhabitant varies from 50 to 110 pharmacists per 100 000 inhabitants, widely.[14] Although Albania has put real efforts to develop a regulatory legislation that is compliant with EU standards for pharmaceutical sector, the Albanian legal framework lacks many regulations.[15]

Therefore, the purpose of this study was to conduct a nationwide survey to assess knowledge, attitudes, and practices of pharmacists in Albania as well as critical changes in the Albanian pharmaceutical market during the COVID-19 pandemic from the pharmacists' perspective and evaluate factors influencing the quality of the pharmaceutical service in Albania.

Moreover, findings from this study will contribute to develop more robust guidelines on the role of pharmacists in the management of infectious diseases and more comprehensive regulations on dispensing medicines. High quality pharmaceutical services not only increase the level of public health, but also reduce the health care costs. To our knowledge, this is the first study of this kind conducted in Albania.

METHODS

Study design and ethics

This is a cross-sectional study, using an online questionnaire targeting Albanian pharmacists during 2021. The questionnaire was developed using google forms and spread through social media, to a group of about 2500 pharmacists. In Albania, there are about 3000 pharmacists registered at the Albanian Pharmaceutical Order.[16] The survey was administered in Albanian, the official language in Albania. Participation in the study was voluntary and anonymous after an informed material describing the study and the objectives. In addition, pharmacists were ensured about the confidentiality of the data.

Data collection

Social media (mainly Facebook) were used to spread the questionnaire among all pharmacists across the Albanian territory. The inclusion criteria for this study were pharmacists who worked in the community pharmacies, rather than in the pharmaceutical industry and pharmaceutical warehouses. The exclusion criteria were those who did not agree to complete the survey and pharmacists who worked in sectors not related to the pharmaceutical sector. Also, other health care professionals were excluded from the study.

The questionnaire was piloted in a sample of 10 pharmacists for validation prior to its launch. Time to fulfill the questionnaire was measured and the comprehensibility of each item was evaluated. Items that were not fully comprehensive or had a double meaning were changed.

Questionnaire

The survey was developed by a group of researchers and academics after an extended and accurate review of the literature, according to the WHO Risk Communication and Community Engagement (RCCE). [17]

Reliability test was done by calculating Cronbach's alpha which was found to be 0.866. The questionnaire included questions aimed to measure pharmacist's commitment to follow the regulations of the pandemic, evaluate pharmacists' perceptions toward their role in the management of COVID-19 and assess pharmacist's knowledge about the pandemic.

The questions were multiple choice, close-ended, true, or false and a few open-ended. The final version of the questionnaire was composed of 6 sections. The first section included 5 items and aimed to collect demographic data such as age, gender, working experience, residence, and the sector of pharmaceutical field where they work.

The second section (9 items) aimed to gather information about the availability of drugs during the pandemic, their stockage, price and prescription patterns. Questions about the working hours of the pharmacists and remote service were asked too.

The third section (8 items) was developed to evaluate the perceptions of pharmacists about the pandemic of COVID-19. This section aimed to assess the impact that these perceptions might have on their service and role during the pandemic outbreak.

The fourth section (5 items) aimed to assess the behavior and approaches of pharmacists in their working place during the pandemic. These practices are expected to directly influence the behavior of the patients and impacts the course of the pandemic.

The fifth section (10 items) was developed to gather information about the knowledges of pharmacists about the COVID-19 pandemic including prevention measures and transmission.

The last section (5 items) aimed to evaluate the relationship between pharmacists and patients.

Data analysis algorithm

Through this study we aim to identify demographic, social,

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economic as well as other factors related to the pharmacist's knowledge, perceptions, and attitudes in the workplace about the COVID-19 pandemic, including the impact on the relationship with the patients themselves (Figure 1). All the aforementioned factors define the performance and the role of the pharmacist toward the management and control of COVID-19 spread.

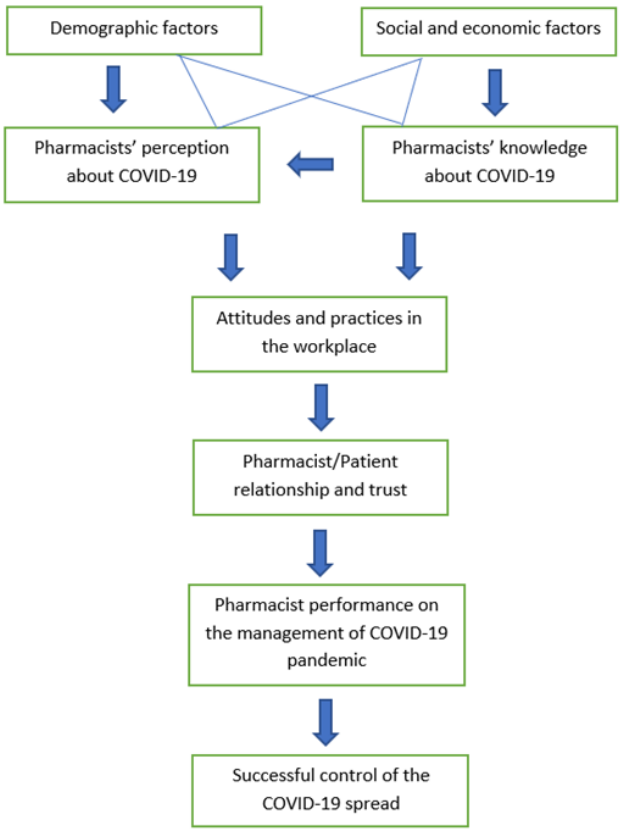

Figure 1. Analysis workflow for the identification of factors that influence the pharmacist's role in the COVID-19 pandemic

Statistical analysis

Data were allocated in an Excel database using Microsoft Excel. After codification, data were analyzed using Statistical Package for Social Sciences (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY, USA: IBM Corp.). The number of Albanian community pharmacists is 2,744.[18]

Statistical significance was assessed at $P \leq 0.05$. Qualitative data were expressed in terms of frequency and percentage, while quantitative data in terms of mean ± standard deviation and median. Each correct response was scored with 1 point while the incorrect response was allocated a score of 0 points.

One-way ANOVA test was conducted to compare the mean difference of outcomes of interest between job categories. Percentages were used to describe categorical data (pharmacists' characteristics). Categorical variables were gender, field of pharmaceutical work (community pharmacists versus other fields of pharmaceutical work or unemployment), or years of experience (greater or less than 5 years of experience). Differences between categorical variables were evaluated using the chi-square test.

RESULTS

Demographic data

Of the recruited pharmacists, 174 of them agreed to participate in the study. The demographic data are shown in Table 1.

Most of the respondents were females (86.2%) and belonged to the 30-39 age group (51.7%). 73% (127/174) of them worked in the community pharmacies and only 4.6% in representative offices for foreign companies. The majority of the respondents lived in the city areas (97.1%), with Tirana having the majority of them (74.7%). Most of the respondents (36%) had between 5-10 years of work experience, 35% of them had less than 5 years of experience and only 8% of them had more than 20 years of experience.

Table 1. Demographic characteristics of interviewed professionals

Variables		**No.**	**%**
Gender	Female	150	86.2
	Male	24	13.8
Age (years)	20-29	60	35.2
	30-39	91	51.7
	40-49	13	7.4
	≥50	10	5.7
Years of experience	<5	61	35
	5-10	63	36
	11-20	36	21
	>20	14	8
Workplace	Community pharmacy/ pharmaceutical agency	127	73
	Pharmaceutical distributor	16	9.2
	Pharmaceutical industry	13	7.5
	Representative office for foreign companies	8	4.6
	Other	10	5.7
Residence	City	169	97.1
	Village	5	2.9
City	Tirana	130	74.7
	Other cities	44	25.3

Medicines offer during the COVID-19 pandemic

In the following tables we have reported only the two most frequent given answers. Results regarding the impact of the pandemic on the medicines offer are shown in Table 2.

About 70% of the respondents working in community pharmacies or pharmaceutical agencies claimed that there have been difficulties in ensuring the adequate medicines

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Table 2. Questions and answers related to the medicines offer during the COVID-19 pandemic

Question	**Answer (%)**	
What impact has the pandemic had on medication supply?	There have been difficulties in providing the medications used to treat COVID-19 (64%)	There have been shortages for all medications in general (23.6%)
What effect has the pandemic had on consumer purchasing power?	It has increased the purchasing power because of the panic-buying (75%)	It has reduced the purchasing power (21.3%)
How has the pandemic affected the pharmaceutical companies' economy?	The revenues of all traders of pharmaceutical products have increased (58%)	The income of retailers on pharmaceutical products has decreased, but the income of wholesalers has increased (24%)
In your opinion, was there any abuse in the prescription and use of antibiotics during the COVID-19 pandemic in Albania?	Yes, a lot (63%)	Kind of (28.2%)
During the pandemic, did the medicines price changed?	Has not changed (61%)	Has risen (33%)
Has your pharmacy provided a drug delivery service during this period?	Never (37%)	Sometimes (40%)

during the pandemic, compared to 56% of those working in pharmaceutical distributors and 50% of those working in representative offices ($X^2_{(12)}$ =94.33, p≤0.05).

While only 3.1% of the professionals working in community pharmacies declared that during the pandemic there have not been shortages in medicines, this percentage rises in 31% in those that work in pharmaceutical distributors, 38% in pharmaceutical industry and 50% in representative offices of foreign companies ($X^2_{(12)}$ =94.33, p≤0.05).

On the other hand, although 61% of the pharmacists declared that the price of medicines during the pandemic has not changed, 58% of them thought that the revenues of all pharmaceutical sectors has risen.

Perception of the COVID-19 pandemic

Results are shown in Table 3.

Moreover, when the statystical relationship between the question "*How do you consider the COVID-19*" and other variables, was anaysed, the results demostrated that 31% of those who considered COVID -19 a severe disease, were afraid of possible infection compared to 16.7% of those who considered it as a common disease (=23.157, p≤0.05). In addition, 33.3% of those who consider COVID-19 as a common disease have tried to provide the medicine they lack, compared to 67% of those who consider it as a variable disease which depends by individual response =20.590, p≤0.05). 36.9% of those who considered the COVID -19 as a variable disease has warned the patients who do not follow the rules of WHO, compared to 16.7% of them who consider it as a common disease =20.935, p≤0.05).

Table 3. Questions and answers about the perceptions of pharmacists regarding COVID-19

Question	**Answer (%)**	
Do you have any family members who may be at greater risk of getting seriously ill from COVID-19?	Yes (54%)	No (36%)
Have you been infected with COVID-19?	No (43%)	Yes (39%)
If the answer to question 12 is Yes, did you or any family members develop a serious condition?	No (65%)	Yes (24%)
If the answer to question 12 is Yes, do you think you got infected in the workplace?	No (32%)	Yes (29%)
How do you consider the COVID-19? [a]	A disease in which symptoms vary from one individual to another (74%)	Severe (22%)
If you have not been infected with COVID-19 yet, how scared are you of getting infected? b	Scared enough (42%)	A little bit scared (27%)
What is the reason of fear about contracting COVID-19?	I am afraid of transmitting it to family members (77%)	I am afraid of getting seriously ill (12%)
How has your perception of the pandemic affected the availability of the health service you provide?	Has not affected at all (56%)	I have extended working hours (26%)

[a] *Pearson's chi square test was performed to analyze the statistical relationship between the question "How do you consider the COVID-19"? and other variables.*

[b] *Pearson's chi square test was performed to analyze the statistical relationship between the question "If you have not been infected with COVID-19 yet, how scared are you of getting infected?"*

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how scared are you of getting infected?" and other variables, was analyzed, the results showed that 85% of those who were very afraid of getting infected with COVID -19 declared that the motivation of their fear was transmitting the disease to family members, compared to 31.3% of those who were not afraid at all =63.799, p≤0.05). The fear against infection also influenced their behavior in providing the medicines for their patients. In fact, 26.9% of those who were very afraid of getting infected with COVID-19 didn't make efforts to ensure the missing product to the patients compared to 9.8% of those who were a little afraid (=27.476, p≤0.05).

Behavior in the workplace during the pandemic

Results have shown that although most of the interviewees (89.6%) stated that they generally followed the WHO rules, only 63% of them stayed at home during the infection and 76% of them, referred patients to a specialist doctor when they complained of symptoms like COVID-19 (Table 4).

The majority of the pharmacists (65%) who were very afraid of getting infected, stated that they followed the WHO rules compared to those who were not afraid (37 %) (= 42.818, p≤0.05).

We also found that the tendency to follow the rules is also correlated to the years of experience and the workplace. In fact, those who had more than 20 years of work experience (60%) had applied the anti-COVID rules more than the ones who had 10-20 years of work experience (47%) and those who had 5-10 years of work experience (50%). Furthermore, pharmacists who worked in representative offices for foreign companies (74%) followed the rules, compared to community pharmacies (56%) and pharmaceutical distributors (44%).

On the other hand, we noticed a direct correlation between the pharmacist's perception about the severity of COVID-19 and the behavior against the patients. For example, 37% of those who thought that COVID-19 clinical route changes in individual

Table 4. Questions and answers regarding the behaviour of pharmacists in the workplace during the pandemic

Question	**Answer (%)**	
Did you follow the rules against COVID -19 given by WHO during the pandemic	Yes, a lot (47.1%)	Sufficiently (42.5%)
Have your patients followed the rules during the pandemic?	Sufficiently (60%)	A little (34%)
What was your reaction when a patient complained of COVID -like symptoms?	You asked them to follow the rules (64%)	You told them to be careful (32%)
What was your reaction in front of a patient not following the anti-Covid rules?	You referred him to the family doctor/ specialist (76%)	You have recommended a PCR test (19%)
What was your reaction when you got infected with COVID -19?	You have stayed at home for the time recommended by the WHO (63%)	You have continued to work and at the same time, you have informed the patients about your condition (3%)

[c] *Pearson's correlation was used to observe any statistically significant relationship between the level of knowledge about COVID-19 and the application of rules established by WHO.*

basis declared that have warned their patients to follow the rules of WHO, compared to 17% of those who thought that COVID-19 is a common disease. (=20.709, p≤0.05). Finally, most of the pharmacists (84.2%) who considered the pandemic as a serious disease referred the patients to the doctor when they suspected of COVID-19, compared to 50% of those who considered COVID-19 as a common disease

Knowledge towards Covid-19

More than 38% of the respondents (67/174) scored 5 points out of 8 and less than 24% scored 4 points. When ANOVA test was used to observe any statistically significant relationship between the knowledge level about COVID -19 and other variables , only two variables have a statistically significant relationship; *"Did you follow the rules against COVID-19 given by WHO during the pandemic*?*"* (F=4.406, p≤0.05) and *"Have you participated in training courses about COVID-19?* (F=12.209, p≤0.05). Our data showed that as the level of knowledge about COVID -19 increases, the possibility to follow the rules established by WHO also increases (p≤0.01, r=0.279). Those that have partecipated in training courses have scored greater points on knowledge level (M=4.94, SD=1.11) than those that have not partecipated (M=4.26, SD=1.47).

When asked about the need for training, we founded those pharmacists working in the industry needed the most training (92 %) compared to community pharmacists (74%) and pharmaceutical distributors (44%). An interesting data is that although most of the interviewees said they had attended training courses (62.8%) most of them (78%) stated that they still need training (=4.964, p≤0.05). On the other hand, 86% of those who declared that they needed training, were afraid of transmitting the disease to family members, compared to 57% of those who did not need training. (=18.997, p≤0.05).

Pharmacist/Patient relationship

Based on the pharmacist's perception, during the COVID-19 pandemic the patients have strengthened the trust in the

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Albanian pharmaceutical service (53%) (Table 5). At the same time, most of them (77%) think that the number of patients that refer their symptoms to the pharmacist rather than the physician has also increased (77%). When the statistical relationship between the confidence in the pharmaceutical service and other variables was analyzed, we found that 48.5% of those who declared that patients have lost trust in the pharmaceutical service tried to provide the missing medication as soon as possible compared to 70% of those who declared the opposite (=28.304, p≤0.05). In addition, 78.8% of those who thought that patients have lost trust in the pharmaceutical service stated that the number of patients who turn to the pharmacist has increased compared to 79.3% of those who stated the opposite (=15.316, p≤0.05). The pharmacists opinion about the public perception regarding the pharmaceutical service is also correlated to other factors such as the need of training and years of experience. For instance, most of the interviewees (88%) who stated that patients have lost confidence in the pharmaceutical service needed training, compared to 75% of those who stated the opposite (=12.873, p≤0.05).

Those with more years of work experience (M=14.96, SD=13.95) declared that the number of patients who seek pharmaceutical service in confront to medical service has decreased during the pandemic, while those with less experience (M=8.10, SD =6.64) at work declare that the number has increased (F=5.903, p≤0.05).

We also observed that the years of work experience influenced the pharmacist's behavior when they couldn't provide the required medicine by the patient. Those with more work experience (M=10.55, ds=9.12) declared to provide the missing medicine within a short time, in comparison with those with less experience, which replaced it with a similar product after asking the patient (M=5.51, SD=6.82) (F=2.767, p≤0.05).

Finally, regarding the public evaluation of the pharmacist figure in Albania, we found that although most of the respondents (96%) stated that in Albania this position is not sufficiently evaluated, this also depends on the workplace of the pharmacist. As a matter of fact, 97% of those who worked in the pharmacy thought that the figure of the pharmacist was not sufficiently valued compared to 87% of pharmaceutical distributors, 84% of those who worked in the industry and 62.5% of those who worked in the representative offices of foreign companies ($X^2_{(4)}$ =25.458, p≤0.05).

DISCUSSION

No disease in recent history, underlined the value and role of pharmacists as frontline health professionals, as much as COVID-19. In fact, results from previous studies in this area show that pharmacists played a crucial role in controlling the spread of the COVID-19.[19] Worldwide, pharmacists are demonstrating their commitment to the communities they serve, by dealing every day with the COVID-19 pandemic. These responsibilities become even more significant in a country like Albania, in which the inequity healthcare service availability, the socio-economic gaps of individuals, the limited access to healthcare service and other already established problems of the health system became more sharpened by the pandemic. These findings are supported by many studies conducted in this area which highlighted the vital role of pharmacists during the pandemic.[20]

This pandemic has globally been associated with short-term and long-term impacts on the pharmaceutical sector, exacerbating many issues such as patient safety, vaccination and vaccines hesitancy, medicines shortages, inequities of access to medicines, and falsified medicines misinformation. While there is still no definitive treatment for COVID-19 pandemic, the pharmaceutical industry is struggling to maintain normal market flow and supply chain of the medicines needed, not only for the treatment of the COVID-19, but also for other diseases. The role of the pharmaceutical industry is crucial to address the unmet needs of health systems, especially in times of crisis such this, which by its side has put a lot of pressure and challenged the pharmaceutical system.[21] Identification of these effects is essential for developing strategies and policies based on evidence to overcome future challenges. Short-term impacts should be identified and analyzed to prevent long-term effects.

In this study, when asked about the impact COVID-19 had on the revenues of pharmaceutical sector in Albania, most of the respondents replied that the revenues of all traders of

Table 5. Questions and answers regarding the pharmacist/patient relationship

Question	**Answer (%)**	
In your opinion, has COVID -19 changed/ affected public perception regarding the pharmaceutical service?	Patients have strengthened trust in pharmaceutical service (53%)	Patients have lost faith in pharmaceutical service (19%)
What have you done in case you couldn't provide one of the medicines described in the anti-COVID prescription?	You have tried to obtain the product within a short period of time (64%)	You have replaced it with a similar product after obtaining patient approval (21%)
During the pandemic, the number of patients who referred their disease condition to the pharmacist rather than to a doctor,	Has increased (77%)	Has not changed (14%)
What was your reaction when you found out that the patient you are serving was infected with COVID-19?	I have advised him how to behave and what to consume to get over the disease as easily as possible (63%)	I didn't give any advice and served him normally (23%)
Do you think that the figure of the pharmacist in Albania has been sufficiently evaluated by government structures knowing his significant role in dealing appropriately with the pandemic situation?	The pharmacist role is not sufficiently evaluated (96%)	The pharmacist role is sufficiently evaluated (4%)

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pharmaceutical products have increased during the pandemic. However, a much larger percentage of pharmacists working in community pharmacies thought that the income of retailers on pharmaceutical products has decreased, but the income of wholesalers has increased, compared those working in pharmaceutical distributors.

In Albania, the pharmaceutical industry mainly relies on imports. Considering that China and India are the world's main supplies of Active Pharmaceutical Ingredients **(**APIs), Key Starting Materials (KSMs) and finished products, a supply shortage of these products was expected during the pandemic. Approximately one quarter of the respondents of this study declared that there have been shortages in all medicines during the pandemic while about 2/3 of them declared that there have been difficulties in securing the medications used to treat COVID-19. The highest percentage of pharmacists who claimed that there have been difficulties in ensuring the adequate medicines during the pandemic was observed in the community sector and pharmaceutical agencies rather than pharmaceutical distributors or representative offices. Thus, it is obvious that the real problems of the pharmaceutical market are faced by the community pharmacists.

Many regulatory authorities have globally announced a shortage list, specifically for drugs used for COVID-19 treatment and associated pneumonia.[22]

Proper drug supply is crucial for a robust healthcare system as it is a determinant of population access to essential medicines. Maintaining the continuous supply of medicines, is even more challenging in a country with limited local manufacturing.[23] An example of a successful approach to the issue is Rwanda in which the Government established norms that regulated pharmaceutical service from local manufacturing of essential products to control prices.[24] Supply shortage by itself leads to price increase in essential medicines making them unaffordable for most of the population.

This is consistent with the findings in our study, where a high number of pharmacists working in community pharmacies declared that the prices of medicines have increased during the pandemic, mostly noticed in the wholesale sector.

Although most of the respondents claimed that there have been difficulties in ensuring the adequate medicines for the treatment of COVID -19 disease, many of them declared that the purchasing power of the byers has increased. The COVID -19 pandemic led to a demand change of medications and especially for chronic diseases, this induced demand, along with panic-buying could lead to shortage of medicines. This can also be due to problems related to the supply chain. Induced demand in the global pharmaceutical market, due to "panic buying" of medicines for chronic diseases, was estimated to be +8.9%, by March 2020.[25]

However, this result might be biased by the higher number of respondents being from urban areas compared to rural ones. Inequity in healthcare access within Low and Middle-Income countries (LMICs) may be further widened by the COVID-19 pandemic.

Challenges concerning the availability and affordability of essential medicines are doubled in a developing country, such as Albania, where the pharmaceutical market is emerging every year and healthcare resources are limited. Moreover, healthcare systems in LMICs are already challenged in providing high-quality and affordable health care.

The Food and Drug Administration (FDA) and the European Commission published regulations related to demand optimization and rational supply to avoid shortages.[26]

During the lockdown, the role of community pharmacies has become central in ensuring proper health care to patients who could not have access to medical service, due to movement restraints or economic issues. Offering online service and home-delivery, is another instrument to prevent the spread and assist patients who have limited access to community pharmacies. Our data seem to be in discordance with these practices, since only a relatively small percentage of pharmacists declared to have always offered home delivery during the pandemic.

Most of the pharmacists from this study thought that patients have enhanced trust in pharmaceutical service during the pandemic. Although, on the other hand, a relevant percentage of them thought the opposite, most of them declared that they had participated in training courses. This suggests that the loss of confidence does not depend on the knowledge level of the pharmacists, rather than on other factors such as behavior in the workplace and approach toward patients. This is confirmed by the greater number of pharmacists who try to provide the missing medication in a short time and give the right advice to the patients in the "increased trust" group, compared to the "lost trust" group. The increased trust in the pharmaceutical service, is also confirmed by the number of patients who seek pharmaceutical service rather than medical during the pandemic. This might be due to the role of pharmacist as the most accessible healthcare professional figure. At the same time, this result suggests that the loss of trust might only be e flawed perception of pharmacists.

The relationship between pharmacists and patients is as much important as professional service to address the misinformation which can lead to wrong perceptions about the disease, improper treatment, and poor health outcomes. Therefore, patient trust in their pharmacist is vital in establishing a strong pharmacist-patient relationship. In some reports, patients have also relied on community pharmacies for their medication needs.[27]

The high percentage of patients that follow the WHO rules in this study, demonstrates an efficient relationship between the patients and the pharmacist. This is confirmed by a high number of pharmacists that declare that their patients follow the WHO rules, who also think that patients have enhanced trust in pharmaceutical service. In this scenario, pharmacists are considered the most accessible healthcare providers, and their perceptions, knowledge, and attitudes toward the management of COVID-19, are key factors for controlling the disease transmission.

In our study, we also found that pharmacist's perceptions about the impact of COVID-19 on the person's health influence their approach toward patients. Among the interviewees, those

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who considered the COVID -19 pandemic as a serious disease referred the patients to the doctor when they were suspected of COVID-19 and warned patients to follow the rules of WHO. This behavior could strongly influence the pharmacist/patient relationship and the build of trust. Moreover, their perceptions influence the adequate implementation of WHO rules and the professional approach toward patients.

The good practices of pharmacists regarding COVID-19 prevention are crucial in the management of COVID-19 positive-tested patients and redirect their behavior according to the indications given by WHO for the prevention of the spread. Best practices during a public health emergency are defined by education and proper communication of the risk.[6] Although most of the respondents in our study declared to have generally followed the COVID-19 rule, not all of them asked their patients to do the same or stayed at home during the infection. This suggests again a lack of responsibility toward others, despite having the adequate information about COVID -19 and being feared of getting the infection.

Moreover, despite most respondents declared to be scared enough about the COVID-19 pandemic, they have not reduced working hours which could demonstrate their dedication and commitment level and that personal fear does not influence their engagement level at work. This observation is further confirmed by the fact that approximately half of those who considered COVID-19 a serious disease declared that they continued to offer home delivery service. However, on the other hand, fear seemes to have influenced their approach toward patients since those being afraid of COVID-19 did not make efforts to ensure the missing product to the patient. This finding may be reinforced by the fact that the main reason of the fear of getting infected with COVID -19 is transmitting it to their family members, rather than their patients.

On the other hand, pharmacists are cornerstones for scientifically based information transmission to the patients and assisting them to understand scientific information.[28] A study among pharmacists in Italy, reported that pharmacists' science-based expertise was highly valued by their clients in an era of uncertain or false information about COVID-19.[29] In the meantime, other studies evaluated that gender, age or profession might be related factors to the level of knowledge.[30,31]

In our study, although most of the respondents did participate in training courses, only about one third of them had good knowledge about COVID -19. However, the two variables are statistically correlated, which suggests that pharmacists got their knowledge from the training courses. This is further confirmed by the observation that the knowledge level was not correlated with age, nor with work experience. The majority of those who had participated in training courses, declared they still need training which could prove the willingness to learn. Nevertheless, the majority of those who needed training, were afraid of transmitting the disease to their family members which can indicate that the principal reason for training was the fear.

Poor understanding of the disease and limited knowledge among Health Care Workers (HCWs), is likely to lead to undesired therapeutic outcomes affecting the spread of the disease. Several Knowledge, Attitude, and Practices (KAP) surveys related to COVID-19 were conducted among community pharmacists in several countries. Results indicate that many pharmacists have adequate knowledge and perceptions as well as positive attitudes regarding COVID-19.[32,33] Reports from a study conducted among Albanian Pharmacists claim the need for educational vaccination programs integrated into university studies or further.[7]

Results of our study also showed the general opinion of Albanian pharmacists, regardless of the age and years of experience is that their role was under evaluated during the pandemic. Perceiving their role as underestimated, might compromise their commitment in the profession, resulting in poor approach and collaboration with patients.

Thus, the behavior of the pharmacists in the workplace depends not only by their perceptions about the COVID -19, but also by their perceptions about their position in the battle between the patient and the disease.

In the future, community pharmacists might contribute to decrease public health burden through several ways such as symptom management for mild conditions, advising over-the-counter medications for some symptoms and ensuring the compliance of patients to the treatment and rational use of medicines.

Furthermore, the reconfiguration of health systems with the insertion of pharmacies as places of service delivery based on primary health care, will strengthen the role of pharmacists in public health.

Strengths and limitations

This study, to our knowledge is the first of this kind conducted in Albania that aimed to provide valuable data regarding knowledge, attitude, and practices among the Albanian pharmacists during the COVID-19 pandemic outbreak. However, one of the first limitations is the recall bias.

The participants in this study were only a part of community pharmacists, and for this reason, the results might not be inferred to the population even though participants were from different cities in Albania. Another limitation derives from the electronic way of distribution of the questionnaire. Thus, the response rate could not be calculated. Moreover, a large proportion of respondents were young pharmacists (≤35 years), which could be explained by the difficulty of older ages to access the internet. The higher percentage of female participants in the present study could also indicate the lack of interest of male pharmacists in answering our questionnaire. Most of the patients were from urban areas who might have different point of views from those living in rural areas.

CONCLUSIONS

COVID-19 has tested our health systems to their limits, but

at the same time highlighted the importance of pharmacists, as a crucial part of the health system. During this time of insecurity and emergency, the pharmacists in Albania have demonstrated strength, professionality, and commitment to offer pharmaceutical service to the highest level.

From this study it is concluded that the correct behavior of the pharmacists in the workplace and adequate approach toward patients depends mainly on their perceptions and fear about the pandemic. Most of them perceive their role as underestimated and this perception results in poor patient-pharmacist relationship. In the future, the pharmacist's role can be extended in the community to provide successful medical service as they represent frontline medical professionals and their collaboration within and between pharmacists and physicians is essential.

ETHICAL CONSIDERATIONS

Approval was obtained from the Republic of Albania, Catholic University "Our Lady of Good Counsel'' Ethical Council Prot. Nr. 349 on 01/07/2022.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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AUTHOR'S CONTRIBUTIONS

Irsida Mehmeti: Conceptualization, methodology, writing Silvi Bozo: Visualization, investigation, writing. Entela Kostrista: Data curation, Software, Data analysis. Eftiola Pojani: Supervision, validation, reviewing, editing.

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