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COMMUNITY PHARMACIES SERVICES AND PREPAREDNESS DURING COVID-19 PANDEMIC IN SAUDI ARABIA: A CROSS-SECTIONAL STUDY

Abdulaziz Alhossan[1*], Noha Al Aloola[1], Manar Basoodan[1], Munirah Alkathiri[1], Razan Alshahrani[1], Wael Mansy[1], Thamer A Almangour[1]

1. *Department of Clinical Pharmacy, College of Pharmacy, King Saud University, Riyadh, Saudi Arabia.*

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ABSTRACT

The reprioritization of healthcare services occurred with the discovery of the highly contagious coronavirus 2 (SARS-CoV-2) in late 2019. Pharmacies played a crucial role in the healthcare system during the pandemic, contributing to the enhancement of patient care in all dimensions. This study aimed to evaluate the provision of community pharmacy services and the level of preparation exhibited during the COVID-19 pandemic in Saudi Arabia. Between July and November 2020, a cross-sectional study was conducted in Saudi Arabia. The study involved the distribution of a validated questionnaire to community pharmacists using electronic means. The questionnaire encompassed many issues aimed at evaluating the extent of preventative efforts, public knowledge, and the ramifications of the pandemic on the services provided by pharmacists. A total of 315 pharmacists from various regions around the country were included in this study. A significant proportion of individuals (81.9%) participated in educational programs focusing on COVID-19, with compulsory attendance required for 56.6% of these individuals. The most often implemented preventative measures in pharmacies were disinfecting clients' hands, wearing face masks, and checking body temperature, with respective application rates of 90.8%, 89.2%, and 85.1%. Moreover, most participants concurred that the provision of pharmaceutical counseling and public education saw the most significant impact due to the COVID-19 pandemic, with 52.1% and 49.5%, respectively. The report demonstrates a notable degree of compliance among community pharmacies concerning implementing preventative measures during the COVID-19 outbreak. Nevertheless, most of these preventative steps were implemented voluntarily and were tailored to individual needs and circumstances.

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Introduction

At the end of December 2019, the world health organization (WHO) received several reports about the cluster of cases of "pneumonia with unknown cause" in Wuhan [1]. Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) was the cause of the disease that is now named coronavirus disease 2019 (COVID-19). Thereafter, there have been significant outbreaks in many regions of China as well as many other countries [2, 3]. This virus has the potential to cause multi-organ damage in addition to pneumonia. Person-person transmission of this virus occurs by close contact with an infected person, exposed to coughing, sneezing, respiratory droplets, or aerosols [4, 5]. These aerosols can penetrate the human body -mainly the lungs- via inhalation through the nose or mouth [6, 7]. Globally, as of October 13, 2022, there have been over 620, 30,709 confirmed cases of COVID-19, including 6,540,487 deaths, reported to WHO [8, 9]. In Saudi Arabia, the first case diagnosed with COVID-19 was on March 2nd, 2020. Until October 13, 2022, there are more than 818 thousand confirmed cases and more than 11 thousand deaths [10, 11].

During the current situation of the COVID-19 pandemic, pharmacies all around the world have been an essential part of all healthcare systems, helping to optimize patients' care in many different aspects [12]. Pharmacists in all specialties provide the best pharmacy services and products to those who were affected by SARS-CoV-2, as well as to those affected by non-COVID-19-related health illnesses and comorbidities [13]. Pharmacists help in providing medications through home delivery services,

Corresponding Author: Abdulaziz Alhossan; Department of Clinical Pharmacy, College of Pharmacy, King Saud University, Riyadh, Saudi Arabia. E-mail: alhossan@ksu.edu.sa.

as well as working in the frontline with a high number of patients coming to community pharmacies [14]. They also help in addressing patients' concerns and clarifying the public misconceptions about COVID-19 [15].
The demand for community pharmacy services has grown globally during this crisis [16]. Community pharmacists are essential professionals in responding to public health issues and help relieve the pressure on other health services areas such as general practice and emergency departments [15]. In some countries, community pharmacies play an important role in testing and detecting new COVID-19 cases [17, 18]. Moreover, in some countries including Saudi Arabia, COVID-19 vaccination services were implemented and provided in community pharmacies [15].
Given the important role of community pharmacies during this health crisis, the center for disease control and Prevention [13] provided several recommendations for pharmacy staff and patients to minimize the risk of exposure to COVID-19 by using the principles of infection prevention and control [13]. Moreover, the International Pharmaceutical Federation (FIP) [19], the American Pharmacist Association (APhA) [20], and the National Health Service (NHS) [21] have issued preventive guidance and recommendations for community pharmacy workplaces. In Saudi Arabia, the Saudi Center for Disease Prevention and Control has provided guidance and recommendations for both professional healthcare workers and the public during this pandemic [22] (NCDPC, 2020). However, there were no specific preventive measures or guidance targeting the workplace in community pharmacies. Furthermore, the Saudi Patient Safety Center (SPSC) has published preventive recommendations that summarize the international safety measures to minimize the risk of exposure during the COVID-19 pandemic [22]. Nevertheless, this guidance is not mandatory for community pharmacies.
Different countries have issued guidelines and recommendations on social distancing and the use of personal protective equipment (PPE), however, these recommendations were inconsistent [22]. The Community pharmacists' perceptions of COVID-19-related preventative measures were assessed in some countries, in which the results showed that pharmacies in those countries were sufficiently prepared with protective equipment for their staff [23]. On the other hand, a study that assessed the preparedness of community pharmacies for the COVID-19 pandemic showed there was less frequent availability of contactless payment, hand sanitizers or masks for customer use, or a separate area for patients with suspected COVID-19 [24].
Throughout the pandemic of COVID-19, the role of community pharmacies continues to expand. To date, the degree of implementing such measures by community pharmacies is sub-evaluated globally. This study aimed to assess the preparedness of community pharmacies in Saudi Arabia for the COVID-19 pandemic, with a focus on the extent of COVID-19 preventative measures implementation, pharmacists' practice with COVID-19-related issues, and the impact of the crisis on the provided pharmaceutical services and products.

Materials and Methods

A quantitative, cross-sectional, web-based survey was conducted between July and November 2020 to assess community pharmacies' preparedness for the pandemic crisis of COVID-19. Our data were gathered through an online, self-administered questionnaire due to the lockdown situation emerging from the COVID-19 outbreak. A total of 21 questions were formulated based on various international guidelines and recommendations. These included several authorities such as the international pharmaceutical federation [19] (FIP, 2020), the American pharmacist association [20] (APhA 2021), the National Health Service (NHS) recommendation and the Centers for Disease Control and Prevention [13] (CDC, 2020) guidelines. The survey consisted of five domains: (1) demographic information, (2) pharmacist's knowledge about health pandemics, (3) prevention strategies and standards that were adopted in the workplace, (4) the impact on services and products provided by community pharmacies during the pandemic, and finally (5) the pharmacist interactions with COVID-19-related issues and concerns. The content validity of the survey was evaluated by several faculty members from schools of pharmacy and community pharmacists, and a pilot test was conducted to make sure that it is comprehended and understandable.
The survey was directed only to community pharmacists, community pharmacy technicians, and community pharmacy managers. An electronic version of the survey was distributed via email to the managers of some community pharmacy chains around the country. The study was exempted from the ethics committee at King Saud University due to the nature of the study and the types of gathered data. Any questions that might disclose private or personal information of participants or their identities were avoided. All participants consented by accepting to participate questions before starting the survey. The confidentiality statement of the provided information was clearly stated, and anonymous and voluntary participation was mentioned before the start of the survey. Descriptive statistics were used to describe the study findings by using the statistical package for the social sciences (SPSS).

Results and Discussion

A total of 315 respondents have completed the survey. The majority of the participants were male (92.7%) and under 34 years of age (74.6%), as shown in **Table 1**. Only 56 respondents (17.8%) were Saudis. Most participants had a bachelor's degree (97.1%) and an experience of less than ten years (68.9%). Most of the sample (43%) work in a shift where at least two pharmacists are available.

Table 1. Demographic Information of the Respondents

Characteristic	**n=315**
Gender	
Male	292 (92.7%)
Female	23 (7.3%)
Age	
Less than 25 years	8 (2.5%)
25-29 years	101 (32.1%)
30-34 years	126 (40.0%)
35-39 years	52 (16.5%)
40-44 years	18 (5.7%)
45-49 years	10 (3.2%)
Nationality	
Saudi	56 (17.8%)
Non-Saudi	259 (82.2%)
Level of education	
Bachelor's degree	306 (97.1%)
Master's degree	6 (1.9%)
Doctoral degree	3 (1.0%)
Position	
Community pharmacist	258 (81.9%)
Community pharmacy manager	54 (17.1)
Others	3 (1.0%)
Years of experience	
Less than a year	36 (11.4%)
1-5 years	73 (23.2%)
6-10 years	108 (34.3%)
More than 10 years	98 (31.1%)
Region	
Central region	108 (34.3%)
Southern region	52 (16.5%)
Eastern region	43 (13.6%)
Northern region	38 (12.1%)
Western region	74 (23.5%)
Chain pharmacies with > 100 stores across the kingdom	
Yes	293 (93.0%)
No	22 (7.0%)
Number of employees work in the pharmacy per a single shift	
Only one pharmacist	131 (41.6%)
2-3 pharmacists	137 (43.5%)
More than 3 pharmacists	47 (14.9%)

Most respondents indicated that their pharmacy administration has initiated and conducted meetings to educate on minimizing transmission risks (81%). Moreover, (81.9%) of the participants attended courses about COVID-19 and infection prevention measures. These courses were mandatory for 56.6% of the respondents, and 93.8% participated in these courses virtually. Most participants (59%) participated in these courses per their company's regulations **(Table 2)**.

All pharmacies had implemented several customer and employee prevention measures; these preventive measures varied between pharmacies. Disinfecting customers' hands, wearing face masks, and measuring body temperature when entering the pharmacy were the most commonly observed measures in pharmacies (90.8%, 89.2%, and 85.1%, respectively) **(Table 3)**.

Moreover, **Table 3** shows implementing protective windows and free hand sanitizers on the pharmacies' counters were available in 71.7% and 82.2% of the pharmacies, respectively.

Table 2. Pharmacies and Pharmacists Preparedness During COVID-19 Pandemic

Preparedness during COVID-19 pandemic	**n=315**
Is there any meetings conducted by the company or pharmacy managers to minimize COVID-19 transmission	
Yes	255 (81.0%)
No	60 (19.0%)
Attendance of any course/program about COVID-19 or infection prevention measures	
Yes	258 (81.9%)
No	57 (18.1%)
Was the course/program mandatory to complete or optional	
Mandatory by your company	146 (56.6%)
Optional	112 (43.4%)
Attendance of the course/program	
Onsite	16 (6.2%)
Virtual (Online)	242 (93.8%)
What drives you to take the course/program	
Your company	153 (59.3%)
Self-motivation	102 (39.5%)
Others	3 (1.2%)

Table 3. Prevention Measures Towards COVID-19 Pandemic

Measures used in the pharmacy	**n=315**
Availability of free hand sanitizer on the pharmacy counters	259 (82.2%)
Availability of protective shield on the pharmacy counter	226 (71.7%)
Disinfect customers hands when entering the pharmacy	286 (90.8%)
Disinfect the counter after each customer	210 (66.7%)
Floor marking to ensure physical distance.	237 (75.2%)
Keep only essential objects at the counter	194 (61.6%)
Limit the number of customers entering the pharmacy	219 (69.5%)
Measuring the body temperature	268 (85.1%)
Pharmacy employees and customers wore face masks	281 (89.2%)
Providing home delivery services	207 (65.7%)

Table 4 shows that most % of respondents (82%) had contact with suspected or confirmed COVID-19 cases. Most of them (83.7%) advised the case to contact the Ministry of Health (MOH). Most (85.3%) indicated cleaning and disinfecting all patient-contacted surfaces were applied. Only one respondent (0.4%) reported that the pharmacy had to close for sterilization.

Table 4. Strategies Applied by Pharmacies When Interact with Suspected or Confirmed COVID-19 Cases

Action of pharmacist interacts with suspected or confirmed COVID-19 cases	**n=258***
Advice the case to contact MOH	216 (83.7%)
Change gloves and face mask	204 (79.1%)
Clean and disinfect all patient-contact surfaces	220 (85.3%)
Contact MOH to report the case	85 (32.9%)
Limit the number of practitioners that contact with the suspected case	164 (63.6%)
If the case was employee, not attend to work until he/she complete the isolation period	173 (67.1%)
If the case was employee, not attend until sterilization applied to the pharmacy	147 (57%)
Close pharmacy until complete sterilization	1 (0.4%)

* Around 258 (81.9%) pharmacists interacted with suspected or confirmed COVID-19 patients

Table 5 shows that most pharmacists relied on the information provided by MOH and other official agencies (81.3%) to answer costumers' questions related to COVID-19. On the other hand, only 50.8% encouraged their customers to contact their doctors regarding their concerns.

Table 6 illustrated the majority of the respondents indicated that medication counseling and general public education were the most negatively affected services by COVID-19 pandemic (52.1%, 49.5%, respectively), followed by home delivery of medications (30.8%) **(Table 6)**.

Table 5. Resource of information to answer COVID-19 related questions from customers

Source	**n=315**
Searching through Google browser	76 (24.1%)
Search through a reliable scientific websites	132 (41.9%)
Encourage them to contact doctors regarding their concerns	160 (50.8%)
Relay on Information provided by MOH and other official agencies	256 (81.3%)
Rely on the general information that pharmacist have	156 (49.5%)

Table 6. Impact of COVID-19 pandemic on pharmacies' services

Service	n=315
Drive-through services	48 (15.2%)
General public education	156 (49.5%)
Home delivery of medications	97 (30.8%)
Medication counseling for patients	164 (52.1%)
Prescribing medication	101 (32.1%)
Supplying the patient with essential medication and prevention tools	1 (0.3%)
Nothing of the above was affected	58 (18.4%)

Table 7 showed the most common identified strategies for public awareness during COVID-19 pandemic included wall posters and printed leaflets (64.4%), followed by social media posts on the official accounts of the pharmacy (59.9%) and educational videos (45.2%).

Table 7. Public Awareness in Pharmacies During COVID-19 Pandemic

Strategy	n=312*
Direct advices from the pharmacist	1 (0.3%)
Educational videos	141 (45.2%)
Printed leaflets	201 (64.4%)
Social media posts on the official accounts of the pharmacy	187 (59.9%)
Wall posters	201 (64.4%)

*3 repossess answered none.

This study provided a clear image on how preventive policies in community pharmacy settings are implemented and whether they are sufficient to protect pharmacists in this setting. In addition, it explored the impact of the crisis on the provided pharmaceutical services and products from pharmacists' perspectives. Given the important role community pharmacies in providing medications, health products, and health related information to the public, the results of this study highlight the areas that need to be addressed to prevent infection transmission in community pharmacies and to promote the role of this setting.

Despite the variation in implementing preventive measures by community pharmacies reported in this study, the results reflected great efforts that community pharmacies in Saudi Arabia have done during COVID-19 pandemic to protect both patients and staff. It also highlights the adherence of community pharmacies to the guidelines and recommendations issued by SCDC and SPSC to minimize risk of exposure given that they are not mandatory implementations.

As a consequence of the immense social and economic impact of COVID 19 pandemic around the world, community pharmacies were affected by this crisis at all levels [25]. Serving patients and providing the best healthcare services were affected by several challenges include curfew, risk of infection, medication shortage, and many others [26, 27]. Many chain pharmacies all over the world started alternative strategies to continue serving their patients with no risk of interruption [28, 29]. Medication home delivery was one of the great initiatives during this pandemic that helped in preventing treatment interruptions [30, 31]. Telemedicine and virtual counseling via mobile phone applications was also a great way provided by community pharmacists to maintain proper medication counseling [32].

In this study, only few pharmacies provided these services due to several reasons: most of patients in Saudi Arabia get their medications from governmental hospitals and they are required to provide free-of-charge medications and home delivery services. Also, the counseling on medications is provided by their primary care teams mainly. However, community pharmacies did a great job in home delivery services especially in providing personal protective equipment during the peak of this pandemic. Also, the study shows the level of willingness that community pharmacists have to provide all needed services during pandemics either these services were related to dispensing medications or providing medication and health related information or maintaining the secure quantities of PPE to their patients.

The study also highlights the level of preparedness to handle this pandemic on both patient and staff levels. Most participated pharmacists have received adequate education on needed precautionary measures that prevent risk of infection. However, these efforts were mainly driven by either companies' administrations or individualized efforts by pharmacists, which raises a flag on the importance of determining national standards that should be implemented by all pharmacies without leaving any a space for self-judgment. These recommendations and requirements should come from the Ministry of Health and other related official agencies to regulate and follow up on standards' implementation.

In addition, the study shows the level of preventive measures applied by pharmacies. Most of these measures mentioned in **Table 3** are either mandatory or highly recommended by MOH, therefore, the responses were consistent. On the other hand, the strategies that are applied by pharmacies when interact with suspected or confirmed COVID-19 cases were inconsistent within the respondents. This is because of the variation in pharmacies internal policies. Also, there is no national mandatory policy for a such case, which highlights a potential risk in putting patients or staff in risk of infection in pharmacies that do not have a strict infection control policy.

This study also shows that community pharmacies have contributed in different ways to raise the awareness during this pandemic. Wall posters, social media posts and videos, printed leaflets and direct advice to patients were frequently provided. On the other hand, community pharmacists relied on information provided by official agencies in answering questions related to COVID-19 with no issue reported in accessing these resources. This shows the great efforts that MOH has been doing in providing the most updated resources on this pandemic and directing healthcare workers to its resources.

The study has some limitations and should be taken into consideration when rely on its findings. The nature of this study was exploratory to understand the level of precautionary measures applied and the qualitative method was used to achieve this goal. However, because of the lockdown at the time of conducting the study, online survey was used instead of in-person interviews with the pharmacists which increases the risk of bias and potential inconsistent responses in terms of how these measures are implemented.

Conclusion

The study reveals a relatively high level of adherence in community pharmacy setting regarding the implemented preventive measures during the COVID-19 pandemic. There was a slight variation in infection control policies among pharmacies which may put some pharmacies at higher risk of infection outbreak. The resources provided by the official agencies were sufficient and well followed by community pharmacists.

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