


# Readiness of Community Pharmacists to Play a Supportive and Advocacy Role in the Fight Against Corona Virus Disease

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**Background:** As the coronavirus disease pandemic continues to severely strain healthcare systems across the globe, there is need to determine whether every facet of the healthcare system is ready to respond.

**Purpose of the Study:** The study investigated whether community pharmacists in the Kingdom of Saudi Arabia are ready to play a supportive role in the fight against COVID-19.

**Methods:** The study employed a descriptive cross-sectional survey. A descriptive analysis to capture the demographic characteristics of the sampled population, frequency tables and graphs were generated to capture community pharmacists' practice, readiness, attitudes and awareness. The means of the subset of knowledge on COVID-19 etiology, prognosis and management, and the practice, attitudes were compared in a one way analysis of variance to determine whether the difference was significant to predict preparedness towards playing a supportive role in the fight against COVID-19.

**Results:** The practice of community pharmacist as reflected adherence to recommended guidelines by the ministry of health on COVID-19 management and control. About 74% always disinfected contact surfaces, 69% conducted basic temperature checks on staff members and customers. Community pharmacists in Saudi Arabia displayed positive attitudes towards fight against COVID-19 [ $m = 4.08$  and a relatively narrow difference in percentage distribution between those who were not sure and those who claimed to be very satisfied 20%]. Community pharmacists in KSA displayed extensive knowledge on the subject of COVID-19 as all respondents were aware of the primary symptoms of COVID-19 (100%), 62% were aware of COVID-19 management strategies, 81% believed information supplied through the ministry was sufficient. A p value of 0.00 indicated that the results were significant to support the assumption that community pharmacists in KSA were prepared to play a supportive role in the fight against COVID-19.

**Conclusion:** The result demonstrated readiness among Saudi Arabian community pharmacists to be integrated into COVID-19 pandemic planning and response.

**Keywords:** COVID-19, corona virus, infectious diseases, community pharmacists, preparedness, response

## Introduction

Current global statistics indicate that COVID-19 is threatening to wipe populations and cause economic meltdown in many parts of the world.<sup>1</sup> First manifested in humans in China towards the end of November 2019, the diseases have spread across the world gaining the status of a global pandemic. As of 13th September 2020, the WHO has reported 28,989 073 cases worldwide, with 925 373 deaths. Out of the infected, only 19.5m have recovered successfully.<sup>2</sup> COVID-19 is highly transmissible,

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putting everyone in contact with an infected person at risk.<sup>3</sup> Clinically, COVID-19 presents itself as a flu-like illness characterized by fever, a nonproductive cough, difficulty in breathing, dyspnea, and chest abnormalities.<sup>4</sup> According to,<sup>5</sup> the disease incubation period is between 3 and 14 days, with a mortality rate of 9% to 65% depending on the management strategies adopted. A number of factors have been cited as key to high mortality rates among them, age, availability of equipment, and other comorbid conditions.<sup>6</sup> While optimal therapy for the condition remains unestablished, the condition has been managed through a broad spectrum regimen of antibiotics, corticosteroids, and antivirals. The impact of COVID-19 in every level of the society has been profound and as the disease continues to spread, the challenge faced by many governments across the globe has been organizing the various components of the healthcare sector to work harmoniously in the fight against the disease.

When the disease was first reported in Saudi Arabia on March 2, 2020, the lives of virtually every Saudi national and the practice within every medical institution in the country was literally changed.<sup>7</sup> Nine days later, the World Health Organization (WHO) declared a global pandemic triggering population-wide lockdowns across the globe. Since March 2020, the number of cases has grown exponentially to 326k, with 303k recoveries and 4268 deaths.<sup>8</sup> The magnitude of the disease defined preplanning imagination yet despite the scale and the impact of the situation, community pharmacies across the country remained open continuing to provide care to their patients. The Ministry of Health has responded to the condition by adopting and proposing public use of the WHO recommended steps to control the infection and the government suspended all domestic flights, buses, taxis, and trains for 14 days.<sup>8</sup> Days later, a countrywide lockdown was implemented and the healthcare sector was summoned to work harmoniously to control the spread of the disease. However, the question remained whether every component of the healthcare sector was adequately prepared/ready to play a collaborative role in the fight against COVID-19.

## Community Pharmacies and the Healthcare Sector

One of the most critical tenets of the healthcare sector in the country is the pharmaceuticals industry whose connection to the public are the community pharmacies. Pharmacists are a central part of the healthcare system and the role of the professionals in completing the

management cycle of COVID-19 outbreak is extensively acknowledged.<sup>9-12</sup> Pharmacists primarily deal with drug dispensing. As such, having the right information on the types of drugs required for the management of particular conditions during a disaster is imperative.<sup>13</sup> Currently, there is no cure for COVID-19, and most of the regimens used in the management of the disease have not received approval yet.<sup>14</sup> Guidelines for dosing and administration of the available drugs to combat the disease are not readily available since most of the drugs used in managing the condition are not marketed drugs, nor have there been research on their use in COVID-19 cases.<sup>15,16</sup> Where these drugs are available, dosage adjustments for the elderly population who have different comorbidities present a major challenge to pharmacists in centers dealing directly with cases of COVID-19. The current situation is consistent with what has been documented with respect to the SARS virus at the peak of its outbreak. A review conducted by<sup>17</sup> documenting the challenges that pharmacists faced during the outbreak in Toronto confirm the problem of lack in clarity in the administration of new drugs, dosage, and the unavailability of drug information. In response to SARS, doctors in China, where the disease began had developed kits that provided accessible information on dosages in various antimicrobial agents, administration of intravenous and oral drugs, and the guidelines for the preparation of available medication for administration.<sup>18</sup> Given the circumstances with COVID-19, it would be expected that the same approach would be used in managing the condition.

## Direct Patient Care

Community pharmacists provide advisory opinions when they come into direct contact with the patient.<sup>19</sup> In COVID-19, however, the circumstances are different. Pharmacists have to work under conditions of stress, urgency, and strict infection-control precautions that do not allow interaction between the patient and the pharmacists. From previous experiences in treating SARS and MERS, pharmacists and other healthcare professionals, in general, had to wear a fully protective outfit including a face shield, fit-tested masks, goggles, double gowns, shoe covers, and hood caps.<sup>20</sup> This, in a way, has a negative impact on direct communication with the patient. Any therapeutic approaches to control that is taken needs to take into account the stringent precautions to control the spread of the disease.

## Pharmacy Operations

The outbreak of COVID-19 means that pharmaceutical activities and pharmacy operations must be adjusted to adapt to the stringent infection control policies adopted at every level of the healthcare system. A study conducted after the SARS outbreak found that pharmacies had to adopt various changes in the various aspects of pharmacy operations. For example, in zones where pharmacists were involved in the drug distribution to SARS patient care areas, new procedures had to be adopted<sup>21</sup> The disposal of used and unused drugs too, equipment of drug administration, drug procurement, and other related information such as contacting drug manufacturers and pharmacy departments in other hospitals had to be changed significantly. Where new centers are identified and approved, pharmacy staff have to develop specific drug delivery systems for that unit/center and incorporate the infection-control measures.

## Collaboration and Communication

Collaboration and communication are cited as two of the most vital activities in response to any form of disaster. The pharmacy profession has to borrow collaboration and communication knowledge from other disciplines to foster an effective response to the situation. As a result of the nature of the problem, Booth<sup>22</sup> argues that the pharmacists have to work closely with infectious disease consultants, anesthesiologists, microbiologists, and respiratory care practitioners in order to foster control of the infection. Collaboration and timely communication were considered to be the most important success factors in containing MERS and SARS at the peak of their outbreak. At the time, most of the tasks had to be completed efficiently and urgently, and a multidisciplinary approach to controlling the spread of these diseases was considered to be vital. Regular and frequent communication was cited by<sup>17</sup> as vital in the management of the condition in its early stages. Command centers must provide pharmacy managers with new briefs on a daily basis, and pharmacy managers must communicate the same information to their staff in a timely manner.

## Personnel Management

Any type of disaster calls for a new approach in disaster management, and the COVID-19 is not any different. At the top of the command chain, managers have to develop strategies for staff education, creative handling of a new situation, and redeployment of pharmacists where necessary.<sup>22</sup>

Pharmacists must be taught new procedures for pharmacy operations. Personnel management has been shown to reduce hospital admissions, especially in surgical units, and effective control of the spread of infectious diseases. Overall, pharmacists must be engaged in a coordinated manner during the pandemic response. They must be ready to adapt to changes required in the pharmacy practice in order to respond to challenges that come with COVID-19.<sup>11</sup> As the FIB recommends, community pharmacies need reliable information and advice if effective collaboration with other segments of the healthcare sector is to be achieved.<sup>13</sup> Furthermore, pharmacists in outbreak, affected and unaffected countries remain the first point of contact with the patient within the healthcare sector.<sup>14</sup>

## Study Objective

Evidence from public health preparedness studies suggest the need for pharmacists to assume a role in humanitarian and health emergency settings. Today, pharmacists are recognized as a the first point of response to disease in the community. While it is widely recommended that community pharmacist play a central role in combating COVID-19, very few studies have examined whether community pharmacists are ready and adequately prepared to play a collaborative role in the fight against COVID-19. This study closes this gap by investigating the readiness of community pharmacists in the Kingdom of Saudi Arabia to play a supportive role in the fight Against COVID-19. Specifically, the study will explore whether community pharmacists in the kingdom possess the right knowledge and attitudes towards providing care for COVID-19, their awareness of COVID-19 etiology, management and prevention strategies, and preparedness to play a supportive role in the fight against COVID-19. The objectives of this study are summarized below.

1. To assess the practice, attitudes, and readiness to play a supportive role in the fight against COVID-19.
2. To assess community pharmacists' awareness of COVID-19 infection, etiology, prognosis, protective measures, and management.
3. To determine the level of preparedness among community pharmacists in Saudi Arabia to play a supportive role in the government response to the COVID-19 outbreak in the country.

## Methods

This adopted a descriptive cross-sectional online survey to determine the readiness of community pharmacists to play

a supportive role in the fight against COVID-19. The study was conducted in Saudi Arabia during COVID-19 outbreak. Eligible participants were pharmacists working in community pharmacies in the Kingdom of Saudi Arabia.

## Target Population

The study targeted all practicing community pharmacists in Saudi Arabian community pharmacies. Currently, there is an estimated, 24,395 community pharmacists dispensing pharmaceutical products in community pharmacies across the country.

## Sampling and Sample Size

This study utilized a random sampling to collect data. The instrument was distributed electronically randomly to community pharmacist in various regions of the country. The sample size was determined by an online sample size calculator [surveysystems.com](http://surveysystems.com). At 95% confidence interval and 0.05 confidence interval, the sample size needed for this study was 378.

## Survey Instrument

The survey instrument for this study was developed after an extensive review of current pharmaceutical literature on the readiness and preparedness of community pharmacists to respond to COVID-19 pandemic. The first draft of the questionnaire was developed in English based on a pool of questions considered to be relevant to the study objectives. The questions were reviewed by the researcher with the help of colleague in the department. The final version of the survey instrument was translated to Arabic. The instrument was organized into four sections: the first section included items that collected demographic characteristics of the sampled population. The second section included items to assess practice, attitudes, and readiness to play a supportive role in the fight COVID-19. The third section covered items on awareness of COVID-19 etiology, prognosis, and management while the fourth section had items that examined KSA community pharmacists preparedness to play a supportive role during the fight against COVID-19.

## Validity

The questionnaire was examined for face validity. Three independent academics with extensive experience in pharmacy research, practice and education evaluated the first draft of the questionnaire. The researcher was notified of

items that were not clear and difficult to comprehend. Comments and opinions were considered and incorporated in the final version of the questionnaire.

## Statistical Considerations and Data Analysis

The data obtained from the research instruments developed were cleaned, organized, and entered the Statistical Package for Social Sciences SPSS version 25.0. Analysis for the data was conducted in a sequence as follows: descriptive analysis to capture the demographic characteristics of the sampled population, frequency tables and graphs were generated to capture community pharmacists' practice, readiness, attitudes and awareness. The means of the subset of knowledge on COVID-19 etiology, prognosis and management, and the practice, attitudes were compared in a one way analysis of variance to determine whether the difference was significant to predict preparedness towards playing a supportive role in the fight against COVID-19.

## Ethical Consideration

This study was conducted within the ethical boundaries set by the Saudi Law of Ethics of Research on Living Creatures. Ethical approval to conduct the research was issued from Taif University. The study was conducted in accordance with the Declaration of Helsinki.

## Results of the Study

A total of 1323 survey instruments were distributed among community pharmacists working in different regions across the country. Out of the 1323, only 1097 (83%) responded to the questionnaires. The responses were screened, cleaned, and entered into SPSS version 25 for analysis. The descriptive characteristics of the respondents are shown in [Table 1](#). From the table, a significant majority of the respondents were young 78% (22–34 years), while a relatively small number 19.9%, were between the ages of 35–44 years. 2.1% of the sample population fell between the ages of 45–54 years. The survey indicated that most of the Saudi Arabian community pharmacists were young, with most lacking many years of experience. Most of the respondents (96.7%) were men, while women accounted for 3.3%. Most of the respondents (91.7%) worked in major cities with a small population of community pharmacists working (8.3%) in the villages. The respondent's working regions were distributed between the central,

**Table 1** Demographic Characteristic of the Sampled Population

<b>Descriptive Characteristics of the Respondents</b>		
<b>AGE</b>		
Particulars	Frequency	Percent
22–34 years	856	78.0
35–44 years	218	19.9
45–54 years	23	2.1
<b>GENDER</b>		
Female	36	3.3
Male	1061	96.7
<b>WORK LOCATION</b>		
	Frequency	Percent
In a city	1006	91.7
In a village	91	8.3
<b>QUALIFICATION</b>		
Bachelor	978	89.2
Diploma	6	0.5
fellowship or residency program	1	0.1
Masters	9	0.8
Pharm.D	103	9.4
<b>WORKING REGION</b>		
Central region	261	23.8
Eastern region	105	9.6
Northern region	104	9.5
Southern region	210	19.1
Western region	417	38.0
<b>BOARD CERTIFICATION</b>		
No	823	75.0
Yes	274	25.0
<b>PRESENT PROFESSIONAL LEVEL</b>		
Consultant pharmacist	26	2.4
Pharmacist	781	71.2
Senior pharmacist	289	26.3
Technician	1	0.1
<b>MARITAL STATUS</b>		
Married	831	75.8
Single	261	23.8
<b>NATIONALITY</b>		
Non-Saudi	1018	92.8
Saudi	79	7.2

southern, and western regions of the KSA (23.8% and 19.1%, 38.0%, respectively). The Eastern and the Northern regions accounted for 9.6% and 9.5% of the total population sampled in this study. Most of the respondents in this study lacked board certification 75%, with only a quarter of the population sample for this study possessing board certification. Most of the respondents

were non-Saudi residents, 92.8%, with only 7.2% being permanent Saudi residents. The presence of non-Saudi citizens indicated that the KSA relies significantly on the services of expatriates for community pharmacists.

Importantly, most of the community pharmacists' sample, 89.2% were Bachelor's degree graduates with 0.5% having diplomas, and 0.1% possessing certification in fellowship or residency programs. 0.8% were Master graduates, while 9.4% had Ph.D. When asked how they described their present professional level based on the Saudi Commission for Health Specialties, most described themselves as purely pharmacists 71.2%, some considered themselves as senior pharmacists 26.3%, while a small group described itself as consultant pharmacists 2.4% and Technicians 0.1%. Overall, the sample covered all the regions of the Kingdom and therefore represented a fair opinion of the level of preparedness for community pharmacists to play a supportive role in the wake of COVID-19.

## KSA Community Pharmacists Practice, Attitudes, and Readiness to Play a Supportive Role in the Fight COVID-19

The practice of community pharmacists in the KSA was assessed based on the current recommended COVID-19 recommended practice standards developed by the European Union, the WHO, and the CDC. This involved determining their ability to test patients and staff members, counseling on COVID-19, ability to wear protective gear, nature of protection for counters, ability to disinfect surfaces. The attitudes were measured by a personalized view of their job satisfaction and interaction with patients. Readiness was determined by their ability to adjust working hours, staff, the presence of recommended supplies such as sanitizers, swabs, face masks, dispensable gloves, thermometers, among others.

## Practice

As shown in [Figure 1](#), a significant majority of the community pharmacists working in the surveyed areas wore protective gear during their work. The distribution of the response occurred between always, sometimes, and very often, suggesting that most of the community pharmacists observed this important recommendation during the COVID-19 pandemic. Equally, most of the community pharmacists disinfected contact surfaces often. About 74% of the respondents always disinfected contact surfaces, while 18% did it very often. Less than 1% disinfected their surfaces rarely or never disinfected contact surfaces (pie chart). As for testing,



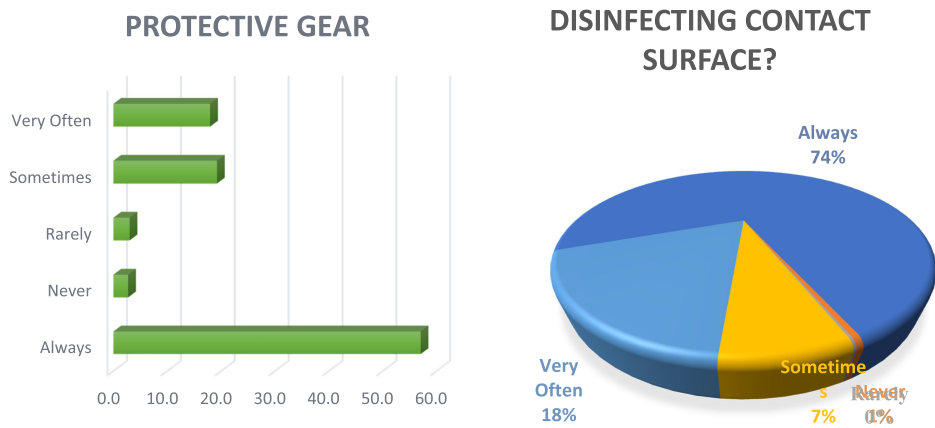


Figure 1 A comparative view of the practice of community pharmacist in KSA in the wake of COVID-19.

a significant majority of the community pharmacists conducted basic temperature checks on staff members and customers 69.4% always, 18.5% very often, 10% sometimes. Cumulatively 97.9% of the community pharmacists in KSA valued this practice [Figure 2].

The number of working hours during COVID-19 seems to have decreased significantly, with most pharmacies operating between 8 and 10 hours. As shown in Figure 3, there was an equal distribution of working hours between 8–10 hrs and 10–12 hrs before COVID-19. However, this seems to have reduced significantly, with an estimated 58% of the pharmacies choosing to operate between 8–10 hrs while the others reduced their operations to an equal distribution of 20% between those operating for 6–8 hrs and those operating between 10 and 12 hrs.

### Attitudes

Community pharmacists in Saudi Arabia displayed an above-average satisfaction on their jobs in the wake of COVID-19. With a mean of 4.08 and a relatively narrow difference in percentage distribution between those who were not sure and those who claimed to be very satisfied (20%), the results demonstrated indifference in job satisfaction among community pharmacists in the areas sampled. Overall, 36.8% of the total population claimed to be very satisfied with their jobs, 41.8% were satisfied, while 16.8% were not sure whether they were satisfied with their jobs. To test whether the emergence of COVID 19 affected community pharmacists interaction with patients, community pharmacists were asked to identify how frequently they interacted with customers during dispensing of medication.

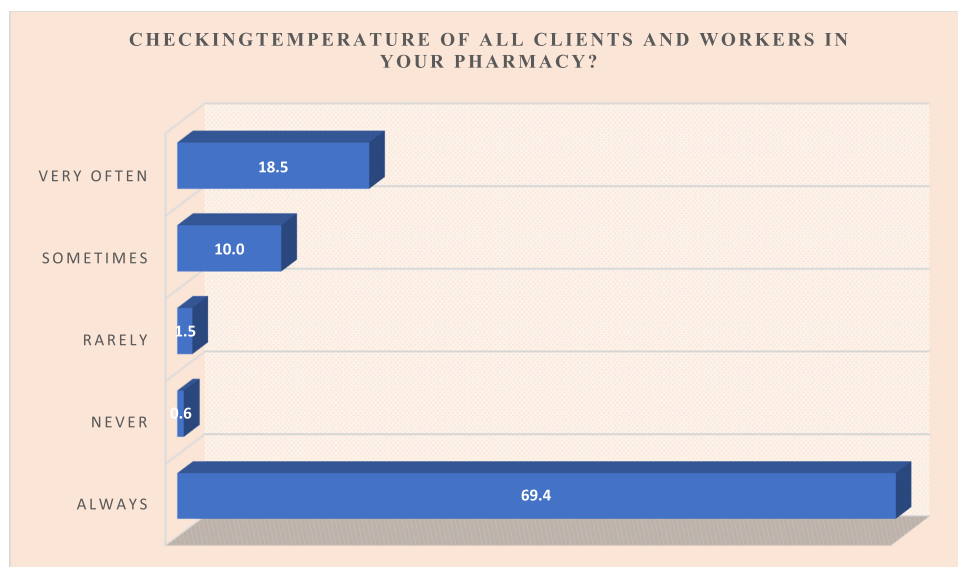
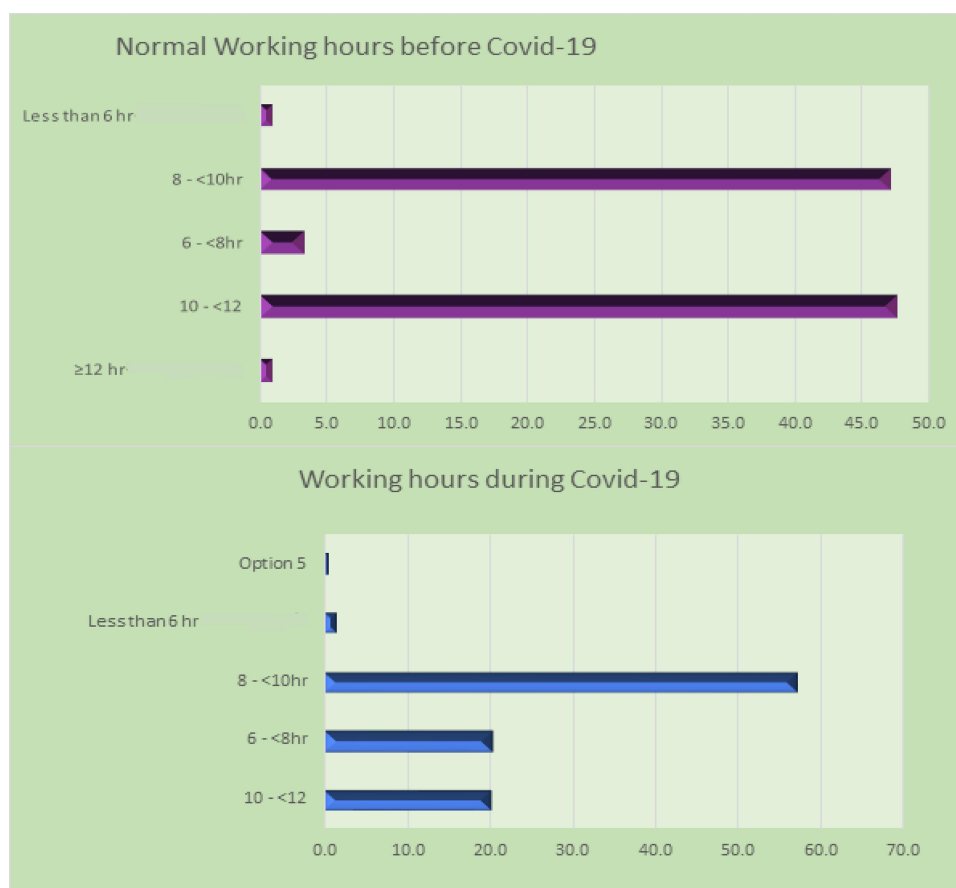


Figure 2 Measuring temperatures.



**Figure 3** Working hours.

A significant majority (96.6%) agreed to having frequently (22.0%) and very frequently (74.6%) interacted with their patients during the dispensing of drugs. When it comes to their perception about the authenticity of the information received from the ministry about COVID-19, 81% confirmed their trust in the information distributed by the government through the media about COVID-19. 12.3% were not sure about this information. A mean of 3.91 indicated that most of the community pharmacists trusted the information distributed through the media by various government agencies. In relation to counseling, a significant majority of community pharmacists believed that counseling customers on COVID-19 was an important activity. Nine percent placed an average importance to this task, 34.4% believed it was important, while 52.5% believed it was very important [Table 2].

## Readiness

Community pharmacies were equipped with some of the essential products for disinfection surfaces and keeping basic hygiene during COVID-19. 80.9% always provided swabs,

alcohol, and sanitizers, while 8.5% provided these items most of the time. 7.8% agreed to sometimes providing these essential products, while 1.4% and 1.4% never and rarely provided these products simultaneously. 93.3% always provided hand sanitizers for customers; 3.6% provided hand sanitizers very often, while 0.2% never provided hand sanitizers. 0.3% of the community pharmacies rarely provided hand sanitizers to consumers, while 2.6% sometimes provided hand sanitizers to consumers. With respect to enforcing social distancing, 83.8% of the community pharmacies had self-protective windows that were set on the OTC counter, only 116.2% did not have [Table 3].

## KSA Community Pharmacists Awareness of COVID-19 Etiology, Prognosis, and Management

To test the awareness of community pharmacists on the etiology, prognosis and management of COVID-19, the research designed specific survey instruments that covered the subject of COVID-19 risk of transmission, complications

**Table 2** Descriptive Statistics on Community Pharmacist Attitudes in the Wake of COVID 19

Statistics								
	Perception on job satisfaction		Interaction with patients/customer		Perception on information about COVID-19		Perception on counselling	
N	1097		1097		1097		1097	
Mean	4.08		3.78		3.91		4.01	
		Percent		Percent		Percent		Percent
Very dissatisfied	2.0		I do not	0.3	Not at all	0.5	Not important at all	2.1
Dissatisfied	3.3		Rarely	3.2	No	6.2	Not important	2.0
Not Sure	16.1		Frequently	22.0	Not sure	12.3	Average important	9.0
satisfied	41.8		Very Frequent	74.6	Yes	81.0	Important	34.4
Very Satisfied	36.8						Very important	52.5

associated with COV-19, signs, and symptoms of COV-19, COV –19 incubation period, and whether community pharmacists had received any form of training on COVID-19.

A significant majority 84%, had received formal training on the subject of COVID-19. Fifteen percent indicated that they had not received any form of formal training on COVID-19, while 1.5% could not remember whether they had received any formal training on COVID-19 [Figure 4].

An important question on the nature of formal training received was whether the information received was sufficient. When asked whether the information they had received about COVID-19 was sufficient enough, 81% believed that the information was sufficient, 12.3% were not sure, 6% said no, while 0.5 did not care [Figure 5].

Community pharmacists in KSA displayed extensive knowledge on the subject of COVID-19. For example, community pharmacists were aware of the primary symptoms of COVID-19. When asked to choose from a list of headache, fever, cough, sore throat, runny nose, and skin rash which one was not a symptom of COVID-19, all the respondents (100%) cited skin rash indicating they knew all the other were symptoms of COVID-19. When asked about the most common complication associated with COVID-19, 98.8% cited respiratory failure affirming knowledge on the primary complication associated with the prognosis of the disease. With respect to management and treatment of COVID-19, responses were distributed between supportive care (62%), antiviral therapy, 21%, and vaccination 17%. Overall, the results indicated that most of the community pharmacists in

**Table 3** Readiness for Community Pharmacists to Play a Supportive Role During COVID-19

Readiness of Community Pharmacists						
		Pharmacy equipped with enough supply of the following products [Alcohol swab]		Pharmacy providing hand sanitizer for customers		Pharmacy having a self-protective window that is set at the OTC counter
N		1097		1097		1097
		Percent		Percent		Percent
	Always	80.9	Always	93.3	No	16.2
	Most of times	8.5	Never	0.2	Yes	83.8
	Never	1.4	Rarely	0.3		
	Rarely	1.4	Sometimes	2.6		
	Sometimes	7.8	Very Often	3.6		



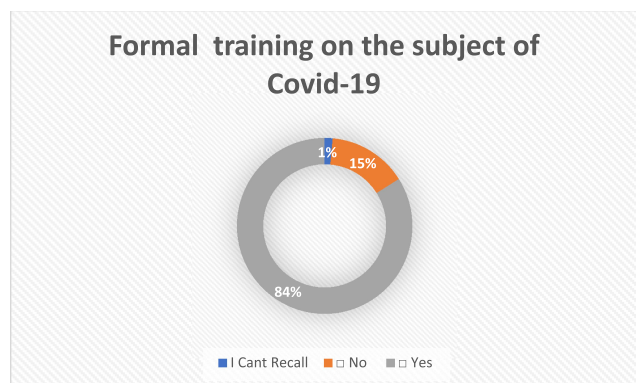


Figure 4 Training on COVID-19.

most parts of the KSA were knowledgeable on the subject of COVID-19 [Table 4].

### KSA Community Pharmacists Preparedness to Play a Supportive Role During the Fight Against COVID-19

Preparedness in this study was defined as a subset of knowledge on COVID-19 etiology, prognosis and management, and the practice, attitudes, and readiness of community pharmacist to play a supportive role in the fight against COVID-19. To test for preparedness, a one way ANOVA test was conducted to determine whether the difference in means for measures of practice, attitudes, and readiness and awareness on COVID were significant to indicate preparedness. The results of the analysis (0.00) were significant to authoritatively point out that community pharmacists in KSA were prepared to play a supportive role in the fight against COVID 19 [Table 5].

## Discussion

Pharmacists play a critical role as members of the health-care team. Internationally,<sup>12</sup> notes that pharmacists are integrated into pandemic planning and response teams, because of their instrumental role in creating awareness and availing pharmaceutical products to the consumers. Those in the forefront dispensing medicines to the general public should be aware of the steps they can take to stop the spread of COVID-19.<sup>27</sup> The World Health Organization developed key recommendations in a series of technical guidelines that sought to provide a practical way through which community pharmacists could respond to the challenge of COVID 19. The WHO recommends that community pharmacists should be in the frontline of those enforcing social distancing. The current WHO guidance advises that individuals keep two meters apart to prevent passing COVID 19 from one person to the other.<sup>3</sup> Pharmacy teams are encouraged to find creative ways of enforcing and implementing controls that enforce social distancing. An important point of consideration is the fact that social distancing is not only to be enforced for the patients but also the pharmacists themselves. In fact, guidelines from the WHO call for stringent social distancing behavior by those that are at high risk. Testing for both pharmacists and the patients is considered a critical step towards responding to COVID-19. The results of the study confirmed that KSA community pharmacists practice, attitudes, reflect a sense of readiness to play a supportive role in the fight COVID-19. When assessed on parameters such as counseling of patients on COVID-19, ability to wear protective gear during work, ability to disinfect contact surfaces, job satisfaction, the ability to adjust working hours, and the presence of essential items such as sanitizers, swabs, face masks, thermometers,

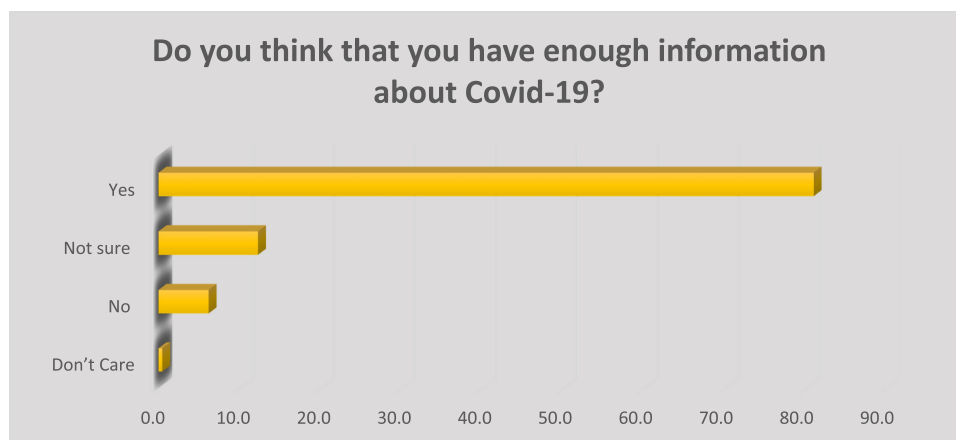


Figure 5 COVID-19 information.

**Table 4** Knowledge on COVID-19

Knowledge Parameters	Particulars	Percent
Reducing the risk of infection transmission	Hand hygiene	0
	Covering the nose and mouth when coughing	0
	Avoiding sick contacts	0.1
	All of the above	99.9
Current Treatment for COVID-19	Supportive care	62
	Antiviral therapy	21
	Vaccination	17
	None of the above	0
Complications associated with COVID-19	Pneumonia	0
	Respiratory failure	98.8
	Death	0
	All the above	1.2
Not a Symptom of COVID-19	Headache	0
	Fever	0
	Cough	0
	Sore throat and runny nose	0
	Skin rash	100

and dispensable glove, the results indicated that community pharmacists were ready to play a supportive role in the fight against COVID-19.

Another important measure in the fight against COVID-19 is the need to reduce the level of interactions between the patient and the pharmacist. This is especially so when handling medicines, when taking payment for prescription, and the amount of time spent on the premises. Most of the pharmacies have a self-protective window that is set at the OTC counter [Table 3]. While the study established that most of the community pharmacies had taken steps to enforce social distance and reduce customer interaction during dispensing of medication, an important recommendation as per

**Table 5** One Way ANOVA Test

ANOVA				
Preparedness to Fight COVID-19				
	Sum of Squares	df	Mean Square	Sig.
Between Groups	90.307	3	30.102	0.000
Within Groups	825.472	1093	0.755	
Total	915.779	1096		

the WHO is the ability of the pharmacies to maintain safe staffing in the wake of COVID 19. Typically, pharmacy teams are accustomed to working in close confines and reduced numbers.<sup>24</sup> The WHO recommends the presence of a contingency plan where community pharmacists can increase the number of pharmacists required on demand. Furthermore, pharmacists can fall ill, making it difficult for community pharmacies to cope with the influx of patients. Most of the community pharmacists survey agreed to remain at the minimal operation during COVID 19. Specific steps to establish whether community pharmacists had a contingency plan in the wake of the COVID-19 influx was not conducted.

The retail function of pharmacies is expected to be complemented with the dispensing of medicines and information. The WHO recommends the presence of warning in the pharmacy to remind patients about the nature of COVID 19, advise on a suitable time to visit the pharmacy, best approaches to manage their health during isolation, access to sick notes, and a hotline for contact with patients who are concerned about their symptoms.<sup>28</sup> While specific information on the nature of information dissemination was not surveyed in this study, a significant number of community pharmacists valued counseling patients on COVID-19.

One of the primary findings that questioned the readiness of community pharmacists to play a supportive role during COVID-19 was the finding that the number of working hours had reduced significantly in the wake of COVID-19 [Figure 3]. The reduction in working hours can be explained by the need to limit interaction among community members. Immediately after COVID was declared an international pandemic, there was an immediate call by governments for people to stay at home. There is a possibility that the call for people to stay indoors and stop the spread of COVID-19 may have reduced the number of people visiting pharmacies.<sup>26</sup> Other compounding factors in the reduction of working hours would have been the increase in the use of digital technologies in ordering and processing of medication, decrease in the number of diseases as the need maintain social distance and keep hygiene became a habit among community members and efforts by individual pharmacies to make their working environment safe.<sup>28</sup>

In the fight against COVID-19, the ability to demonstrate awareness and knowledge on the various aspects related to COVID-19<sup>28</sup> is vital. Many governments around the world have recognized this fact. They have invested in a significant amount of information sharing in order to improve the ability of various health workers to deal

with COVID-19. Practice across the globe, as demonstrated by the action of WHO and the European Union, is to focus on educating both healthcare workers and the public on the various aspects to look for when dealing with COVID-19. In fact, an effective response to COVID-19 across the globe has been linked to the ability of the various stakeholders to understand and interpret COVID-19 information.<sup>29</sup> Inside the pharmacy, it is important that the pharmacists demonstrate competence in knowledge of the various prognosis, management, and development of COVID-19. For majority, the ability to maintain a safe clinical environment in the pharmacy while prioritizing hygienic interaction of patients has been cited as one of the most effective measures of the infection control of COVID-19. To determine whether pharmacists were aware of COVID-19, infection etiology, prognosis, outcome, protective measures, and its management, questionnaires were designed to test these parameters. Community pharmacists agreed to having received sufficient training on COVID-19 [Figure 4]. In addition, most of the community pharmacists felt the information received on COVID-19 was sufficient. From the findings of the study [Table 4], the respondents expressed a high awareness of the virus infection etiology, prognosis, outcomes, protective measures, and management of the disease. The knowledge displayed by community pharmacists surveyed in this study can be attributed to the significant amount of investment on the re-education of community pharmacists by the KSA government through the ministry of health. The results mirror the current state of acknowledging the etiology, prognosis, and management of the disease,<sup>28,29</sup> For instance, beyond supportive care, there is no clinically approved treatment for COVID-19 to date.<sup>2</sup> The community pharmacists were aware of the commonly used management of COVID-19. A significant number of community pharmacists were aware of the importance of facemasks in controlling the spread of the disease. According to the CDC, face masks are an important element in the prevention of COVID-19, and the WHO recommends wearing of masks when in public spaces.<sup>30</sup>

Comparing the subset of knowledge/awareness among community pharmacists and their practice predicted their preparedness towards playing a supportive role in the fight against COVID-19. The results of the analysis were significant, indicating that community pharmacists in the KSA are well prepared to play a supportive role in the Fight against COVID-19. The findings suggest the need to continue investing in

capacity building among community pharmacists to improve their level of awareness of COVID-19. While the Saudi Arabian Ministry of Health has been investing in public awareness campaigns, the Saudi Centre for Disease Prevention and Control (CDC) and the Ministry of Health (MoH) is yet to come up with advisory opinion and guidelines specifically designed to regulate the activities of pharmacists while executing their duties in the wake of COVID-19. An advisory opinion<sup>31</sup> urges Saudi Centre for Disease Prevention and Control (CDC) and the Ministry of Health (MoH) to continue utilizing pharmacists' expertise in their efforts to prevent and treat COVID-19 during epidemic and pandemic situations. This draft paper also recommends the inclusion of pharmacists in emergency preparedness and disaster planning during the pandemic.<sup>32</sup> The finding that community pharmacists are adequately aware of the COVID-19 virus infection etiology, prognosis, outcomes, protective measures, and management has also been established by other studies such as,<sup>10,26</sup> among others. However, these researchers call for the need for community pharmacists to be trained to screen pharmacy customers for signs and symptoms of COVID-19 and provide the most appropriate action plan in suspicious cases as directed by the Saudi CDC guidelines. This study adopts the same opinion as one of the most effective strategies of reducing the risk of exposure to and transmission of COVID-19. Moreover, where each community pharmacies develop and adopt a screening system to screen customers/patients before entering into the pharmacy, there is a reduced incidence of COVID-19 transmission from one suspected case to others.

## Conclusion

This study has established that community pharmacists in the Kingdom of Saudi Arabia are ready to play a supportive role in the fight against COVID-19. The practice of community pharmacists in the Kingdom reflected the recommended standards in the prevention of COVID-19, they demonstrated positive attitudes towards COVID-19 management and were aware of the aetiology, management and prevention of COVID-19. Imperatively, the relationship between practice, attitudes, as compared to knowledge on COVID 19 was significant to point to preparedness of the community pharmacist in the Kingdom of Saudi Arabia. Being the first point of contact to patients, the result confirm the capabilities of community pharmacists as active members of healthcare teams in combating

COVID-19.<sup>33,34</sup> Contemporary researchers agree that pharmacists being the first point of contact to the health-care system should be integrated into pandemic planning and response, this results point that they are ready to do so.<sup>35</sup>

## Value to the Kingdom Vision 2030

The Kingdom of Saudi Arabia launched the vision 2030 strategic plan in 2016. Within this plan, the Ministry of Health (MOH) developed fifteen strategic goals that should be achieved by 2030.<sup>23</sup> According to Alomi,<sup>23</sup> at the heart of the strategic health goals is the recognition that pharmaceutical services play an integral role in the health of the Saudi Arabian people. Moreover, studies from developing countries confirm that community pharmacists are no longer confined to the traditional role of dispensing drugs.<sup>24</sup> While KSA Vision 2030 goals provide an elaborate role for community pharmacist in creating healthy society within the kingdom, it is apparent from the strategic plan there is no comprehensive approach to responding to pandemics of the magnitude of COVID-19 outbreak. It is widely acknowledged that the number of local certified Saudi pharmacists will remain significantly small by 2030 to meet the demand for the health of the local population and respond to the health challenges presented to the healthcare system in the country.<sup>25</sup> This study offers an opportunity for the Saudi education system to identify areas of deficiency in its pharmacists' training and certification programs and develop strategies to build the capacity of community pharmacists within the country in preparation for health pandemics. The country's health goals in the vision 2030 are anchored on a competent health labor force, and this study contributes to achieving these goals by identifying areas where community pharmacist competencies are lacking with respect to response to public health emergencies.

## Outcome Utilization

The findings of this study will be critical for both policy-makers and community pharmacies across the country. At the policy level, policymakers will in a position to make informed decisions on how to continue integrating community pharmacists in the current effort to contain and eliminate COVID-19 in the country. To prepare for future outbreaks, the capacity of community pharmacists will also be considered as an area of educational investment in the future. This research sets the foundation of sound decision-making on the capabilities, qualifications, and

efficacy of community pharmacists in the face of a global pandemic like COVID-19. At the pharmaceutical level, the research provides an avenue to support attempts for developing regular refresher programs on communicable diseases and the role that pharmacists can play in creating awareness and containing such outbreaks.

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