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#### \*CORRESPONDENCE

Hafsa Hashmi

E-mail:

Hafsa.hashmi22@gmail.com

## The role of pharmacy services and pharmacist comeback during COVID-19. A narrative review

<sup>a</sup> Abdur Rashid, <sup>b</sup>Ghulam Abbas Miana, <sup>b</sup>Hafsa Hashmi\*

<sup>a</sup>Division of Pharmacy Services, Drug Regulatory Authority of Pakistan, Islamabad, Pakistan.

<sup>b</sup>Riphah Institute of pharmaceutical sciences, Islamabad, Pakistan.

#### ABSTRACT

SARSCoV-2, a recently discovered coronavirus, causes COVID-19, which is a respiratory infection. The disease rapidly spread across the world, prompting a pandemic declaration.

During natural calamities and outbreaks, pharmacists have long been involved in public well-being management such as precautionary safeguards, immunizations, screening, authentication of medicines safety and efficacy and also involved in emergency alertness and response. Pharmacy professionals are considered an integral part in response to the ongoing COVID-19 pandemic. Pharmacists and pharmacy services are at the combat zone for patients care and safety to enhance public health. The ongoing Covid-19 pandemic had a significant impact on healthcare services around the world. New policies and procedures will be implemented to fill the void. Pharmacists expect to adopt a variety of strategies to providing pharmacy services during and after the current pandemic. Pharmacists are playing an important role in the current epidemic. It's been over a year since the Covid-19 epidemic first eventuated, and it's still unclear how long the pandemic will endure. Hence, pharmacists and pharmacy professionals are playing crucial character in the prevention, treatment and mitigation of adverse outcomes due to the covid-19 pandemic. The current publication emphasizes the potential responsibilities and actions that pharmacists might undertake in a variety of healthcare settings to assist relieve strain on an overburdened healthcare system.

**Keywords:** Pharmacist, Covid-19, Pharmacy services, Pandemic, healthcare professionals.

#### INTRODUCTION

Diarrheal diseases are considered as one In Wuhan, Hubei Province, China, in December 2019, an innovative Beta coronavirus tentatively named 2019 novel coronavirus, which was later coherently renamed severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) by the International Committee on Taxonomy of Viruses (ICTV), triggering coronavirus disease 2019 (or COVID-19) was integrated with a group of respiratory tract infections [1].

The World Health Organization declared COVID-19 a pandemic. On March 11, 2020, and requested to increased aid and cooperation among other states [2]. Following that, extreme procedures were implemented in the United States and around the world to deal with the pandemic, implemented in

the United States and around the world to deal with the pandemic, including the closure of schools and non-essential trades, limited travel, public isolation, and other public barriers and prohibitions [3]. Symptoms associated with COVID-19 comprise cough, dyspnea, and fever whereas the intensity of the disease ranges from asymptomatic infection, insignificant ailment (in 81% of patients), to pneumonia, respiratory failure, and ultimately death [4].

The ongoing plague knocking out countries so harshly that health amenities and healthcare professionals are remarkably facing burdened, leading to the shortage of facilities and healthcare workers. Hence pharmacists, pharmacy services in collaboration with other principal healthcare workers playing a vital contribution in this time of calamity [5]. Community pharmacy is one of the highest attainable healthcare professions. In retorting to community health emergency community pharmacy is playing a foremost contribution [6]. It has been cleared during this Covid-19 plague; the valuable facilities provided by pharmacists to the community also their contributions to eradicating the infection for additional spread. The facts and recommendations included in this assessment could aid governments, public health organizations, and policymakers in reorganizing existing pharmacy services in response to the COVID-19 epidemic. Furthermore, this paper will highlight any untapped potential among pharmacists in a variety of settings, including community, hospital, industry, and drug regulatory agencies. Pharmacists have gained significant knowledge for future practice progress through taking on new positions and changing existing practices. Pharmacists must be provided with the skills essential to handle the changing healthcare problems in order to properly carry out these obligations.

During this existing plague, it has been ratified that community pharmacies are frequently the primary point of interaction with the health system for persons with COVID-19 associated health concerns or who need authentic information and guidance and also remain in touch with affected or unaffected areas. The role of the community pharmacists include counseling, help in infection control, stop further spread of diseases, ensure proper provision and storage of pharmaceutical products and devices such as medicines, face masks, provide adequate information to public and educate them. Hospital pharmacies and healthcare teams/coworkers also provide esteemed services to inpatient and outpatients via a proper supply of medicines and pharmaceutical care[7].

One of the key roles of pharmacists is to ensure optimal accessibility, timely delivery of the most screened and efficacious regimen/therapy to the patients in order to avoid any harm associated with patients' health. To avoid such sort of calamities, pharmacists should organize some schemes for the identification and mitigation of drug insufficiency/undersupply during the COVID-19 plague. Undersupply of medicines may lead toward insignificant/substandard/minimal medicines prescribing, which has been a crucial factor linked with patient harm [8]. Drug insufficiency usually comes off when there is finite/restricted provision of raw material or Active pharmaceutical ingredients (API) [9]. The immediate/direct consequences of the pandemic are usually undersupply of minimum one drug and more are expected/anticipated in near future [10]. At this stage there are no reports of deficiencies of medicines due to this outbreak yet, hence in order to eliminate possible supply interruptions in the coming weeks and months pharmacists are doing and will continue doing their best to assure the proper provision of medicines [11]

Pharmacists are also broadcasting information on safeguards related to COVID-19 spread including handwashing practice to accessibility of face masks and directions for their appropriate use and discarding. USP has issued guidelines for the compounding, pharmacists and manufacturers for the preparation of hand sanitizers in order to prevent stock undersupply [12]. Therefore, it is the foremost duty of pharmacists to work dynamically in order to precise productive regimen substitutes, make various drug shortage mitigation strategies and impose implementations and if required, prioritize drug supply to the patients who are most prospectively to take advantage [13].

Pharmacists' response towards COVID-19, including prevention, mitigation, treatment, and the role of pharmacy services

In order to cease the spread of infection, pharmacists should also assist other healthcare workers and infection preventionists. Pharmacists should counsel and update their patients regarding personal hygiene, staying home if any respiratory associated signs and symptoms appear, public hostility, symptomatic ease/comfort, and also provide the latest updates of Covid-19 to avoid further spread of infection [14].

Currently, there are numerous trials evaluating remdesivir for COVID-19 [15]. Clinical and infectious diseases (ID) pharmacists need to explain all drug-related evidence that may be essential in COVID-19 cases, including dosing and dose adjustment,

drug/drug interactions, drug/food interactions, adverse effects, monitoring parameters and the pharmacokinetics of all concerned drugs. [16]. Categorizing patients who might be appropriate for remdesivir or other investigational agents, collaborating with the physician sponsor and rapidly directing with the other several parties, receiving, preparing, and delivering drug to the patient's bedside are all important roles of the pharmacist during the COVID-19 pandemic [17].

While investigational drug pharmacists play a significant role here, the active involvement of those working in infectious diseases, information technology, critical care, distribution, and management can rationalize the process and speed the time to therapy for study patients [18]. Community and hospital pharmacies are extending their working time and are providing essential services to the community. Pharmacists' Multilevel Engagements During the COVID-19 Pandemic revealed in figure1.

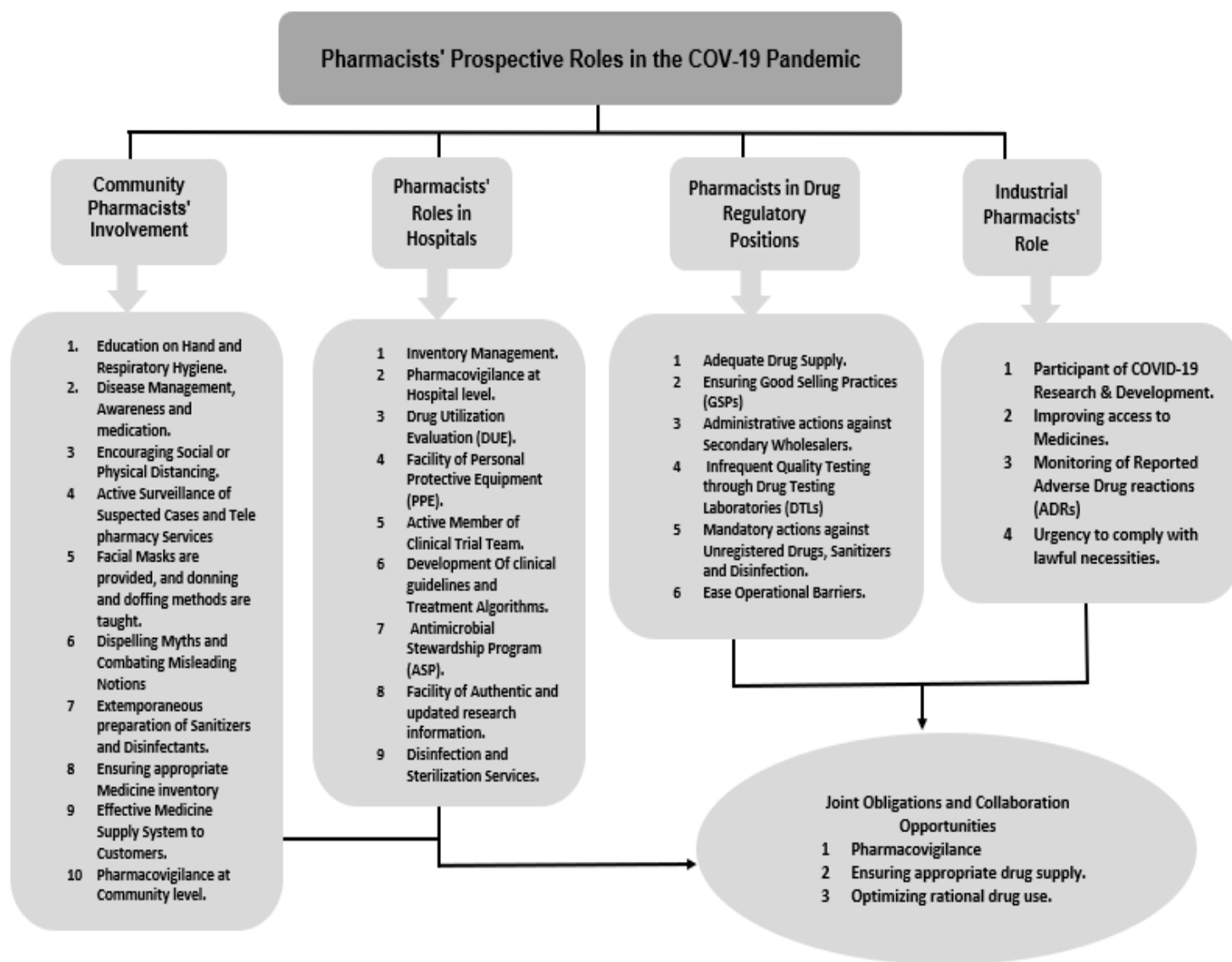


Fig1: Pharmacist's contribution During the COVID-19 Pandemic. [1]

Pakistan, officially the Islamic Republic of Pakistan, is a country in South Asia with a population 212.2 million. Total 897,468 confirmed, 63,436 active, 20,177 deaths and 813,855 recoveries Covid-19 cases in Pakistan by 22nd May, 2021 (fig.2 and table 1) [20]. In Pakistan first Covid-19 case was reported on 26th February 2020 [21] since then, pharmacists especially community pharmacists playing a significant role.

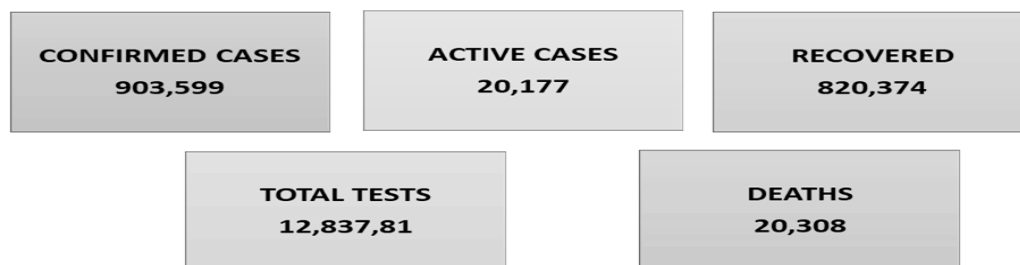


Fig 2: Pakistan statistics <http://covid.gov.pk/>

	CONFIRMED CASES	ACTIVE CASE	DEATHS	RECOVERIES
<b>AJK</b>	18,651	1,702	526	16,423
<b>BALUCHISTAN</b>	24,413	998	270	23,145
<b>GB</b>	5,471	79	107	5,285
<b>ISLAMABAD</b>	80,156	7,696	744	71,716
<b>KPK</b>	129,013	6,790	3,900	118,323
<b>PUNJAB</b>	333,057	24,522	9,739	298,796
<b>SINDH</b>	306,707	21,649	4,891	280,167

Table 1: COVID-19 Cases in Pakistan. <http://covid.gov.pk/>

Pharmacists intend to use immeasurable tactics to deliver pharmacy services

A literature quest was conducted. Results were screened for pharmacists' interventions and reviewed to identify pharmacist duties including prevention, treatment, mitigation, clinical outcomes as well as non-clinical outcomes i.e., dispensing, products preparation and counselling during this ongoing Covid-19 pandemic. Data was extracted from different articles and guidelines provided by International pharmaceutical federation (FIP), American Pharmacist Association (APhA), world health organization (WHO), centers for disease control and prevention (CDC) and others.

This ongoing Covid-19 pandemic influenced a wide range of changes in healthcare services globally. The gap will be fulfilled by making new policies and procedures. Innovative and extended methods of practice are required for pharmacy professionals as well as coworkers. Pharmacists intend to use innumerable tactics to deliver pharmacy services in the current pandemic and beyond. The significant themes are, Emphasis new methods of pharmacy services and medication delivery services, Video base consultations, Focus on chronic ailments management, Monitoring and Reporting ADRs, Reporting mortality and morbidity during Covid-19, Involvement in general practice activities, Testing for Covid-19, Improving Access to Medicines, Providing adequately staff education and training, Promote telehealth/telemedicine, Psychological support to promote Covid-19 pandemic control and beyond, Safe use of infusions, Patient education, Homecare guidance to higher risk groups such as old patients, patients with non-communicable diseases such as hypertension, diabetes and immune-compromised patients, Extended Emergency preparedness and response also Pharmacovigilance at the Community and Hospital Level.

### Conclusion and Future direction

Pharmacists are highly trustworthy resources for the community during this ongoing pandemic. All pharmacists are contributing vital role in their respective domains. Yet there is special attention required to pharmacy professionals predominantly in Pakistan. There are supplementary prospects for enhancing the pharmacist's roles and acknowledgment in public health, precisely concerning telemedicine/telehealth accessibility of pharmacists in rural and remote areas, implementation of electronic

prescription, video-based consultations, personal protective equipment to pharmacists, testing for Covid-19, prescribing roles and related activities, and train them for emergency preparedness and response during Covid-19 and beyond. Endorsements are required to enhance pharmacy's scope as a public healthcare professional.

The World Health Organization (WHO), International Pharmaceutical Federation (FIP) and also American pharmacist association issued guidelines for pharmacists in order to highlight the frontline contributions of pharmacists in this ongoing covid-19 plague. Pharmacy organizations, both in US and globally issued guidelines and advisories for pharmacy professionals to guide workflow and optimize services in Covid-19 pandemic. A joint statement was issued by ten (10) US Pharmacy professionals to assist and enhance pharmacy professionals in the Covid-19 pandemic [19]. Almost half of the population of the country living in rural and remote areas. Due to this they lack most of the basic health facilities. Telemedicine/telehealth able to fulfill this gap of underprivileged communities. Telemedicine has already been recognized in Pakistan. Pharmacists should hold onto telemedicine and provide basic consultations to the public in order to reduce the burden on physicians and healthcare system.

A number of pharmacists are engaged with community/retail pharmacies and also involve in compounding, a very little or negligible attention is paying towards pharmacists' personal protective equipment, although they are the primary point of interaction with public during this ongoing covid-19 pandemic as well as in usual circumstances. National Health Service (NHS) England has provided various personal protective equipment (PPE) to pharmacists which included gloves, aprons and fluid repellent face masks [22].

Pakistan is a developing country; pharmacists are of great importance in this aspect as majority of the patients are unable to afford consultant fees. A wide range of pharmaceutical services provided by Chinese community pharmacists are including Patient's safety regarding medicine use, Provision of proper supplies, Guidance regarding Covid-19 as well as regular medication and counselling in order to minimize patient's visits to healthcare facilities. They also used mobile applications, coordination with neighborhood committees and medicine firms to ensure proper supply of medicine to patients' doorstep [23]. It is notable how the growth and scope of pharmacists are highlighted in UK and Canada. In UK, the pharmaceutical services negotiating committee (PSNC) has been pressed, England government for Covid-19 testing for pharmacists [24]. Community pharmacists will be able to access testing for Covid-19, The PSNC has confirmed the community pharmacists would be involved in the novel testing program at some point. In Scotland there is use of electronic prescription services. Prescription information sent electronically to community pharmacy from the General physician's practice. Hence in Pakistan there should be implementation of electronic prescription services in order to avoid direct contact of patients to pharmacists.

Antimicrobial stewardship analyst, including, pharmacists, physicians, infection preventionists are dynamic in promising the safety and quality of healthcare amenities, predominantly during occurrences of serious infection. The infectious diseases (IDs) pharmacists should coordinate with the microbiology laboratory for the interpretation of, and mechanisms involving, COVID-19 test consequences, monitor compliance with official guidelines, formulate and implement local treatment procedures, monitor and manage drug deficiencies and assist in exploration of new drug applications and uses [25].

Clinical pharmacists should retain their information up to date and be attentive of the CDC's broadcasting on symptom demonstration, directing initial screenings, approving those entities that have the appropriate epidemiological risk factors that might specify COVID-19, and providing suitable management [26]. As the demand for drugs and drug repurposing applications has grown, so have the responsibilities of drug regulatory and administrative authorities. In the current condition of instability, a proactive approach from these authorities is critical to ensure the proper administration of drugs. They can make sure that pharmacists working in community pharmacies, hospitals, clinics, or industrial settings are adequately prepared and authorized to respond to the COVID-19 emergency plan [27].

Pharmacists may fully utilize their professional experience, rationally analyze the current situation, test, treat, and immunize patients, quickly develop telemedicine protocols, and ensure medication adherence and appropriate drug usage. As the impact of traditional and expanded pharmacy services during a pandemic is rarely assessed, well-structured and controlled studies are required. Furthermore, the amount of pharmacists' preparedness for any subsequent outbreak must be determined.

Hence, pharmacy specialists are an essential part of this ongoing COVID-19 pandemic. Pharmacists and pharmacy services are at the battle zone for patient overhaul and safety to improve public health.

## ABBREVIATIONS

ICTV International Committee on Taxonomy of Viruses  
FIP International pharmaceutical federation  
APhA American Pharmacist Association  
WHO world health organization  
CDC centers for disease control and prevention  
PSNC Pharmaceutical services negotiating committee  
NHS National Health Service  
ADRs Adverse Drug Reactions  
PPE Personal protective equipment  
IDs Infectious diseases  
AJK Azad Jammu and Kashmir  
GB Gilgit-Baltistan  
KPK Khyber Pakhtunkhwa

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## COMPETING INTERESTS

The authors declare that they have no competing interests.

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## AUTHORS' CONTRIBUTIONS

All authors participated in the conceptualization, drafting and revision of the manuscript. All authors critically reviewed and approved the final version of the manuscript.

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