

**International Journal of Pharmacological Research**

ISSN: 2277-3312 (Online)

Journal DOI: <https://doi.org/10.7439/ijpr>

Review Article

**Pharmacist and COVID-19 pandemic: Role and challenges**Rahul Ashok Sachdeo<sup>\*</sup>, Manoj S. Charde and Ritu D. Chakole

Department of Pharmaceutical Chemistry, Government College of Pharmacy, Karad, District- Satara, State-Maharashtra-415124 India

**Abstract**

Today we are facing COVID-19 a global health outbreak pandemic which has been declared as “World Health Emergency of International Concern” by WHO because of its spread like fire world-wide and the escalating number of deaths. 2,549,632 numbers of reported cases and 175,825 deaths worldwide are reported till 23<sup>rd</sup> April, 2020. This viral infection is contagious and spreads from one person to another through various means. Efforts are been taken world-wide to help stop the spread and healthcare workers including pharmacists are on battlegrounds to fight back COVID-19 to make the diagnosis and treatment of patient easier and save the lives of mankind by ensuring the availability and timely provision of the safest and most effective therapy. In this mini-review we have discussed about the role and challenges that pharmacists as the “medicine expert” will have to face and tackle in this pandemic.

**Keywords:** COVID-19, global outbreak, pharmacists, healthcare worker, coronavirus, patient care.

**\*Correspondence Info:**

Rahul Ashok Sachdeo  
Department of Pharmaceutical Chemistry,  
Government College of Pharmacy, Karad,  
District- Satara, State-Maharashtra-415124 India

**\*Article History:**

**Received:** 27/03/2020  
**Revised:** 24/04/2020  
**Accepted:** 27/04/2020  
**DOI:** <https://doi.org/10.7439/ijpr.v10i4.5407>

**QR Code**

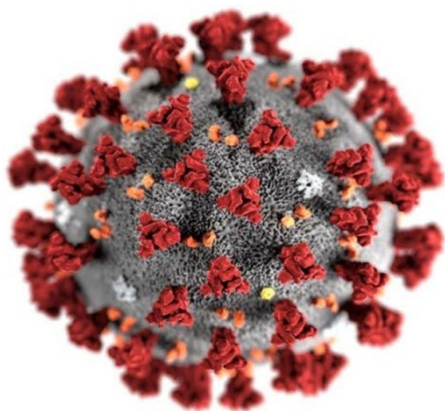
**How to cite:** Sachdeo R. A, Charde M. S. and Chakole R. D. Pharmacist and COVID-19 pandemic: Role and challenges. *International Journal of Pharmacological Research* 2020; 10(04): e5407. Doi: 10.7439/ijpr.v10i4.5407 Available from: <https://ssjournals.com/index.php/ijpr/article/view/5407>

Copyright (c) 2020 International Journal Pharmacological Research. This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/)

**1. Introduction**

Corona viruses are large group of single stranded enveloped RNA viruses which have spike like projections on the surface depicting crown-like appearance, hence named as corona virus. They range from 60 nm to 140 nm in diameter, are non-segmented which belong to Coronavirinae subfamily part of family Corona viridae and the order Nidovirales and broadly distributed in humans and other mammals. [1-3] Humans had been affected by these group of viruses since last few decades of which six human corona viruses are known; (HCoV) - HCoV-NL63, HCoV-HKU1, HCoV-229E, HCoVOC43, Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV), and Middle East Respiratory Syndrome Coronavirus (MERS-CoV) SARS-CoV and MERS-CoV have been reported to cause severe respiratory symptom and large number of deaths in past few years across globe. [4] Coronaviruses are divided into four types namely,  $\alpha$ -coronavirus ( $\alpha$ -COV),  $\beta$ -coronavirus ( $\beta$ -COV),  $\delta$ -coronavirus ( $\delta$ -COV) and  $\gamma$  - coronavirus ( $\gamma$ -COV). [5]

A new series of cases of pneumonia were reported in December, 2019, in Wuhan, Hubei, China, whose epidemiology and pathogenesis showed to be case of viral pneumonia. Further clinical studies showed that the virus was found to be a case of novel-corona virus named as (2019-nCoV). [1] International Committee on Taxonomy of Viruses (ICTV) named the virus as Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). SARS-CoV-2, like SARS-CoV and MERS-CoV, belongs to  $\beta$ -coronavirus. Similar to other viruses this virus too has potential natural, intermediate and final hosts and high transmissibility and infectivity, despite of low mortality rate as compared to SARS and MERS. [5] Structurally, the SARS coronavirus (SARS-CoV) has a well-defined composition comprising 14 binding residues that directly interact with human angiotensin-converting enzyme 2. [3]



**Figure 1: Illustration of SARS-Cov-2 virion [3]**

WHO named the disease as COVID-19 and declared this pandemic as world health emergency of international concern on 30<sup>th</sup> January, 2020, after its outbreak all over the world.[6] The source of this virus to human was reported in study carried at Wuhan Institute of Virology which showed that the similarity of gene sequence between SARS-CoV-2 and bat coronavirus is as high as 96.2% by sequencing technology which implied that bats are the possible source of SARS-CoV-2 but still further conformation is needed to decide whether it is transmitted directly from bats or through an intermediate host.[5,7] The spread of the virus is mostly due to airborne respiratory droplets and with close contact with the carrier or the affected person a human-to-human chain of 4 “generations” (a person who originally contracted the virus from a nonhuman source infected someone else, who infected another individual, who then infected another individual). [8]

COVID-19 shows mostly symptoms like fever (87.9%), cough (67.7%) and fatigue (38.1%), whereas diarrhoea (3.7%) and vomiting (5.0%) are rare ones. Some COVID-19 patients have arrhythmia, acute heart injury, impaired renal function, and abnormal liver function (50.7%) at admission. [5] It has also been reported that the people of age group belonging to 70 years or above are more susceptible to catch the infection and the one with previous history of various diseases and weaker immunity. Other symptoms mostly in adults include headache, dyspnoea, rhinorrhoea, sour throat and pharyngalgia.[9, 10] Also, it has been seen that the lifestyle and unhygienic practices are too responsible for getting affected by the virus where smoking is also reported to most likely associate with the negative progression and adverse outcomes of COVID-19.[11]

## 2. Pharmacist and COVID-19

In pandemic like the one we are facing today which has spread world-wide and no proper medication and treatment is still known, and the only available solution is to

stay indoors and protected, where only symptomatic, preventive and palliative measures are available and pharmacists along with other healthcare workers are on battle grounds to tackle COVID-19 where he has to play various roles and face lots of challenges in this war against COVID-19. He might be working in drug design laboratories or as community health care provider or as on ground field as hospital pharmacist and various other roles for betterment of world. [12, 13]

### 2.1 Role of Pharmacist in Drug Design and Development:

Pharmacist has the knowledge of drug design and development and this knowledge has help develop a number of drugs reported till date. Starting from the day the drug is on the paper till it reaches to the patient pharmacists play a major role and further in pharmacovigilance studies. Pharmacists with keen knowledge of drug-target interactions can target and design lead molecules that will bind specifically to the target. Moulding the drug into a formulation is a challenging task where he has to juggle all three drug-formulation-patient related parameters together. Patient compliance and drug interactions, its metabolism and toxicity are what have to be monitored along with it. New drug molecules have been developed and evaluated in controlled studies globally for the prophylaxis and treatment of COVID-19 while the available ones, remdesivir undergoing clinical trials. Pharmacists are essential in facilitating these investigational drug studies in health systems to provide most effective therapy. Pharmacist and pharmaceutical companies have to check for availability of drug (i.e. hydroxychloroquine) and help maintain the adequate supply. [14]

### 2.2 Role as Community Pharmacist:

Currently no vaccine or medication therapy is available for COVID-19 and the only way available is to prevent its spread by preventive and palliative measures. As a community pharmacist, a vital health care provider pharmacist has to serve the patients directly as a frontline combatant. [15] He has to dispense the prescriptions with care and also by following all the guidelines given by International Pharmaceutical Federation (FIP) for pharmacists and pharmacy workforce. [13] Community pharmacist can make use of Telemedicine and Telepharmacy to help discuss health issues with other pharmacists and patients. [16]

Use of various digital means to dispense medications and different apps or door-step delivery of medicines can help reduce public contact and unnecessary gatherings. Community pharmacist has to work as health care service provider to the patients and quarantined people susceptible to get affected by the virus. He has to check the patient's behaviour, travel history and any signs and symptoms and counsel the patient and family members regarding safety and

personal hygiene and self-incubation. In pharmacies, pharmacist has to dispense medications with care by maintaining social distancing and by using electronic payment methods to avoid spread of COVID-19. Patient counselling is necessary specially in case of patients with previous health issues and diseases like kidney failure, cancer, diabetes and asthma, etc. Regular check-ups and health advise to the old patients are other healthcare services he can provide with.[14]

### 2.3 Role as Hospital Pharmacist:

Hospitals have got converted to isolation wards where pharmacist has to be 24x7 to provide patient care and support. Hospital pharmacist has the role of monitoring the drug therapy of the patient while considering all the ADR's and toxicity during medication regimen. Pharmacist has to share the burden for patient care with other hospital staff and get trained with management of COVID-19 patients. Importance and wise use of PPE to avoid unnecessary entry in patient-room, cleanliness and self-care, proper use of medication is what a hospital pharmacist can help with, to hospital staff and health-care workers.

### 2.4 Role in Training and Awareness:

Digital-media has been a great platform for all over the world to stay connected and share the knowledge where healthcare workers can help share and discuss the health issues and treatment options for COVID-19. Digital-media has been a platform for the pharmacist to help get trained and prepared for this global outbreak with health informatics. [17]

Social-media is what keeps us connected and this has been a platform with two side of a single coin where people are sharing fake news, self-medication and un-ethical remedies for COVID-19 where our pharmacist can help spread awareness and help remove fear from minds of public. Washing hands frequently with soap for at least 20 seconds, covering mouth while sneezing and coughing, using alcohol based hand-rub and avoiding face touch, maintaining social distancing by staying indoors are the preventive and palliative measures that are now known to everyone, but pharmacist can help explain the reasons and importance to follow these guidelines very well given by WHO and other governmental bodies. Public awareness program and sharing right knowledge is what a pharmacist can do at community level.

The outbreak of COVID-19 and the sudden change of routine daily life, together with the fear or concern of being infected by the SARS-CoV-2 from anyone at any time may lead to emotional problems in some community patients. During the interaction and communication with patients, pharmacy staff shall pay attention to their emotional or psychological conditions, and identify patients with excessive anxiety, concern, fear or blind optimism. [15]

### 2.5 Role in Vaccination and Immunisation:

Pharmacists play a major role in storing vaccines in pharmacies, delivering vaccines to physicians, preparing antitoxins for administration, and distribution of vaccines while further as a clinical pharmacist in administering vaccines to the patients. Pharmacist has been evolved into educators about vaccines, and promoters of vaccine services and has to play a key role in developing vaccine for the treatment of COVID-19. [18]

The role of pharmacists as educators, facilitators and immunisers is particularly important during pandemics and/or other challenging situations that may significantly affect the morbidity and mortality of the general population as mentioned in the FIP global report on overview of current pharmacy impact on immunisation. [19]

Along with all these roles our health warrior has to shield himself from getting self-acquisition by the virus and stay protected as he has to directly come in contact with the COVID-19 virus in the drug development laboratories, during patient counselling, while in monitoring drug therapy in hospitals or while as dispensing prescriptions. Use of PPE, personal hygiene and other preventive measure should be carried out as per the FIP guidelines to avoid contact with the virus. Prompt measures are to be taken to help stop the spread of this highly prevailing virus as it has spread from a single Wuhan city to almost whole world in just few days. Various challenges are to be faced by the healthcare workers and people where everyone has to stand strong and help flatten the curve.

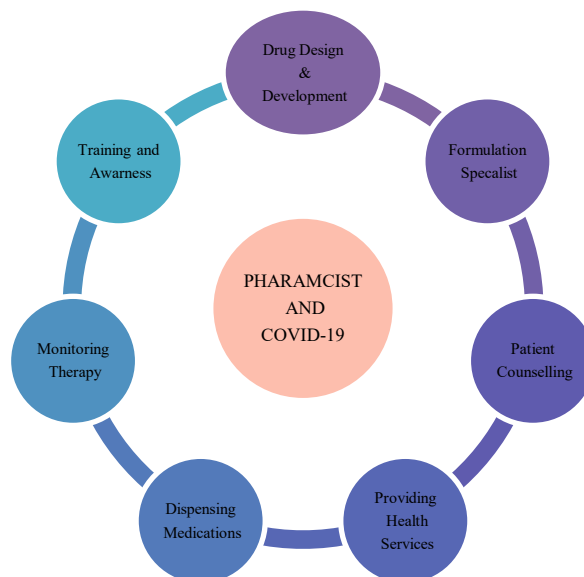


Figure 2: Pharmacist and COVID-19 pandemic

### 3. Conclusion

The incidence of COVID-19 has scrolled up to the peaks and in this high time all the healthcare workers including pharmacists are playing an essential role to optimize patient care during this outbreak. Pharmacist has holdup the responsibility to provide pharmaceutical care and management to speed up and streamline the treatment process. Identifying different therapeutic alternatives and working on it to provide critical patient care is the due role pharmacist has to play. Prioritizing patient's health as topmost, pharmacist has to face hundreds of challenges during war against COVID-19.

### References

- [1]. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *The Lancet*. 2020; 395(10223):497-506.
- [2]. Singhal T. A Review of Coronavirus Disease-2019 (COVID-19). *The Indian Journal of Pediatrics*. 2020; 87(4):281-286.
- [3]. Sohrabi C, Alsafi Z, O'Neill N, Khan M, Kerwan A, Al-Jabir A et al. World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19). *International Journal of Surgery*. 2020; 76:71-76.
- [4]. Zhang J, Ma K, Li H, Liao M, Qi W. The continuous evolution and dissemination of 2019 novel human coronavirus. *Journal of Infection*. 2020.
- [5]. Wang L, Wang Y, Ye D, Liu Q. Review of the 2019 novel coronavirus (SARS-CoV-2) based on current evidence. *International Journal of Antimicrobial Agents*. 2020:105948.
- [6]. Coronavirus [Internet]. Who.int. 2020 [cited 24 April 2020]. Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>
- [7]. Ahmad T, Khan M, Haroon, Musa T, Nasir S, Hui J et al. COVID-19: Zoonotic aspects. *Travel Medicine and Infectious Disease*. 2020:101607.
- [8]. Wu D, Wu T, Liu Q, Yang Z. The SARS-CoV-2 outbreak: What we know. *International Journal of Infectious Diseases*. 2020; 94:44-48.
- [9]. Nicola M, O'Neill N, Sohrabi C, Khan M, Agha M, Agha R. Evidence Based Management Guideline for the COVID-19 Pandemic - Review article. *International Journal of Surgery*. 2020.
- [10]. Jiang F, Deng L, Zhang L, Cai Y, Cheung C, Xia Z. Review of the Clinical Characteristics of Coronavirus Disease 2019 (COVID-19). *Journal of General Internal Medicine*. 2020.
- [11]. Vardavas C, Nikitara K. COVID-19 and smoking: A systematic review of the evidence. *Tobacco Induced Diseases*. 2020; 18(March).
- [12]. Bukhari N, Rasheed H, Nayyer B, Babar Z-U-D. Pharmacists at the frontline beating the COVID-19 pandemic. *Journal of Pharmaceutical Policy and Practice*. 2020; 13(1).
- [13]. FIP Covid-19 Information Hub - FIP - International Pharmaceutical Federation [Internet]. Fip.org. 2020 [cited 24 April 2020]. Available from: <https://www.fip.org/coronavirus>
- [14]. Gross AE, Macdougall C. Roles of the clinical pharmacist during the COVID-19 pandemic. *Journal of the American College of Clinical Pharmacy*. 2020.
- [15]. Zheng S, Yang L, Zhou P, Li H, Liu F, Zhao R. Recommendations and guidance for providing pharmaceutical care services during COVID-19 pandemic: A China perspective. *Research in Social and Administrative Pharmacy*. 2020.
- [16]. Littauer SL, Dixon DL, Mishra VK, Sisson EM, Salgado TM. Pharmacists providing care in the outpatient setting through telemedicine models: a narrative review. *Pharmacy Practice*. 2017; 15(4):1134.
- [17]. ASHP Statement on the Pharmacy Technician's Role in Pharmacy Informatics. *American Journal of Health-System Pharmacy*. 2014; 71(3):247-250.
- [18]. Poudel A, Lau ET, Deldot M, Campbell C, Waite NM, Nissen LM. Pharmacist role in vaccination: Evidence and challenges. *Vaccine*. 2019; 37(40):5939-45.
- [19]. [Internet]. Fip.org. 2020 [cited 24 April 2020]. Available from: [http://www.fip.org/files/fip/publications/FIP\\_report\\_on\\_Immunisation.pdf](http://www.fip.org/files/fip/publications/FIP_report_on_Immunisation.pdf)