Review Article

Strategic Role and Challenges of Community Pharmacists in SARS-CoV-2 Outbreak

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Abstract

This study highlights the importance of community pharmacists' strategic role in hindering the progression of the SARS-CoV-2 virus in the community setting and innovative measures to protect themselves. This article focuses on the features, control, and prevention of COVID-19 and social awareness measures of the pandemic. The means employed by the community pharmacist to safeguard his health while providing pharmaceutical services during COVID-19 is compiled and presented to benefit health-care professionals around the world. As per the US Center for Disease Control and Prevention, community pharmacists play a crucial role in providing essential drugs to patients without knowing their current COVID-19 status. They also work in conditions that make them susceptible to COVID-19 exposure. Despite the availability of guidelines, community pharmacists need to be trained in personal protective equipment for efficient protection and prevention of spread. Community pharmacists are essential frontline warriors against transmission of the SARS-CoV-2 virus in the community and act as frontline workers to educate the public on COVID-19. They are at high risk and need to observe necessary precautions to mitigate the spread of the virus.

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Introduction

Despite the enormous effort by agencies and governments to educate the public about the precautions to restrict the spread of SARS-CoV-2, there has been an unprecedented, unchecked global increase in COVID-19-positive patients. As evidenced by the daily toll for almost a year, infection rates have skyrocketed, with virtually no signs of case reductions. Researchers are working relentlessly to develop acceptable treatment plans, and a vaccine for immunization has many promising candidates at various stages of clinical trials. Despite the advances in medical technology, the only reliable method for curtailing the spread of the virus lies in conventional preventive measures. The health-care system faces numerous challenges due to the uncertainty associated with a new infection. New knowledge is being added daily regarding the virus's changing behavior, new symptoms are emerging, and complications are not properly understood. The only correct approach is prevention with standard disinfection, sanitization, and hygiene measures with physical distancing and quarantine protocols.[1,2]

Community pharmacists represent a vital component of the health-care system. They play a crucial

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role in providing critical health-care services involving dispensing medicines, vaccines, and other therapeutics and medication information. During the pandemic (COVID-19), their services include the regular supply of chronic medication to outpatients and those inflicted with minor ailments who wish to avoid the crowded clinic or health facilities.[1,3] Community pharmacists are the frontline warriors who are the first to contact people with questions on health-care services, concerns, and medications. They attend to various patient's needs, thereby reducing nonessential visits to the physician, allowing more time for the physician to deal with medical emergencies and COVID-19 patients.[4-6]

While engaged in routine prescriptions filling, the community pharmacist is vulnerable to exposure from undiagnosed potential COVID-19 patients.[5] Patients with probable symptoms of SARS-CoV-2 such as fever, dry cough, muscle aches/pains, sore throat, fatigue, runny nose, and diarrhea may seek the pharmacists intervention rather than attending to a primary health-care facility. These patients can transmit the virus to others through droplets of respiratory secretions upon sneezing, cough, exhaling directly, and contaminating surfaces. Most dispensaries are outfitted with air conditioning, which may allow the virus to persist for a more extended period if left on the pharmacy's surfaces. There may be fomite transmission of viruses when a healthy person touches surfaces contaminated by droplets generated during sneezing, coughing, or even speaking by the infected person. The need for pharmacists to get tested lies in the scenario that an infected pharmacist without any symptom may unknowingly become a source of spreading the contagious infection to pharmacy visitors, and therefore, it is advisable for a community pharmacist to stay at home if unwell, whether exhibiting symptoms of coronavirus infection or not. Employers need to be compassionate with employees, specifically those working in a pharmacy with flexible and nonpunitive sick leave policies and other health-care facilities.[4,6,7]

Infected individuals who approach the pharmacy for essential medical supplies can be asymptomatic or presymptomatic. Community pharmacists must always follow Centers for Disease Control and Prevention (CDC) recommendations such as wearing a facemask, especially in the workplace. Alcohol-based hand sanitizers, frequent handwashing, or gloves can be used along with the eyes' protection gear. It is also emphasized by the US CDC to maintain a distance of at least 6 feet from potential patients or customers.[6-9] Moreover, the public should be advised to reserve personal protection equipment such as N95 respirators, isolation gowns, facemasks, eye protection equipment for health-care personnel, and use cloth masks instead, which can limit the spread of coronavirus in the community. Community pharmacists play a viable role in a health-care setting, and additional infection prevention recommendations and guidelines should be followed to keep them safe.[7,8]

Community Pharmacists and SARS-CoV-2 Outbreak

In this article, information about susceptible community pharmacists exposed to the SARS-CoV-2 virus is discussed. Features, control, and prevention of COVID-19 and social awareness measures and means to be employed by community pharmacists to safeguard their health are also discussed. Anecdotal reports of community pharmacists offering improved health-care services through various modes such as medication counseling, screening patients, educating patients on health care, point-of-care COVID-19 medical counseling, advice, and health education are elaborated. Such pharmaceutical services during COVID-19 are essential and are compiled and presented for the benefit of professionals worldwide.

Community pharmacists shared real-time information about drug usage by COVID19-positive patients enabling drug companies to supply priority drugs to manage and control the pandemic's spread. As part of essential services, they coordinated with drug companies to provide adequate medicines to community patients. Information shared by pharmacists is critical for pharmaceutical companies, social organizations, volunteers, personnel, and care coordinators. Community pharmacists keep track of patients through patient education, psychological support, home delivery of drugs, face-to-face interactions, health-care education through posters and flyers, chronic disease management, drug dispensing, consultations, and referrals.[7-10]

Community pharmacists' methods and strategies to offer essential services to patients while wearing recommended personal protective equipment (PPE) gear and training staff for self-protection and prevent spread of the COVID-19 pandemic are compiled and summarized in this article. Community pharmacists are trained with emergency plans, prevention strategies, offer expert consultation, and information on COVID-19 to the patient population, chronic disease management for susceptible and elderly patients, create protocols for potential drug shortages, and screen patients at the behest of physicians and government organizations.[11-13]

Community pharmacists have strategized the Internet, e-mails, online chat, and text messages as tools to remain accessible to patients 24 hours 7 days in a week (24 × 7). Such methods have proven effective in reducing the spread of COVID-19 and considered safer for service providers than regular on-site visits and consultations. Hence, this article shows the recommended approach and model of community pharmacists in controlling the spread of the COVID-19 pandemic, and the methods implemented by them are listed and compiled with tables and diagrams.[10-14]

Results

Role of community pharmacist during the COVID-19 pandemic

1. During these challenging times, maintaining stocks is of utmost importance to ensure adequate drug levels by managing stocks judiciously. As per stocks in hand, a community pharmacist should dispense the prescription for a maximum number of days[11-13]
2. Filling prescriptions is vital for community pharmacists to prepare prescriptions in advance and provide emergency medical supplies for at least 30 days to vulnerable populations such as senior citizens, especially the drugs for chronic conditions such as diabetes, cancer, heart disease, rheumatoid arthritis, and psychiatric conditions. Early refills and doorstep delivery for senior citizens can isolate them from risky surroundings and prevent unnecessary exposure[10,12]
3. COVID testing – Community pharmacist has a pivotal role to play in effective implementation of COVID-19 testing. They participate in public health testing and are involved in collecting, storing, and shipping COVID-test samples. They inform the local and state health administrators to determine eligibility criteria for any individual for COVID-19 testing[11,14]
4. Awareness for prevention of COVID-19 – The pharmacy can serve as a focal point for spreading public awareness about the prevention and control of the SARS-CoV-2 virus. The information on effective precautionary measures to be exercised and the latest update on means to prevent community transmission of COVID-19 needs to be displayed as posters in the patient waiting for area or circulated as social messages to the associated patients.[6] Community pharmacist undertakes to promote infection control and awareness programs and educate the public on coronavirus disease and prevention[13-16]
5. Patient support – The pharmacy operations and procedures are required to be revised and upgraded to cater to the special needs of patients during the pandemic, for example, prospective customers or patients may be contacted online or by a phone call regarding refill requisitions, renewals of prescription, availability, or acquisition of drugs or emergency supplies to avoid the need of inquiries in person. It is important to actively reach out to susceptible patients in need of any assistance. It is important to manage the anxiety and fear of patients through support tips and free counseling[8,16,17]
6. Preventive measures – Staff members should be encouraged to maintain a social distance of at least 1–2 m among themselves and prospective symptomatic or asymptomatic patients. Alcohol-based hand sanitizers in nontouch autodispensers and thermal scanners should be placed at entry points, and proper shielding mechanisms should be employed while interacting. Automatic refilling systems should be established for ease in delivering drugs to patients without waiting in line and exposing themselves in the vicinity of other patients.[11,15,17,18]. It is advisable to use assessment tools to determine if any pharmacy worker needs self-isolation with regular temperature screening at entry and exit.

Risk of COVID-19 for the community pharmacist

It is evident that community pharmacists are at risk of exposure to COVID-19, and many incidences of pharmacists losing their lives owing to COVID-19 infection are reported in the news worldwide. Therefore, public health authorities must raise community awareness about strict adherence to precautionary measures to prevent transmission of the virus.[18-19] As per CDC protocol, community pharmacists or any other health worker involved in sample collection from potential COVID-19 patients are at grave risk since they can unconsciously sneeze or cough. The CDC recommends that community pharmacists are trained to handle respirators specifically as per the Occupational Safety and Health Administration (OSHA) Respiratory Protection standard.[17-20]

As frontline health-care professionals, community pharmacists are at risk of contracting the virus within clinical settings while conferring the treatment to COVID-19-positive patients in quarantine or care centers and intensive care units if proper preventive care steps are compromised. Anyone within the vicinity of an infected person can be exposed by inhalation of the droplets of respiratory secretion produced while sneezing or coughing or by touching infected surfaces transmission of the virus through nose, mouth, or eyes.[18,19,21,22] While filling the prescription, exposure is likely by touching contaminated surfaces such as pill bottles, bags, containers, and supplies. The pharmacies, therefore, should make appropriate arrangements to safeguard the health of pharmacy staff by providing protection, safety mechanisms, and proper training of staff.[22-25]

Common strategies for preventing COVID-19 exposure

Community pharmacists must work for long durations performing physical transactions such as prescription handling, drug dispensing, and cash collection, which exposes them to COVID-19. Maintaining a physical distance of at least 1–2 m from patients and pharmacy workers during any verbal communication is essential to preclude droplet transmission.[20] Hand hygiene plays a crucial role in reducing exposure, and pharmacists must follow intermittent hand washing/sanitizing for 20 s using soap and water or hand sanitizer. Community pharmacists should refrain from touching the eyes, mouth, or nose with unwashed hands, and wearing a mask helps prevent the possible transmission of the virus through these routes. Further, they should avoid sharing personal items such as glass, tea/coffee mugs, breakfast plates, bowls, and laundry towels, and bedding with their family members. A sincere practice of regularly disinfecting and cleaning all exposed surfaces of the pharmacy premises that are touched such as tabletops, desk, chair hand rests, doorknobs, keyboard, mouse, computer accessories, and bathroom fixtures can reduce the chances of exposure substantially. CDC published a list of disinfectants approved by the Environmental Protection Agency.[23,24] While working in a highly infective environment, PPE such as gloves, goggles, or face shields, N95 respirators, face mask needs to be employed.[26-28] An overview of the community pharmacist's role and exposure is collected in Table 1.

Preventive measures when the community pharmacist is sick

To prevent transmission of COVID-19 among employees and visitors, the community pharmacist shall be required to make a log of persons he interacts during duty and keep his status updated on the COVID monitoring mobile app. This is essential to receive a notification if someone he interacted with is found to be COVID positive. One needs to follow standard protocol if suspected of probable COVID-19 infection. It is recommended to get tested as advised by concerned physicians and avail quarantine facility to prevent the spread. A community pharmacist with some symptoms should isolate themselves from other people and stay in a designated room with separate washrooms and other facilities.[29-31] Reports indicate that the majority with mild symptoms of COVID-19 have recovered with preliminary symptomatic treatment at home. As per CDC guidelines, it is advised to take proper diet, rest, and stay hydrated with over-the-counter medications such as acetaminophen, which can help alleviate symptoms. Moreover, any contact with individuals within the community or visiting public places need to be avoided.[31-33] Availing of public transport or riding shared taxis can be dangerous. Maintaining physical distance, especially with family members in the house, is crucial. Moreover, one should always wear face masks and avoid contact with people or pets inside the home. Covering coughs and sneezes to avoid the virus's spread within the community is critical to reducing spread. It's also essential to dispose of used tissues at designated lined trash and wash hands immediately for 20 s with soap and water or hand sanitizer with at least 60% alcohol.[16,17,34-37]

Apart from observing precautions, it is paramount to monitor fever, cough, headache, chills, muscle pain, loss of taste or smell, fatigue, and difficulty breathing. Before visiting a doctor or health clinic, one should inform stakeholders about the symptoms to better prepare themselves to tackle potential COVID-19 patients. Apart from that, in case, the symptoms worsen like troubled breathing, gasping for breath, bluish lips, lower oxygen saturation, state of confusion, inability to arouse or stand up, persistent pain or pressure in the chest, immediate

Table 1: An overview of community pharmacist's role, exposure, and precautionary measures implemented during the COVID-19 pandemic

Role	Exposure risk	Precautionary care
Awareness programs to educate the public on coronavirus disease prevention and promote infection control	Exposure to respiratory droplets from an infected person while coughing or sneezing	Social distancing 1-2 m, cleaning and sanitization of exposed surfaces
Refill prescriptions and dispensing for the elderly during the self-isolation period	Touching contaminated surfaces such as pill bottles, bags, container, and supplies	PPE - face mask, gloves, goggles, or face shield, N95 respirator
Assessment of illness to determine the need for self-isolation. Counseling and support tips for managing anxiety and fear	Proximity to patients and shedding of virus in the air can lead to transmission of the virus through the mucous membrane	Touching nose, eyes, and mouth with contaminated gloves or hands should be avoided
Manage stocks in hand rationally, conduct meetings with staff members, and recognize symptoms of susceptible patients or customers in the pharmacy	Asymptomatic patients can infect through microdroplets through entry points like the nose, eyes, or mouth fomite transmission	Handwashing with soap and water for at least 20 s or using at least 60% alcohol-based hand sanitizer to prevent the spread of the virus

PPE=Personal protective equipment

medical attention should be sought, and it is important to stay in touch with a doctor for emergency medical care.[31-33,38,39]

COVID-19 training of community pharmacist

Community pharmacists should be trained to adhere to CDC standards and transmission-based precautions, especially with susceptible COVID-19 cases. One needs to be trained to identify proper gear and conversant about the care to be exercised while putting on PPE. A trained community pharmacist should be able to put on an isolation gown of appropriate size, perform hand hygiene using sanitizer, able to use the National Institute for Occupational Safety and Health (NIOSH) approved N95 respirator or facemask in a proper manner that eliminates chances of exposure. N95 respirators are proven to filter 95% of 0.3 μ particles. Moreover, they fit perfectly over the face as they are more efficient than face masks.[38,40] As per the US Food and Drug Administration, the NIOSH and OSHA approved N95 respirator has an efficient filtration mechanism to protect against airborne particles and liquids contaminating the face. It should also be noted that they do not necessarily prevent illness. CDC also recommends not to wear the respirator or face mask below the chin. Apart from that community pharmacists should also be encouraged and trained to use face shields or goggles as they offer extensive coverage for the face and suffer a disadvantage that fogging may occur. Hand hygiene is crucial as pharmacists tend to touch prescriptions, receipts, various medications, pill containers, pharmacy bags, and supplies. It is also essential to note that the gloves should cover the gown's wrist, and proper technique for effective handwashing should be employed.[39-41]

It is equally essential that training about taking-off PPE gear without causing contamination is administered correctly. The gloves can be removed using more than one technique like a bird breaking method and put on using glove closed technique [Figures 1-3]. Similarly, removing the gown also requires specific procedures for untying all straps or breaking it down and safely disposing it to the trash receptacle. Face shields or goggles should be removed by pulling them upward over the head and not touching the face shield or goggles' front. Similarly, regarding the N95 respirator or face mask, the respirator's lower strap must be removed first, and then the top strap is pulled over the head and taken away from the face. Face masks should be untied first and pulled away from the face without touching the front. In the end, performing hand sanitation is also quite important.[42-46] The safety instructions applicable to the use of PPE are summarized in Table 2.

An additional consideration for the community pharmacist

As per the US CDC and United States Department of Labor guidelines, health-care professionals, especially community pharmacists, should follow standard operating procedures as per standard number 29 CFR 1910.1030 and 29 CFR 1910.132. It is also important to organize regular meetings with staff members to discuss relevant COVID-19 updates. An emergency preparedness plan should be established to deal with accidental exposure of the pharmacy to potential risks. Cleaning schedules should be strictly followed to ward-off disease-causing pathogens. Pharmacy operation timings in terms of handling prescriptions should be managed in a staggered way to minimize crowding. The pharmacy may collaborate with the physician, who may pass on prescriptions for their respective patients in advance by mail or fax.[44-47]

Discussion

As per the study conducted by Ung *et al*., 2020 community pharmacists play defining roles in combating the spread of the SARS-CoV-2 virus. The International Pharmaceutical Federation released guidelines recommending pharmacists worldwide with information regarding novel coronavirus disease 2019 outbreak and understanding pharmacists' role.[41] Bukhari *et al*., 2020, point toward guidelines endorsed by government and private bodies and pharmacists' role in the community. This includes advising patients with signs and symptoms of COVID-19, dispensing medications, sharing updates with staff members, sanitation of the premises, raising awareness, and maintaining an uninterrupted supply of drugs in the pharmacy. Zheng *et al*., 2020, show the versatile role of community pharmacists in consulting, the COVID-19 pandemic management, and patient education, the supply of protective equipment to patients and ensuring safe drug dispensing. The article also emphasizes the importance of staff training about self-protection, identifying susceptible symptoms of COVID-19, counseling regarding medications and management support for the elderly. A study by Cathol A. Cadogan *et al*. shows community pharmacies' role in offering skilled support in reducing transmission routes and helping the community understand the pandemic. They also help minimize cross-infection by providing a safe environment and screening of patients within the pharmacy premises.[1] Suspected cases with cough, fatigue, high body temperature, and sore throat with dry cough are advised to seek immediate medical help. A study by Carico *et al*., 2020, highlights the role of community pharmacists in limiting the spread of the SARS-CoV-2 virus through reinforcing behaviors such

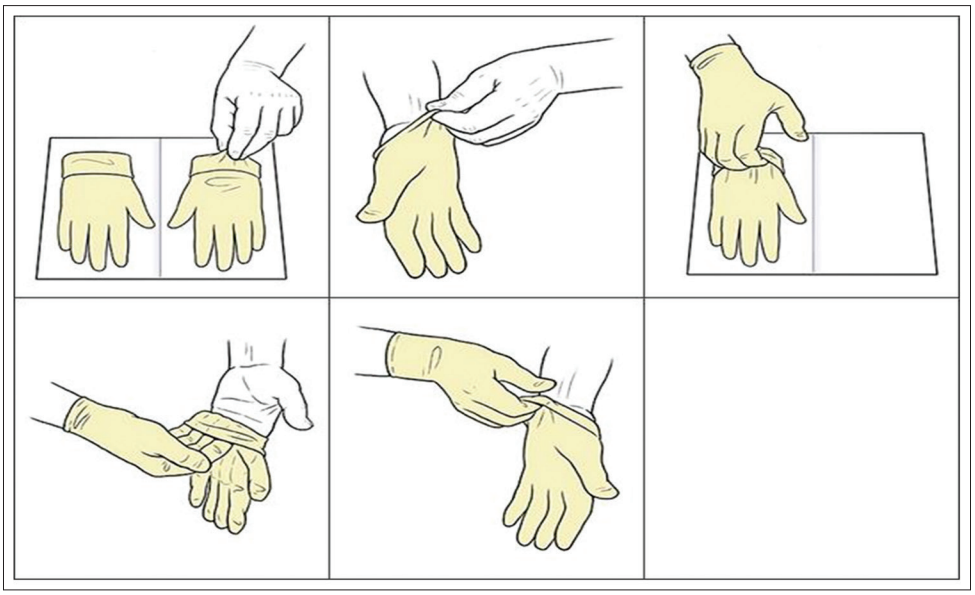

Figure 1: Procedure for the safe removal of gloves – Bird Breaking Method[37]

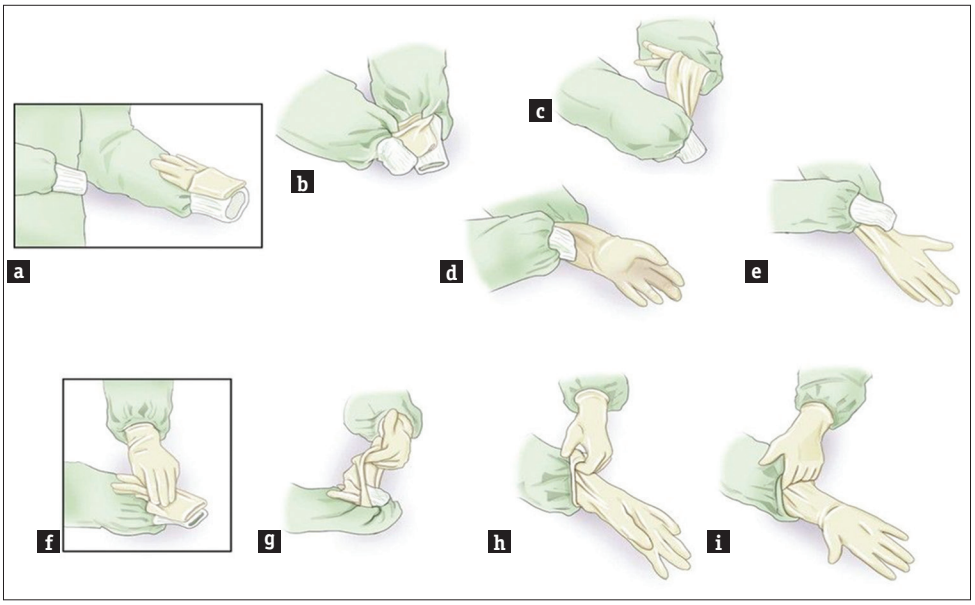

Figure 2: Glove closed technique[30]

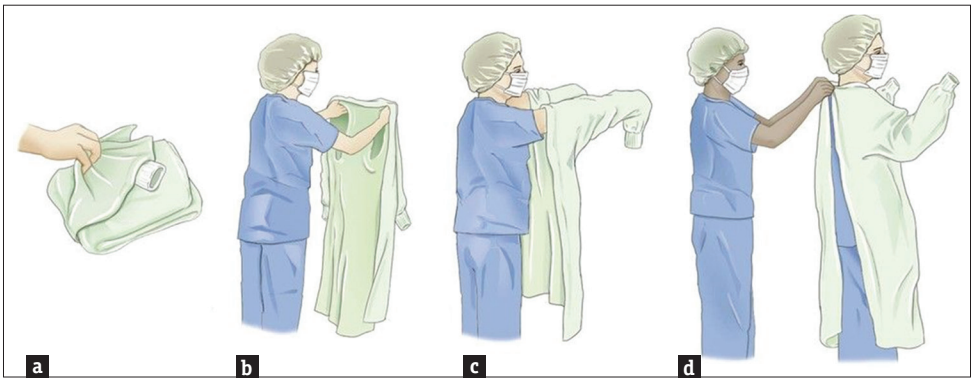

Figure 3: Self and assisted gowning technique[30]

Table 2: List of essential personal protective equipment recommended for community pharmacists

PPE	Safety instructions
PPE gear - gloves	Hand hygiene is crucial before putting on gloves. It should cover the cuff or wrist of the gown. The glove bird beaking technique should be followed while removing gloves[12]
NIOSH approved N95 respirator	It should fit properly to the nose without being bent or tented. The nosepiece of the respirator shouldn't be pinched. The respirator should be strapped on the head and base of the neck. A seal check should be performed. It should be removed without touching the respirator's front and pulled upward and away from the face[31]
Facemask	It can be used if N95 respirators are not available. They can be tied on the crown of the head and base of the neck. Any loop should be tied around the ears. While removing, it should be gently untied and pulled away from the face[32,33]
Isolation gown	It efficiently keeps the clothing beneath free from pathogens. While putting it on, it should be secured tightly. While removing it, it should be rolled down and disposed off in the trash receptacle[34]
Goggles	It is efficient in protecting the eyes that are considered one of the virus's entry points[35]
Face shield	Fogging is a common issue in face shields, but they offer better protection in virus entry to the transmission sites like eyes, nose, or mouth. They need to be adequately strapped. While untying, they can be pulled away from the face without touching the front[36]

PPE=Personal protective equipment, NIOSH=National Institute for Occupational Safety and Health

as social distancing, staying at home, and deploying assessment tools. It also helps communities with relief supplies from government and local organizations by offering support to individuals in distress and guiding the district toward understanding the disease. A study by Li *et al*., 2020, emphasizes innovative strategies formulated by community pharmacists in their fight against COVID-19. It also shows the importance of rationalizing medicine and lowering the risk of transmission of disease. It also discusses patients' education in terms of therapeutic drug doses, assesses mental state, nutritional treatment, risk assessment, and ensuring access to essential medicines for patients. Overall, community pharmacists are frontline health professionals exposed to the SARS-CoV-2 virus through susceptible patients. Their efforts amid operational challenges and offering critical, innovative pharmaceutical services to patients in need are exceptional and invaluable.

Conclusion

Community pharmacist plays a crucial role amid the COVID-19 pandemic. Regular updates with staff should be shared regarding COVID-19 with regular health checkups using a self-assessment tool and monitoring body temperature to maintain a healthy pharmacy environment. Social distancing from patients and staff members should be supported with an efficient use of PPE to avoid virus transmission within the pharmacy workers. Sufficient stocks should be kept to prevent a shortage of drugs, and prescriptions should be filled without delaying patients, specifically the elderly with comorbid conditions. Community pharmacists are always at risk of contracting the virus; hence, proper hand hygiene with added layers of protection such as gloves, face shields, goggles, N95 respirators, and isolation gown can be worn to keep themselves and their patients safe. Apart from that, public education through posters and general medical counseling can be provided to manage fear and anxiety about COVID-19 and avoid nonessential queues at physician's offices. Finally, automated dispensing of medications should be implemented to avoid unnecessary exposure of community pharmacists, and prescriptions could be faxed from the physician's office to avoid unnecessary delays during the present COVID-19 pandemic.

Authors' Contribution

Debjyoti Talukdar performed a literature search, acquired data, prepared, edited, reviewed, discussed, and contributed to the final manuscript. Madan Mohan Gupta prepared, edited, reviewed, and contributed to the final manuscript. Satish Jankie, Shyam Sundar Pancholi, Arindam Chatterjee, and Praveen Kumar contributed to the original draft and reviewed the final manuscript.

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Conflicts of interest

There are no conflicts of interest.

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