Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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REVIEW

Expanded roles of community pharmacists in COVID-19: A scoping literature review

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ABSTRACT

Background: Coronavirus disease 2019 (COVID-19) has affected the world health care system adversely, but it has also brought out innovative roles for health care professionals to cater to growing health care needs. Community pharmacists provide community pharmacy services and can play a vital role in fighting the pandemic by taking on novel roles that complement their pre-existing roles.

Objectives: This study aimed to provide a scoping review of current and emerging literature about the novel roles adopted by community pharmacists during the COVID-19 pandemic.

Methods: Online databases such as Google Scholar and PubMed were searched systematically using the keywords "COVID-19," "pharmacist," and "community." Articles were selected based on availability of full text in English language, with time limit from December 1, 2019, to October 31, 2021; case reports, cross-sectional studies, literature reviews, qualitative studies, and systematic reviews were included, whereas commentary reviews and editorials were excluded from the search methodology. An independent review of the articles was conducted for inclusion based on relatability to study subject; those chosen were screened for references to find additional gray literature. Findings were arranged in themes, and the results were organized accordingly.

Results: Novel roles for community pharmacists were found in relation to maintenance of drug-supply chains, delivery of telepharmacy and telehealth services, provision of ambulatory pharmacy services, use of digital software to coordinate medication delivery for patients with chronic conditions, dispelling of misinformation, and roles in research and clinical trials. Roles in a post-COVID world regarding immunization of population and involvement in lifting lockdown strictures alongside other stakeholders were also explored.

Conclusion: Although COVID-19 has challenged the health care system, it has also provided an opportunity for development of novel and innovative roles that can ultimately have profound consequences for the health care system. Community pharmacists, despite facing multiple challenges in the community, should be facilitated to adapt with these new roles, which can be beneficial in achieving mass immunization and better health care in a post-COVID world.

Background

The coronavirus disease 2019 (COVID-19) pandemic has affected almost every profession in the world. Sociocultural repercussions aside, the impact of COVID-19 on already strained health care resources has been enormous. According to economic estimates by the American Hospital Association, $50.7 billion per month of lost revenue affected America's hospitals and health care systems.[1] The impact has been worse in developing countries, where a delayed public health response led by limited resources and overworked health care force has led to mayhem.[2]

The role of both community and hospital pharmacists in this pandemic has been multifold. Pharmacists have not only served to ensure medication management and patient adherence but have also played an important role in providing essential services, providing frontline health care workers with drug information regarding novel coronavirus treatments, developing remote health care services, and

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Key Points

Background:

- Community pharmacists have been at the forefront during the COVID-19 pandemic.
- The pandemic has encouraged community pharmacists to take on novel and innovative roles.

Findings:

- Expanded roles of community pharmacists include telepharmacy, ambulatory pharmacy and telehealth services.
- They also include community education, vaccine dissemination, and role in clinical research.

developing awareness of and providing infection control measures.[3–5]

Owing to restricted resources and unequal access to health care in lower- and middle-income countries (LMICs), community pharmacists have been at the forefront of providing direct health care to patients. Not only have they played their traditional role of delivering medications to patients, but they have also performed additional duties regarding patient education, promotion of telehealth services, triaging of patients to reduce the load on hospitals, screening for COVID-19, and promoting clear concepts regarding COVID-19.[6] Similarly, their peers working in hospitals have played an important role in managing drug shortages and assisting physicians in development and recruitment for clinical trials of novel therapies and in patient education and medication management.[7]

Community pharmacists not only provide general health care advice but are also involved in dispersal of prescription and nonprescription medications in a community setting, such as a pharmacy chain or a supermarket pharmacy. They also play a role in training and management of staff and in keeping statistical and financial records and budgeting and marketing in the community. Community pharmacists are also involved in designing and implementation of patient care plans and ensuring follow-up evaluation of drug efficacy outcomes. In the COVID-19 pandemic, these task roles have been further augmented, owing to overburdening of the health care infrastructure and lockdown restrictions in various communities.

Objectives

The objective of this scoping literature review is to provide a systematic overview of the novel and expanded responsibilities that pharmacists working in the community sector and providing pharmacy support to various communities have undertaken during the COVID-19 pandemic. Highlighting these key contributions is aimed at providing a framework for restructuring of pharmacy services and to establish the key role that pharmacists have played as frontline health care workers during the COVID-19 pandemic.

Methods

A systematic literature search was carried out on Google Scholar and PubMed databases. The keywords “COVID-19,” “pharmacist,” and “community” were used to search the literature. Articles were selected based on availability of full text in English language, with time limit from December 1, 2019, to October 31, 2021; case reports, cross-sectional studies, literature reviews, qualitative studies, and systematic reviews were included, whereas commentary reviews and editorials were excluded from the search methodology. Studies discussing the role of hospital pharmacists were included in the final review only if they offered relevant information regarding the thematic roles of community pharmacists as well. Studies in English only with full text available were included only, and studies that were not relevant to COVID-19 or included mention of other health care workers than pharmacists were also excluded. An independent review of the articles was conducted for inclusion based on relatability to study subject; those chosen were screened for references to find additional gray literature. The literature search strategy is highlighted in a flowchart in Figure 1. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews checklist was used for reporting the search methodology (Appendix 1).[8]

Because the study topic mostly included qualitative themes with guidelines and recommendations based on various reviews, statistical analysis was deferred in favor of thematic analysis, in which major themes were extracted and curated data from various sources were systematically presented in this review.

Results

Of 130 articles assessed for eligibility according to the inclusion criteria, 56 were finally included in the qualitative synthesis. Baseline data regarding author information, publication year, and country of publication were extracted. Because varying studies had different accounts of novel/expanded roles of community pharmacists, initially all such roles mentioned were broadly included in the thematic analysis as presented in Figure 2. Furthermore, all of the mentioned roles were cross-referenced across studies, and exhaustive relevant findings from the literature review have been described below. Eight major categories emerged from literature appraisal, which are outlined in Figure 2.

Ensuring uninterrupted drug-chain supply

Pharmacists have played an important role in ensuring smooth flow of the drug-supply chain during the pandemic. The COVID-19 pandemic led to a gross imbalance between the supply and demand of drugs; this was further potentiated by decreased production and increased stockpiling by individuals, companies, and even countries in some instances.[9] The impact of this has been even more striking in LMICs, where the unavailability of pharmaceutical imports and decreased production have led to increased vulnerability of patients with chronic diseases and those with general pharmaceutical needs.[3] The role of pharmacists has expanded from refilling medicines to providing a therapeutic substitution for

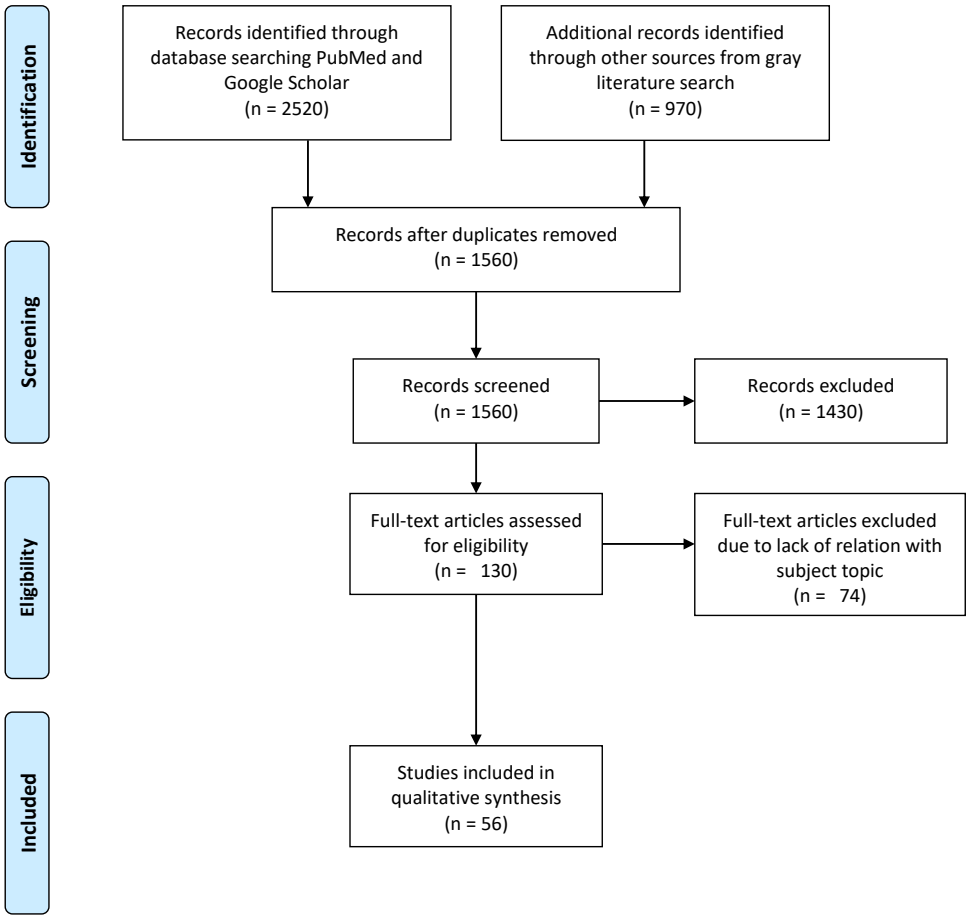

Figure 1. Flowchart of study selection criteria.

physicians, which has helped in ensuring the continuity of care during the pandemic.[10] In one study, it was shown that more than 50% of patients with chronic diseases relied on community pharmacists for both medication-related advice and COVID-19–related information owing to decreased access to clinics and fear of infection—indicating that chronic disease management in vulnerable populations is likely to improve with more and active participation of community pharmacists.[11]

In China, where the pandemic first struck, pharmacists have developed a "pharmacy emergency support guarantee system"; this relies on active surveillance to point out drug shortages, so that emergency drug supply and distribution are ensured.[12] In China, community pharmacies have achieved this goal by the use of mobile applications, based on artificial intelligence, to collect and store data about drug availabilities; these data can be shared across pharmacies and can also be used to guide patients where to buy their medications from or alternatively provide medications at home through a mail-in delivery service or through community and social workers.[13] Pharmacists can also monitor digital patient queries related to COVID-19 medications such as remdesivir and can stock and supply these medications where needed; they can also play a role in safety and efficacy monitoring of these medications, with real-time feedback loops to encourage or discourage prescription behaviors.[12,14]

Ensuring a drug-supply chain has also extended to ensuring that certain items such as hand sanitizers, gloves, and face masks are available to the public, along with correct guidance on their usage. Community pharmacists can ensure a stable supply of these items of personal protection for the public, as these are nonprescription and easily available.[12] They can also set standard costs for personal protection items to halt the rising trend in their prices, so as to increase public availability and adherence. As evidenced by the misuse of chloroquine during the pandemic owing to public miscommunication, community pharmacists also need to stay up to date with local guidelines and to resist dispensing drugs without approved benefit.[15]

Infection control measures

Pharmacists in the community setting need to implement and educate regarding infection control measures. In a cross-sectional survey of community pharmacists in Australia, published almost a year after the beginning of the pandemic, only one-third of participating pharmacists knew about the 2-step cleaning and disinfection practice for their workplace, and only half of these were practicing such cleaning procedures.[16] However, in another cross-sectional survey of community pharmacists undertaken in Egypt, good compliance was found with infection control measures, including wearing masks (86.7%)

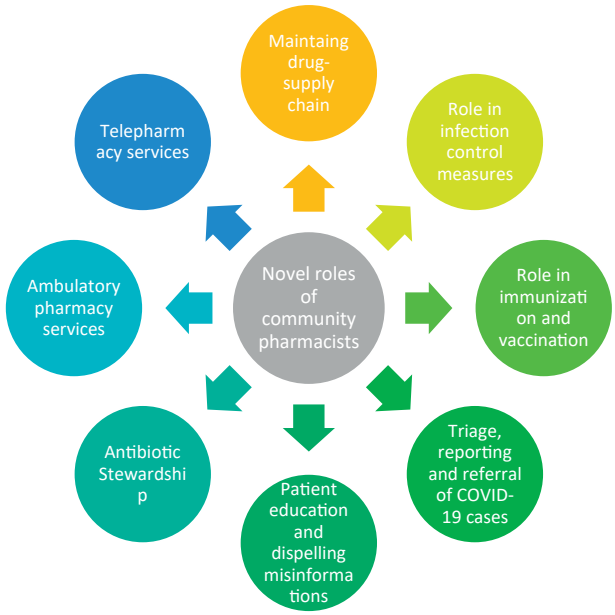

Figure 2. Novel roles of community pharmacists in the COVID-19 pandemic. Abbreviation used: COVID-19, coronavirus disease 2019.

and gloves (54.2%), regularly sanitizing surfaces (89.8%), and sanitization with 70% alcohol (86.2%), among other measures.[17] A descriptive study conducted among health care workers in Ghana also found lower adherence to infection prevention measures such as hand sanitization and wearing personal protective equipment (PPE) in pharmacists; however, because the participation of pharmacists in this survey was very meager (1.8%), the results cannot be extrapolated as a generalization.[18]

Community pharmacists have the added role of not only maintaining infection control measures in their pharmacies and community units, but also in educating their patients about sanitization measures at home. Owing to higher influx of patients at community pharmacies than hospitals that are overburdened with sicker patients, infection control becomes even more important; the same places that are promoting well-being during the pandemic should not become hubs for microepidemics.

Telepharmacy and telehealth consulting

Telepharmacy, using digital communication tools, is another novel innovation that has come to light because of the COVID-19 pandemic. Owing to risk of contagion spreading, outpatient and community pharmacy settings have adapted to telepharmacy and telehealth consulting services. In Spain, this model has been adopted by hospital pharmacy services in collaboration with primary care physicians and community pharmacists: drug dispensing based on geolocation and hospital-based medication dispensing have improved universal access and traceability at the cost of patient confidentiality and increased use of resources.[19] An online pharmaceutical service based on a mobile-based application was launched in Huazhong University of Science and Technology, mainland China, to provide pharmaceutical services related to drug dispensing and monitoring to patients remotely.[12] In another hospital setup in Thailand, clinical pharmacists effectively monitored patients remotely, especially with regard to drug dosing design, through the telemedicine unit.[20] Telepharmacy increases the access of vulnerable patient populations, especially those with COVID-19, to health consultation services; in a prospective observational study conducted across United Arab Emirates, it was found to decrease the rate of medication dispensing errors and prescription-related errors and improve pharmacist counseling of patients.[21] Thus, patients contacted through telepharmacy services were found to be more likely to get tested, maintain home quarantine, and take paracetamol for fever associated with COVID-19.[22] The spectrum of telepharmacy services extends from patient assessment and education to dispensation of prescribed medications to drug surveillance, monitoring, and assessment of treatment outcomes.[23]

In the post-COVID world, community pharmacists can take on the role of telepharmacy and telehealth services, especially in communities with poor or limited access to health care resources (Figure 3). Considering the continued strain the COVID-19 pandemic continues to impose, both financially and on the health care workforce, telepharmacy can not only help reduce financial costs but can also improve health care access.[24] Community pharmacists can also encourage their communities to maintain sanitization measures, respect quarantine sanctions, consult a health care provider when needed, and get referred readily when needed.

Ambulatory pharmacy and contactless payment services

Ambulatory pharmacy services have also sprung as a novel way of providing health care to patients with chronic diseases and those transitioning from hospital inpatients to home care. The Yale New Haven Health System started an ambulatory pharmacy response team, in response to the long-term emergency imposed by the pandemic. The ambulatory action team included adult, pediatric, and oncologic pharmacy services, specialty pharmacy services, and community pharmacy services. In communication with key partners including ambulatory care providers and medical leaderships, the pharmacy team catered to outpatients, providing support for medication dispensation and provision for diabetes, patients with hypertension, those requiring anticoagulation, and those requiring outpatient parenteral antibiotics. In collaboration with telehealth visits, this service was able to improve patient medication management.[25]

Ambulatory pharmacy services include comprehensive medication management services, which ensure that each patient's medications are safe, effective, and achieving their therapeutic goal and that the regimens are being followed as intended. This is not only a means of ensuring patient safety but also for enrolling new patients in medication access programs. This role of pharmacists during the pandemic has expanded to include triaging of patients at home and provision of medication and insurance coordination, in conjunction with telepharmacy services.[26] In France and The Netherlands, community pharmacists delivering home medications played a unique role by reporting cases of domestic violence to their pharmacy and law enforcement agencies; this shows how important ambulatory pharmacy services can be for vulnerable populations.[27]

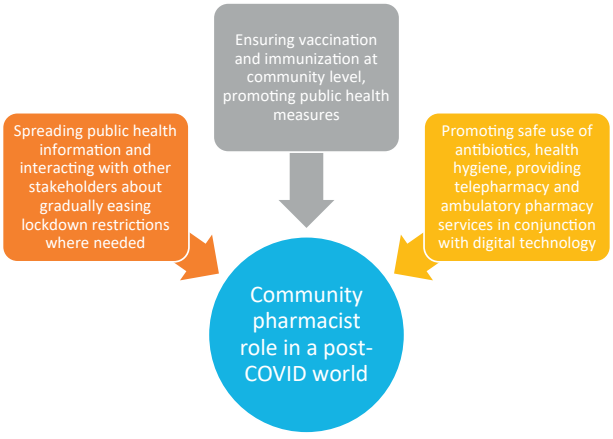

Figure 3. Novel roles of community pharmacists in a post-COVID world. Abbreviation used: COVID-19, coronavirus disease 2019.

Community pharmacists can play an important role in providing ambulatory pharmacy services in their communities. Community proprietors can shift the pharmacy structure to an "on-wheels" system, whereby pharmacists can provide much of the same services as usual but with easier access to patients restricted at home owing to lockdown sanctions in many communities. Moreover, contactless payment systems using Visa machines can also be integrated in the routine and ambulatory pharmacy infrastructure, thereby maintaining minimal contact precautions and ensuring safety measures.[17]

Antibiotic use stewardship

Community pharmacists have an important role to play in the stewardship for proper use of antibiotics as well. COVID-19 has globally increased antibiotic misuse, even in mild cases, against recommendations by the World Health Organization. In a study conducted across Egypt, it was found that almost 93% of patients presenting at community pharmacies received antibiotics either with (82%) or without (18%) a prescription, with azithromycin being the most common antibiotic prescribed.[17] These prescription patterns for mild COVID-19 symptoms were more prevalent among older, more experienced pharmacists. Because of this, 37.7% of participating pharmacists reported azithromycin stock deficiency; however, most antibiotic doses dispensed were appropriate.

Blind and inappropriate antibiotic use has also previously been discouraged by various societies and organizations generating guidelines for COVID-19 treatment.[28,29] Community pharmacists, especially during the COVID-19 pandemic, are at the forefront of delivering health care services in their community, including guiding patients about prescription antibiotics, and, where appropriate, dispensing parenteral antibiotics as well. Appropriate education of community pharmacists through anti-infection consultations and formulation of rational regimens can help prevent antibiotic misuse at a community level, especially in COVID-19 cases where broad-spectrum antibiotics may cause more harm than good.[29]

Patient education during infodemic

Community pharmacists catering to a community have a unique opportunity to educate patients and dispel their doubts and misinformation regarding the COVID-19 "infodemic." With COVID-19 spreading worldwide, multiple partially correct or fake news items have appeared on the Web; these allegations can pose a serious risk to the integrity of health information on COVID-19, affecting preparedness and response of population to this disease.[30–32]

Patient education and the provision of updated information can serve as preventative measures against COVID-19; in a study in Egypt, most pharmacists (96.4%) were found to provide information and education about infection control, disease transmission, and hygiene practices to patients inside their pharmacies. Approximately half of the participating pharmacists were providing similar information through social media pages, whereas 33.7% had printed flyers and posters with updated information in their pharmacies.[17] With multiple drugs being purported as a cure for COVID-19, pharmacists also have a role to play in counteracting falsified claims, serving as a point of reference to assist health authorities in providing correct information to public. For this purpose, self-education of pharmacists is also necessary. In 1 study conducted in Turkey in June 2020, although most participating pharmacists were aware of airborne transmission route, main disease symptoms, major at-risk groups, and basic preventative measures, 72.6% of participants themselves were not wearing any kind of mask.[33] Similarly, in another cross-sectional study, less than 90% of community pharmacists were found to have adequate knowledge of COVID-19 prevention.[34] The sources of information for pharmacists themselves included social media as a predominant source,[33,35,36] indicating that media can influence the risk perception abilities regarding a pandemic. Another study in Dubai, United Arab Emirates, found that pharmacists with greater experience had better knowledge of COVID-19 and its management and were likelier to designate specific areas for suspected COVID-19 cases than others, indicating that preparedness for the pandemic may be reflected by level of knowledge.[37]

Therefore, community pharmacists can take on this new role of educating the public inside and outside their pharmacies. As part of community chains or supermarkets, pharmacists can take it on themselves to make sure that correct information is highlighted at key spots of public visitation. For patients with chronic disease, counseling can include a component on disease prevention related to COVID-19. Similarly, telepharmacy consultations can include electronically recorded messages or infographics providing information about preventative health measures.

Triage, risk assessment, reporting, and referral of COVID-19 cases

Community pharmacists can provide triage for COVID-19 cases in their pharmacies and can report and refer patients for testing, especially if it is being provided on site by their community chain, as is the case in some places in North America.[12] They can do this in one of 2 ways: by triaging patients without a prescription based on common COVID-19 symptoms and referring those with a high suspicion to a

testing area or by offering testing to patients prescribed treatments for COVID-19 by ambulatory or telehealth services. Although so far the number of referrals for potentially infected patients has been low despite adequate knowledge of pharmacists about the disease,[38] this can increase over time. In the United States, access to a community pharmacy is easier than access to a hospital; therefore, pharmacies that offer point-of-care testing can not only increase the testing frequency but also decrease burden on other health care centers. This is especially true for minority and vulnerable populations; Patel et al.[39] reported in a survey conducted in a lower-income Hispanic majority community that point-of-care COVID-19 testing by community pharmacists was highly preferred by patients and was seen as a means of expanding their access to health care. Moreover, pharmacists can initiate early antiviral treatment when indicated or refer acutely ill patients to hospitals timely, playing a major role thereby in decreasing burden on hospital emergency departments and conserving health care resources in this time of need.[5,40]

Role in immunization and vaccination programs

Currently, multiple vaccines have been approved by the U.S. Food and Drug Authority for emergency use authorization in COVID-19. These vaccines have performed excellently in clinical trials at preventing transmission and preventing serious COVID-19 infections.[41] Pharmacists in the community sector can offer a unique insight to vaccination programs: they can not only serve as sites for vaccination but can also conduct adverse-effect and outcome testing for vaccinated individuals using the same ambulatory and telepharmacy services described previously.

In a study conducted in Poland to determine the readiness of community pharmacists to provide vaccination services, those pharmacists who had been trained in vaccination were found to be more ready to offer vaccinations in community pharmacies. Major perceived barriers to this idea were increased workload, lack of training courses, and lack of infrastructure for immunization services.[42] Despite the barriers that may occur, pharmacists legislated to provide vaccines can dramatically affect the community immunization. As underutilized health care individuals, community pharmacists who are well aware of their patients' needs and medical history are perfectly poised to vaccinate their populations, as a step toward achieving herd immunity.[43] Another survey in Puerto Rico reported that more than 75% of community pharmacists were willing to treat and to administer vaccines to patients; working in community pharmacy and educational status of PharmD degree or higher were factors linked with increased willingness to immunize.[44]

Based on operational models for pandemic vaccinations at regional supermarket chain pharmacies, it has been suggested that health authorities can provide epidemiologic data to pharmacies to scale a projected pandemic response. Hub pharmacies at the center of regions with the ability to accommodate large patient volumes, pharmacies located at major roads or intersections, and those with large parking areas can be ideal as vaccination centers for in-store or drive-through vaccination; the presence of multiple stations for pre- and postvaccination waiting will be a further advantage. Community pharmacists can divide duties at these locations, with floating pharmacists providing pharmacy services, whereas pharmacy technicians, students, and interns can play role in vaccination. With proper training, establishment of a supply chain, and documentation in line with local recommendations, this can be a viable model to promote COVID-19 vaccination at community pharmacy chains.[45]

Other roles

Community pharmacists can play several other novel roles during the COVID-19 pandemic. These roles can be further subdivided into participation in prevention of disease, preparedness at local and national levels, responding to community-level issues, and playing a role in individual and community recovery from the repercussions of the pandemic.[46]

Extended roles for pharmacists include participation in clinical trials and experimentation for new drugs. As community stakeholders, pharmacists can play a role in recruitment of patients, in dispensing of drugs, and in following up patients for adverse effects.[12] Community pharmacists can also arrange community meetings in schools and recreation centers, where they can ask and answer queries regarding COVID-19. This role, initially related to spreading information about disease prevention, can now be expanded to answering community queries regarding immunization and vaccination.[47]

Pharmacists can play an important role in providing consultations for minor ailments and in medication renewal for chronic conditions.[6] During the time of a pandemic, one major role that pharmacists can perform is ensuring health equity, especially for ethnic minorities. Community pharmacists can provide health care access to populations that are usually deprived, owing to geographic or socioeconomic constraints, from visiting health care facilities. They can further provide vaccination services remotely for these population subgroups, ensuring universal health coverage for all.[12,48]

In Taiwan, community pharmacists also undertook the role of rationing PPE and providing masks to the community during the initial days of the pandemic. This model of using community pharmacies for health care resource rationing during times of need can also be implemented elsewhere, especially with continued PPE shortages in the United States.[49]

Discussion

Paradigm shift in community pharmacy practice

The COVID-19 pandemic has led to a paradigm shift in community pharmacy practice, by expanding pre-existing roles of community pharmacists and introducing novel roles. From the role of dispensing medications to becoming major health care stakeholders in patient-centered care, the role of community pharmacists has evolved quickly during the pandemic. According to Nadeem et al.,[50] community pharmacy has undergone shifts in paradigm, perspectives, and responsibilities: pharmacists were previously involved in COVID-19 community testing and are now also involved in community immunization programs. Moreover, they have

been authorized to compound and dispense certain medications and substitute and repackage therapeutics and provide temporary exemptions for controlled substances—roles that have rendered them fully accountable for patient medications. In the United Kingdom, it has been recommended that key governmental decision makers should increase community pharmacy engagement as stakeholders in the pandemic response, by involving them in policy making, providing adequate funds, regulating novel roles such as vaccine administration, and clarifying the public health agenda role for community pharmacies.[51] Legal extensions of pharmacist roles in this regard have been of immense help for overloaded health care systems worldwide and have ensured that the full potential of community pharmacists beyond dispensing drugs is duly recognized and used.[52]

Challenges for community pharmacists during the pandemic

Community pharmacists have experienced unique challenges during the COVID-19 pandemic. This includes decreased revenue because of lockdown strictures; poor population response to education provided by pharmacists, especially in lower-income countries; and shortage of medical supplies and PPE.[53] In certain lower-income countries, where community pharmacies do not have support from health care regulators, it has not only been difficult to establish proprietary services with fair profit margins, but dispelling the public viewpoint about pharmacists being just medication dispensers has also been challenging. The lack of support from pharmacy proprietors to community pharmacists in the midst of an unwelcoming community has also been a challenging factor in role fulfillment of community pharmacists in these settings.[54] Pharmacist readiness and the need for compounding essential medications that have been purported or approved as COVID-19 treatments are a key challenge: more than ever, now pharmacists have to educate their patients about potential roles, adverse effects, and efficacies of treatments offered for COVID-19 and provide monitoring on a community level.[55] Regarding the preparation of isolation areas in pharmacies and preparation of vaccination areas, this can be challenging for community pharmacists because they will not only put financial constraints but also impose the risk of exposing pharmacy staff to COVID-19. Moreover, following standard operating procedures inside small community pharmacies can be time consuming, adding to a potential loss of profit for these pharmacies.[7]

In a study conducted in Saudi Arabia to determine perceived barriers among pharmacists for taking up nontraditional roles, it was reported that physician and patient reluctance toward pharmacist advice and the lack of practical training at undergraduate level are the major barriers felt by pharmacists. The participants generally felt that support provided by policy makers was adequate and that increased interdisciplinary communication can help prepare pharmacists in uptaking more nontraditional roles.[56]

Recommendations for community pharmacists: new roles in a post-COVID world

The new roles of community pharmacists in a post-COVID world coincide with the ending of lockdown restrictions and the incidence of mass immunization programs worldwide. Pharmacists now have expanded roles; not only are they important public health stakeholders, but they are also at the forefront of ensuring that the post-COVID world does not fall into disarray as it did during the pandemic.

Community pharmacists can help other public stakeholders in deciding when to ease lockdown strictures. It has been shown in many instances that early lifting of restrictions led to a relapse of disease spread. Pharmacist-driven public health interventions can potentially play a role in mitigating this effect.[12] Even though vaccination programs have started and are growing rapidly, there is still a need to find treatments for moderate and severe COVID-19, especially with the advent of new variants on the rise. Pharmacists, as part of clinical trials, will need to play their role in this regard as well by ensuring community engagement and participation in trials.[57]

Because community pharmacies have shown the largest growth in number as Clinical Laboratory Improvement Amendments—waived facilities for laboratory testing,[58] they will need to step up and provide large-scale antigen testing to identify emergent cases of COVID-19.[59] Community pharmacies will also need to build capacity for providing antibody testing, especially in the postvaccination era. Community pharmacies that have implemented digital technology measures such as mobile applications to keep a track of patients with chronic diseases to ensure medication dispensing can use these same applications for keeping track of vaccination status and symptom monitoring of at-risk individuals without any major additional cost.[59] As stakeholders of public trust, community pharmacists need to pave the way to a safer, more accessible world with health care equity and universal health coverage, and the COVID-19 pandemic has just about afforded them the perfect opportunity to proceed in this regard. Pharmacists can also play a role in making sure that public health measures such as hand sanitization and wearing face masks are not abandoned postvaccination, until data emerge to confirm otherwise.

Limitations

This review has certain limitations. First, the subject topic for this scoping review is almost entirely qualitative, and there are no objective variables or indicators for defining the expanded roles of community pharmacists. Second, a thematic analysis was conducted based on the literature search mainly because the themes for expanded role of pharmacists were consistent across the studies, and it is difficult to ascertain whether there are other novel roles for pharmacists that may not have gained attention in the literature yet. Nevertheless, this review provides an important rationale for the policy of an expanded role for community pharmacists and development of a health care infrastructure that is more prepared to deal with future diseases.

Conclusion

The roles of community pharmacists have greatly expanded after the COVID-19 pandemic, and they have moved on from simply dispensing medications to becoming more important key stakeholders in the health care system. These

roles need political recognition globally, as community pharmacists may well represent the health care liaison that brings patients closer to their health care providers and increases global access and equity of health care.

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