

Role of Pharmacists during COVID-19 Pandemic

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Abstract

background: The COVID-19 outbreak in China and its subsequent spread across the globe has presented a serious public health challenge across different countries. Pharmacists have an important role as health care professionals providing necessary services during this pandemic COVID-19 pandemic.

objective: To focus on the role of the pharmacists in fighting the COVID-19 pandemic, and explore the guidelines on provision of pharmaceutical services to patients.

Methods: This is a systematic literature review. The search was performed on many electronic databases (MEDLINE, EMBASE, and Cochrane library) to identify relevant studies that focused on the role of pharmacists in fighting the COVID-19 pandemic, and guidelines on delivery of pharmaceutical services to patients. The search was limited to English published articles focused on the topic.

results: There were twelve studies that met our eligibility criteria and included in the final analyses. Pharmacists in the community setting are playing a key role in the management of the disease to prevent the spread of the outbreak. In lower middle-income countries, the healthcare systems may not be well developed. Therefore, patients need more pharmacist support because patients cannot afford a doctor's a visit. Pharmacists help in developing emergency drug formulations as well as coordinating with manufacturers to ensure availability. The International Pharmaceutical Federation developed international recommendations and guidance for pharmacists, including accurate information on prevention and management.

conclusions: There is a need for pharmacists to be more actively involved in case management through event-driven and evidence-based practices. These factors have increased the role of the community and hospital pharmacists. Additionally, the pharmacists are an important point of contact for patients in providing information and dissemination of prevention interventions.

key words: coronavirus; pharmacists; guideline; guidance; recommendation

Introduction

The first case of a novel coronavirus pneumonia, later referred to as COVID-19, was detected in the City of Wuhan in the Hubei Province of China [1].

The disease spread across the city and the province becoming, a nationwide epidemic outbreak. The outbreak was declared by the World Health Organization (WHO) as a public health emergency of international concern on 31 January 2020 [1,2].

The outbreak spread to different countries across the world, with many nations being affected, and was characterized as a global pandemic.

The Severe Acute Respiratory Syndrome coronavirus-2 is a novel beta coronavirus that is primarily transmitted from human to human through close contact and respiratory droplets [2,3].

The virus has an incubation period of 14 days before the patients show symptoms [4].

However, asymptomatic patients can shed the virus and be a course of infection. The genetic characteristics of the SARS-CoV-2 have been identified as being significantly different from SARS CoV disease that broke out in 2002 and 2003 [3].

The SARS-CoV-2 is similar to strains of the virus that are naturally found in bats, indicating the possibility of the strain mutating from bats through intermediate animal hosts.

The main symptoms of COVID-19 disease include fever, sneezing, dry cough, tiredness, and progressive difficulty in breathing [1,4]. The symptoms start gradually and are usually mild for most people, with 80% of those infected recovering from the infection.

According to WHO (2020), 1 in 5 people who are infected with the disease become seriously ill with severe pneumonia [1].

This is more common among older adults and those with underlying conditions such as cancer, hypertension, lung and heart problems [5]. While some population groups such as the elderly and those with pre-existing conditions are at risk of becoming seriously

ill, effective management of all infections through pharmaceutical interventions is necessary [6,7]. Therefore, pharmacists have an important role as health care professionals providing necessary services during this pandemic COVID-19 situation. This paper reviews extant literature focusing on the role of the pharmacists in fighting the COVID-19 pandemic, and explores the guidelines on provision of pharmaceutical services to patients.

Materials and Methods

Study Identification

This is a systematic literature review. The search was performed on many electronic databases to identify relevant studies that focused on the role of pharmacists in fighting the COVID-19 pandemic, and guidelines on delivery of pharmaceutical services to patients. The following electronic databases were searched:

- Ovid MEDLINE (1946 through December 04, 2020),
- EMBASE (1974 through December 06, 2020),
- EBM Reviews - Cochrane Central Register of Controlled Trials - October 2020, and
- EBM Reviews - Cochrane Database of Systematic Reviews (2005 to December 04, 2020)

The searches were executed in December 2020 with predefined search strategies (see Appendix). The search strategies were designed and search keywords combined to capture relevant articles.

The search keywords include: coronavirus infections, COVID, COVID 19, corona virus, coronavirus, SARS Virus, SARS-2, SARS 2, severe acute respiratory syndrome, pharmacists, guideline, practice guideline, guidance, and recommendation. The search was limited to English published articles focused on the topic. Systematic reviews, letter, comments were excluded.

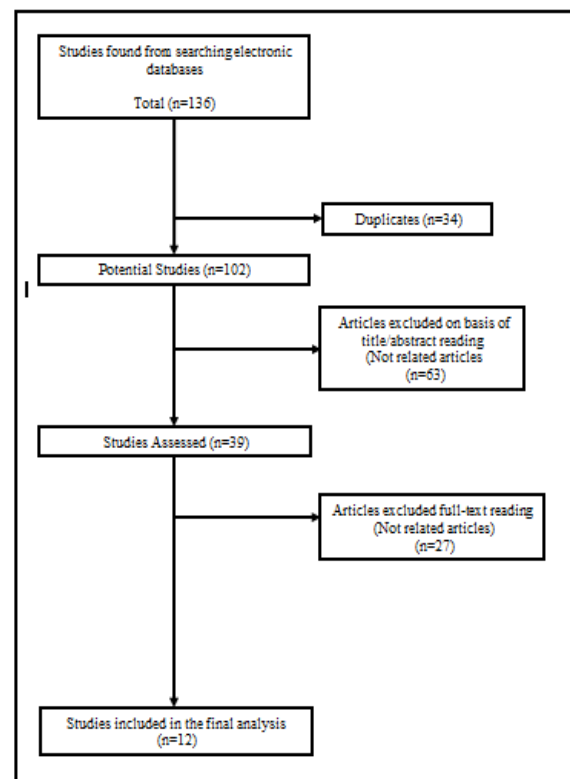
Study Select on

Two reviewers worked independently and reviewed all title/abstracts of records identified by the search strategies (See Appendix).

All studies identified as eligible studies during title/abstract screening then screened at a full-text stage by the same two reviewers.

Any discrepancies between the two reviewers were resolved by discussion to reach consensus.

The study identification and selection process is summarized using a Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram (Figure 1).



Data Extraction

Two reviewers worked independently and extracted data from the final list of included studies. The extracted data included study characteristics, role of pharmacists in fighting the COVID-19 pandemic, and guidelines on pharmaceutical services delivery to patients during pandemic. Reconciliation was done between the two reviewers and any discrepancies between the two reviewers were resolved by discussion to reach consensus. Data was stored and managed in a Microsoft Excel 2019 workbook.

Results

There were twelve studies that met our eligibility criteria and included in the final analyses (Table 1).

Table 1: Studies included in the systematic review.

Author	Year of Publication	Title of the Study
Ung et al.	2019	Community pharmacist in public health emergencies: Quick to action against the coronavirus 2019-nCoV outbreak
Basheti et al.	2020	Pharmacists' readiness to deal with the coronavirus pandemic: Assessing awareness and perception of roles
Bukhari et al	2020	Pharmacists at the frontline beating the COVID-19 pandemic.
Gross et al.	2020	Roles of the clinical pharmacist during the COVID-19 pandemic.

Hua et al.	2020	Pharmacy administration and pharmaceutical care practice in module hospital under COVID-19 epidemic.
Song	2020	Hospital pharmacists' pharmaceutical care for hospitalized patients with COVID-19: Recommendations and guidance from clinical experience.
Liu et al.	2020	Providing pharmacy services during the coronavirus pandemic.
Liu et al.	2020	Pharmaceutical emergency guarantee difficulties and countermeasures for the prevention and control of outbreak of novel coronavirus pneumonia (NCP).
Al-Quteimat et al.	2020	SARS-CoV-2 outbreak: How can pharmacists help?
Zheng et al.	2020	Recommendations and guidance for providing pharmaceutical care services during COVID-19 pandemic: A China perspective.
Stergachis et al.	2020	Preparing pharmacy for the surge of patients with COVID-19: Lessons from China.
Hasan et al.	2020	Social distancing and the use of PPE by community pharmacy personnel: Does evidence support these measures?

Table2: Search on Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Daily and Versions(R) 1946 to December 04, 2020

Date of search: December 06, 2020.

#	Keyword	Results (number of articles)
1	Coronavirus Infections/	6243
2	COVID.mp.	7180
3	COVID 19.mp.	7135
4	COVID-19.mp.	7135
5	corona virus.mp.	391
6	Coronavirus/	2125
7	SARS Virus/	3009
8	SARS-2.mp.	25
9	SARS 2.mp.	25
10	Severe Acute Respiratory Syndrome/	4563

11	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10	17836
12	Pharmacists/	16512
13	pharmacist*.mp.	36692
14	pharmac*.mp.	3862792
15	12 or 13 or 14	3862792
16	Guideline/	16241
17	Practice Guideline/	26832
18	recommendation*.mp.	253996
19	guidance.mp.	113906
20	16 or 17 or 18 or 19	381669
21	11 and 15 and 20	21
22	limit 21 to english language	21

Table3: Search on EBM Reviews - Cochrane Central Register of Controlled Trials - October 2020 Date of search: December 06, 2020.

#	Keyword	Results (number of articles)
1	Coronavirus Infections/	47
2	COVID.mp.	36
3	COVID 19.mp.	36
4	COVID-19.mp.	36
5	corona virus.mp.	9
6	Coronavirus/	2
7	SARS Virus/	9
8	SARS-2.mp. [mp=title, original title, abstract, mesh headings, heading words, keyword]	0
9	SARS 2.mp.	0
10	Severe Acute Respiratory Syndrome/	45
11	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10	94
12	Pharmacists/	569
13	pharmacist*.mp.	4499
14	pharmac*.mp.	165160
15	12 or 13 or 14	165160
16	Guideline/	16021
17	Practice Guideline.mp. or Practice Guidelines as Topic/	11628
18	recommendation*.mp.	21812
19	guidance.mp.	10577

20	16 or 17 or 18 or 19	45841
21	11 and 15 and 20	2

Table4: Search on EBM Reviews - Cochrane Database of Systematic Reviews (2005 to December 04, 2020)Date of search: December 06, 2020.

#	Keyword	Results (number of articles)
1	Coronavirus Infections.mp. [mp=title, short title, abstract, full text, keywords, caption text]	10
2	COVID.mp. [mp=title, short title, abstract, full text, keywords, caption text]	5
3	COVID 19.mp. [mp=title, short title, abstract, full text, keywords, caption text]	5
4	COVID-19.mp. [mp=title, short title, abstract, full text, keywords, caption text]	5
5	corona virus.mp. [mp=title, short title, abstract, full text, keywords, caption text]	5
6	Coronavirus.mp. [mp=title, short title, abstract, full text, keywords, caption text]	18
7	SARS Virus.mp. [mp=title, short title, abstract, full text, keywords, caption text]	3
8	SARS-2.mp. [mp=title, short title, abstract, full text, keywords, caption text]	0
9	SARS 2.mp. [mp=title, short title, abstract, full text, keywords, caption text]	0
10	Severe Acute Respiratory Syndrome.mp. [mp=title, short title, abstract, full text, keywords, caption text]	12
11	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10	25
12	Pharmacists.mp. [mp=title, short title, abstract, full text, keywords, caption text]	189
13	pharmacist*.mp. [mp=title, short title, abstract, full text, keywords, caption text]	496
14	pharmac*.mp. [mp=title, short title, abstract, full	5663

	text, keywords, caption text]	
15	12 or 13 or 14	5663
16	Guideline.mp. [mp=title, short title, abstract, full text, keywords, caption text]	1770
17	Practice Guideline.mp. [mp=title, short title, abstract, full text, keywords, caption text]	151
18	recommendation*.mp. [mp=title, short title, abstract, full text, keywords, caption text]	5160
19	guidance.mp. [mp=title, short title, abstract, full text, keywords, caption text]	2762
20	16 or 17 or 18 or 19	6521
21	11 and 15 and 20	11

Table5: EMBASE (1974 through December 06, 2020)Date of search: December 06, 2020.

#	Keyword	Results (number of articles)
1	'coronavirus infection'/exp	12,889
2	covid	5,064
3	'covid 19'/exp	103
4	'covid 19'	5,012
5	corona AND virus	1,166
6	'coronavirus disease 2019'/exp	1,590
7	coronavirus	18,462
8	'sars coronavirus'/exp	5,754
9	'sars 2'	31
10	'severe acute respiratory syndrome'/exp	8,433
11	'sars-related coronavirus'/exp	6,065
12	'severe acute respiratory syndrome coronavirus 2'/exp	989
13	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12	26,688
14	'pharmacist'/exp	77,025
15	pharmacist*	119,620
16	pharmac*	5,285,044
17	#14 OR #15 OR #16	5,285,044
18	'guideline'/exp	141

19	'practice guideline'/exp	539,736
20	recommendation*	352,929
21	'guidance'/exp	92
22	#18 OR #19 OR #20 OR #21	829,906
23	#13 AND #17 AND #22	105
24	#13 AND #17 AND #22 AND [english]/lim	102

Community pharmacists

Pharmacists in the community setting are playing a key role in the management of the disease to prevent the spread of the outbreak. This makes community pharmacists critical healthcare providers in the frontline of the COVID-19 interventions. According to Ung (2020), community pharmacists are a key element of the actions being taken against the coronavirus 2019 outbreak [8]. They play a key role in ensuring the stable supply of medicines, while also being key knowledge hubs for credible information regarding the infections. In Macao, community pharmacists are also charged with the responsibility of making referrals and early detection of infections [9]. Pharmacists as information sources also act as advocates in sharing education with their staff as well as the community on prevention measures such as proper hand washing techniques [10]. According to Gross and MacDougall (2020.), the community pharmacists can also provide a platform or point of contact for the government to render services to the people through private-public partnerships, such as the distribution of surgical masks and other interventions [11].

Community pharmacists are serving as frontline staff in fighting the COVID-19 pandemic, where non-pharmaceutical interventions have been implemented to reduce community transmission. Some of the main interventions implemented to prevent community transmission include lockdowns observed in many countries and territories. In such settings, pharmacists provide a wide range of services, including triage and consultations, to reduce the burden on healthcare facilities. Pharmacists also provide home deliveries as a way of availing essential supplies to patients. Bukhari et al. (2020) provide a case study of the role of pharmacists in dealing with the COVID-19 pandemic. As the first point of contact in many countries where pharmacies remain open despite strict lockdowns, community pharmacists also provide opportunities for information and the necessary supplies. A major aspect of the community pharmacists is that they are highly accessible, making them critical players in enhancing preparedness and response to the pandemic.

Reducing undue hospital visits

One of the key aspects of the COVID-19 pandemic is the fact that it causes undue pressure on healthcare facilities due to the large number of individuals in need of care. This issue is especially significant in low-income and lower middle-income countries where the healthcare systems may not be well developed. In these countries, patients need more pharmacist

support because patients cannot afford a doctor's a visit. According to Song et al. (2020), the absence of a standard treatment for the disease increases the relevance of pharmacists in these countries. The pharmacists play the role of care providers in the management of symptoms, and are custodians of patient safety.

A notable issue with the COVID-19 pandemic is that it has led to the closure of many places of business. This translates to the loss of income for many residents, with the impact being more adverse in emerging economies where people are less likely to have savings that can support them. These individuals have nowhere to go when they need medical attention. As a result, the community pharmacists play the crucial role of providing consultations free of charge. This increases the relevance of the community pharmacists in maintaining a healthy population during the crisis.

The unique needs of the sector

The healthcare sector across the globe has been overwhelmed by COVID-19 pandemic mainly because of the lack of a working treatment approach. With no approved antiviral therapy for the disease, management involves treatment medications meant to manage the symptoms and boost the patient's immunity. This involves the provision of event driven pharmaceutical care for enhancing health emergency operations. Pharmacists help in developing emergency drug formulations as well as coordinating with manufacturers to ensure availability. The pharmacists enhance access to care and can establish remote services to reduce incidence of infections.

The pharmacists also provide opportunities for critical trials and evidence based interventions that can aid in enhancing the effectiveness of care.

Review of care guidelines

According to Liu et al. (2020), the authorities in China have develop guidelines for the provision of pharmacy services in response to COVID-19. They developed professional guidelines on the professional role of pharmacists in different settings. The Chinese Pharmaceutical Association drafted expert consensus on work guidance as well as control strategies. The International Pharmaceutical Federation used these guidelines to develop international recommendations and guidance for pharmacists, including accurate information on prevention and management. These guidelines are important for hospital pharmacists, but they are also applicable to others working in the retail and community settings. In the case of Pakistan, the fact that pharmacists received little attention in the distribution of personal protective equipment (PPEs) meant that protective guidelines had to be developed specifically focusing on their needs. These include guidelines on use of gloves in handling cash and sanitizing the premises among others.

The Federation also developed guidelines for pharmacy staff and pharmacists in general to train on prevention and how to work effectively with patients as a key point of contact. Pharmacists have to be actively involved in the management of chronic illnesses as well as home care for infected individuals.

This also includes the need to provide social and psychological support to the patients regarding COVID-19. The guidelines presented in different countries focus on highlighting the role of the pharmacists in hospital and community settings in responding to the pandemic. They also show the importance of ensuring that pharmacists are adequately knowledgeable and can provide education to the public.

Discussion

The role of the pharmacists has been effectively captured in the guidelines and in the recommendations made to enable them provide the necessary services to the public. According to Dolovich et al. (2018), pharmacists play a critical role in promoting health outcomes in different settings. The community pharmacist becomes a key point of contact for patients who may not have access to a hospital. This has also increased with the need for hospitals to be set aside for the treatment and isolation of COVID-19 patients who are seriously ill. A key issue from the literature is that the pharmacists also provide a cheaper option for patients in low-income countries to access medical consultations. This may be an expansion of their scope with the need to engage in event-driven practices in an efficient manner to ensure the best outcomes for the patients.

In the management of COVID-19, evidence-based practices and event-driven case management has been applied as a significant element of the available interventions. The pharmacists have to be active players in undertaking clinical trials and using off-label drugs for management of patients suffering from the disease. The fact that there is approved vaccine for the disease means that pharmaceutical care is essential as a way of managing the symptoms and responding to patient needs. In line with these issues, different authorities have developed clear guidelines for pharmacists to guide the delivery of pharmaceutical care. In line with the nature of the pandemic and its lack of a clear treatment, the patients receiving pharmaceutical services may require more efforts to ensure that they are protected including avoidance of ineffective therapies.

Most of the guidelines for pharmacists focus on how to protect themselves from infection and disseminate information to the public. There is a limitation in the provision of guidelines on how the pharmaceutical services are provided. For instance, the associations of pharmacists should highlight how the different types of drugs and interventions help COVID-19 patients. This would be essential in ensuring that the patients are given medications that help them to recover. The issue of off-label drugs being used in the management and event-driven practices increase the risk and diversity of the interventions that pharmacists can deploy. There is a need for clear guidelines from the WHO on the use of different pharmaceutical agents for case management, including the considerations to be made in their use. This would play a major role in ensuring the safety of COVID-19 patients as they receive treatment, especially in avoiding treatments that are ineffective or inappropriate.

Conclusion

The COVID-19 outbreak in China and its subsequent spread across the globe has presented a serious public health challenge across different countries. The disease is complicated by the lack of an approved antiviral remedy even with the presence of the approved vaccine. This indicates a need for pharmacists to be more actively involved in case management through event-driven and evidence-based practices. These factors have increased the role of the community and hospital pharmacists. Additionally, the pharmacists are an important point of contact for patients in providing information and dissemination of prevention interventions. The guidelines introduced in different settings have mostly focused on prevention for the pharmacists. There is a need for more guidelines on the different types of interventions and their application in managing COVID-19 patients.

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