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THE ROLE OF CLINICAL PHARMACIST DURING THE COVID 19 PANDEMIC

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SUMMARY

A serious public health concern created from the time when the start of the COVID-19 epidemic in the later months of 2019 and subsequent expansion around the world over several and different countries. Whereas many of people for the period of SARS-CoV-2 extent were stayed at home to reduce the risk of infection spread, medical services are under a great strain and health workers are fighting COVID-19 on the front lines. Clinical pharmacists worldwide played a significant role in delivering a variety of health care services and implementing innovative strategies to enhance the rational use of medicines and to minimize the adverse impact of the pandemic.

KEYWORDS: COVID-19, pandemic, clinical pharmacist, rational use of medicines, innovative strategies.

INTRODUCTION

In December 2019, respiratory infection due to a novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was first detected in China. The outbreak spread quickly to several countries throughout the world. On the March 11, 2020, the World Health Organization (WHO) termed that coronavirus disease 2019 (COVID-19) as a worldwide pandemic (WHO, 2020).

The SARS-CoV-2 virus is highly infectious coronavirus that spreads quickly in humans and transmitted mainly from person to person through close contact and respiratory droplets generated from coughing or sneezing. COVID19, on the other hand, is a new illness, and researchers are still figuring out how it spreads (Han *et al*., 2020). Transmission has also been documented from asymptomatic individuals(Bai *et al*., 2020).

The COVID-19 had a broad range of presentations, ranging from an asymptomatic carrier infection (mild), to those life-threatening pneumonia, respiratory failure, systemic organ failure (severe) and even death (He *et al*., 2020).The usual symptoms of COVID-19 disease include fever, sneezing, dry cough, weariness and developing trouble breathing. Most people's symptoms begin gradually and are typically minor, with 81 percent of individuals who are infected recovering from the illness (Wu *et al*., 2020).

COVID-19 has no confirmed therapeutic therapies, and the SARS-CoV-2 virus had no particular anti-viral medications. As a result, the people must followed measures to reduce disease transmission, such as social distance, mask use, and careful hand cleanliness (Liu *et al*., 2020).

Whereas many of people for the period of SARS-CoV-2 extent were stayed at home to reduce the risk of infection spread, medical services are under a great strain and health workers are fighting COVID-19 on the front lines. Health professionals are dedicated to ensure that populations had access to health care and reducing the negative influence of the pandemic (Centers for Disease Control and Prevention, 2020).

Pharmacists, together with the rest of the healthcare team, played a critical role in ensuring that peoples receive better possible treatment during this national disaster (Liu *et al*., 2020). Even in this state of emergency and rigorous lock-down, pharmacists stayed the most easily reached healthcare practitioners and the patient's initial point of contact, particularly in remote regions. Community pharmacists were amongst the front-line health providers, delivering vital services to their patients. Hospital and clinical pharmacists had an essential role during this epidemic in infection control, patient’s management, and assisting physicians in analyzing and interpreting different clinical data, despite having fewer time owing to rising number of the patients

(Bukhari *et al*., 2020).

Clinical pharmacists are professionals with specialized training who provide direct patient care and comprehensive drug management (Jacobi, 2016). Routinely before the COVID-19 pandemic, the activities of clinical pharmacist would evaluate the suitability of medicines by clerking patients' case records, partake in ward rounds with physicians and debate with them in selecting the proper therapy that best meets the patient's requirements and contributes efficiently to the overall treatment objectives, contribute in temporary care events focusing on medications management, give out patient's discharge drugs and also patient's medication advising and teaching in the ward (Pee *et al*., 2021).

On the other hand, in public health emergencies, clinical pharmacists' strategies must be adapted in response to the acceleration and spread of the disease, where knowledge and sources are often few to guide them. During COVID-19 pandemic, the clinical pharmacists had several responsibilities and played significant role in making work advices, deliver medications data to front-line staffs, and promote inventive facilities to improve the rational usage of medicines in this pandemic (Damdar, 2021).

General roles, responsibilities and innovative strategies of clinical pharmacist during COVID-19 pandemic:

1. Generate a rational drug manual to help clinicians better recognize and prescribe drugs for COVID19 patients, such as usage and dosage, administration and dilutions, precautions, drug to drug interactions, adverse reactions, and dosages modifications for special patients example pregnant woman, children, the aged people, and dialysis patients (Li *et al*., 2021; Li *etal*., 2020).
2. With the widespread dissemination of COVID19, researchers, physicians, and epidemiologists from around the world immediately published their findings on the viral genome sequence, clinical features of the disease, transmission routes, control and preventive techniques, and management advice (Li *et al*., 2021).
3. Participating in clinical study research: There are no antiviral drugs authorized for the prevention or treatment of COVID 19 infection (Li *et al*., 2020). Clinical trial conducted by pharmaceutical experts, doctors, and pharmacists were essential to find viable therapy choices (Li *et al*., 2021).
4. Organize evidence based medication use: Clinical pharmacists could assist and conduct an evidence-based trial on the effectiveness and usage of medications that were currently using in treating COVID-19 patients. Example, evaluating the indications and effectiveness of Lopinavir/Ritonavir, Hydroxychloroquine, Tocilizumab Remdesivir and Corticosteroids (Li *et al*., 2021; Liu *et al*., 2020; Zhao *et al*., 2020).
5. Prescription audit: all prescription should be reviewed by a clinical pharmacist to avoid or reduce drug-related mistakes and maintain patient's safety.
6. Telehealth consultation and patient education: majority of patients in hospitals, as well as many household quarantined patients with chronic conditions, requires expert consulting in this pandemic. As a result, telehealth and other novel pharmaceutical services have been established (Li *et al*., 2021).

Global examples of clinical pharmacists' activities and innovative strategies during COVID-19 pandemic

1. Related roles and innovative strategies performed by Chinese clinical pharmacists: (as summarized in figure 1)

Create pharmaceutical service guidelines

They were created as a guideline for pharmacists and the pharmaceutical workforce in the interim. The Chinese Pharmaceutical Association (CPA) gathered their experts for analysis, assessment, and summarization of the existing guidelines, studies, and practiced consensus, adding with their previous experience during SARS epidemic in 2003, and developed practiced consensus on guidance and preventive plans for hospital/clinical pharmacy personnel and marketing pharmacy staff (Li *et al*., 2021).

Develop formulary manuals and medicine news

Clinical pharmacists prepared a rational drug use handbook for front-line health workers to administer therapy for COVID-19 and help physicians to understand and prescribe the medications on the prescription list. Furthermore, general pharmacist group published "Anti-epidemic Medicine News" every week, which included the most recent worldwide recommendations, research findings, and COVID-19 facts (Li *et al*., 2020; Zhu *et al*., 2020).

Create medication registration guidelines based on research and evidence

There was no particular treatment for COVID-19, and none of drug therapy had been thoroughly studied for safety and effectiveness. Clinical pharmacists have to provide evidence-based assessments of drug effectiveness. Such as estimating the indications and efficacy of ritonavir, interferon, chloroquine phosphate and other anti-viral medications, observing precaution and dose of ribavirin and steroids, determining which preparations can be nebulized, to explore the optimum dosage schedule, and administration route to help front-line clinicians (Li *et al*., 2021; Li *et al*., 2020).

Remote inpatient order review and dispensing

Health workers should adopt new techniques to deliver medications to inpatients to limit the transmission of infection, including such automated dispensers and intelligent drug storage cabinets. Pharmacists should

collaborate to develop and improve prescriptions reviewing standards and a knowledge database (Zhang *et al*., 2020).

Develop personalized management with a multidisciplinary group

Clinical pharmacists must use their pharmaceutical experience as part of a multidisciplinary diagnostic and treatment team (MDT), taking into account the symptoms of patient's and etiological findings, as well as hepatic and renal function and medication pharmacokinetic characteristics (Wang *et al*., 2020). Because economic and material resources are being depleted in the face of the pandemic, nutritional status should be regarded a fundamental vital sign, and nutritional treatment should be considered under supervision of clinical pharmacist for severely ill patients (Yu et al. 2020).

Telehealth counseling and patient education

Pharmacists around the country consistently give medical education and MTM to patients, as well as psychosocial support to the public, using a variety of strategies, in order to enhance the efficiency of pharmacological therapies for mild cases in the scenario of severely limited healthcare resources (Li *et al*., 2021).

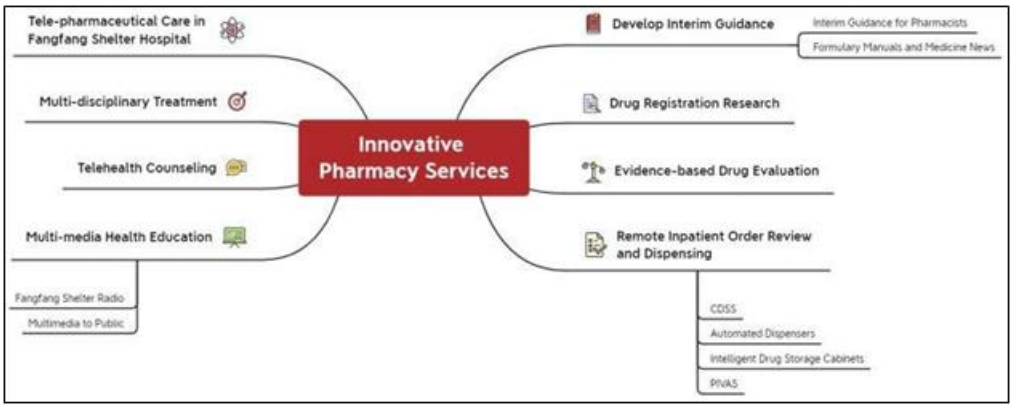

Figure 1: Summary of innovate pharmacy services.

2. In Australia, trained students support dispensing tasks, allowing clinical pharmacy positions to remain in the wards

As the pandemic spread around the globe, important health facilities in Australia (hospitals/clinical and community pharmacies) tried to plan what to do to improve healthcare while still acting as a suitable learning environment for pharmacy students and preregistration trainees. As many health professional students' experiencing placements/clinical rotations were being postponed, there were initial conversations of withdrawing all pharmacy trainees from practical locations (Rose *et al*., 2020).

The local pharmacy academic community, on the other hand, conducted robust consultations with practiced leaders in medicine, nursing, and pharmacy prior to starting measures. The pharmacy community was worried that if medical and nursing trainees were held to their places, it would indicate that pharmacy students were unable to participate. Thus, the pharmacy community approved to related approaches by medical and nursing co-workers (eg, assuming protecting modalities, changing which facilities hosted students, and reviewing the specific responsibilities to be finished) to ensure safe and reinforced learning environments. Furthermore, several hospitals recommended that by rotating qualified pharmacist students to assist with drug administration, mean that more experienced pharmacists may be assigned to direct patient care. The Council of Pharmacy Schools: Australia and New Zealand possess of the heads of the pharmacy programs in these countries, established guidance of principles for pharmacy trainees clinical education throughout a worldwide emergency to help the pandemic workforce as part of and in parallel to academic studies (Little *et al*., 2020).

3. Creative ways to clinical pharmacy barriers in Malaysia: (Cheong *et al*., 2020).

In many hospitals of Malaysia, clinical pharmacists working in the wards have fallen into the “non-essential” category. It means that all nonessential staffs were kept out of the wards to decrease the exposure to COVID-19 infection.

As a result, hospital administrators and chief pharmacists have reallocated many of these clinical pharmacists to assist the pharmacy department's main job, namely the continuous supplying and supply of medications and equipment to the remainder of the hospital.

In spite of being forced out of the wards and told to concentrate on the supply chain, many clinical pharmacists had been found methods to keep contributing to patient care and quality pharmaceutical usage. Clinical pharmacists in Malaysia have been able to continue providing healthcare through a variety of interactions, including remote testing of medication charts to identify medication-related troubles and phone calls/text communications to prescribers to address those issues, organizing for short video calls or

teleconferences after physicians complete their rounds to get updates on the clinical status of patients, and arranging for short video calls or teleconferences after clinicians accomplish their rounds to get updates on the clinical condition of patients.

4. Other different countries related activities are summarized in the table 1

Table 1: Global activities of clinical pharmacists in pandemic (Sami *et al*., 2021).

Country	Activities
North-America: e.g.USA	-American College of Clinical Pharmacists made short documentary stories about COVID-19 related practice, information, research, education, and leadership. -Started ambulatory care clinic for management of patients after hospital discharge. -Provided service via telephone calls
Europe: UK	-Along with Royal Pharmaceutical Society, United Kingdom Clinical Pharmacists Association started training webinars and clinical resource hub and delivered relevant resources for clinical pharmacists. -Helped in policy making, advocacy and national guidance for pharmacists, and facilitated in COVID-19 clinical trials, intensive care units (ICU).
France	-Besides taking care of COVID-19 patients, clinical pharmacists were involved in managing, analyzing and answering questions on an online Q&A hub, formed by French Society of Pharmacology and Therapeutics.
Asia: Saudi Arabia	-Saudi Society of Clinical Pharmacy (SSCP) published an opinion paper on Pharmacists roles & responsibilities during epidemics & pandemics in Saudi Arabia. -A team of clinical pharmacists was involved in analyzing, publishing, updating and creating treatment protocols for COVID-19 according to the dynamic changes of the pandemic situation.
Qatar	-A clinical pharmacist's team dedicated as the frontline responders for the new established COVID-19 hospitals situated across Qatar and provided clinical interventions and partook in daily rounds.
Thailand	-Clinical pharmacist team provided tele-monitoring service on daily basis for every patient by using physician order entry system. -Co-operated with physicians and nurses for handling critical cases of COVID-19 .
Africa: Nigeria	-Clinical Pharmacy Association of Nigeria (CPAN) started webinars about COVID-19 and its effect on daily work life. -Department of Clinical Pharmacy, The University of Nigeria, was a part of the National Scientific Advisory Committee for verifying newly established COVID-19 cure. -Pharmacists from the Department of Clinical Pharmacy helped to design receptive health supply chain systems for effective distribution of medicine for different states.

CONCLUSION

In the war against COVID-19, our armor is the healthcare system and our warriors are health personnel, who surely including pharmacists. Clinical pharmacists haven't been prevented from working because of COVID-19 and in fact, they've stepped up to carry on more responsibilities. They played a crucial role as a resource to physicians and other health professionals, as well as patients, by helping to alleviate the adverse effects of medicine and to promote innovative facilities to improve the rational usage of medication.

REFERENCES

1. Bai, Y., Yao, L., Wei, T., Tian, F., Jin, D. Y., Chen, L., & Wang, M., 2020.
2. Presumed asymptomatic carrier transmission of COVID-19. *Jama*, *323*(14): 1406- 1407.
3. Bukhari, N., Rasheed, H., & Nayyer, B. Pharmacists at the frontline beating the COVID-19 pandemic. *Journal of pharmaceutical policy and practice*, 2020; *13*(1): 1-4.
4. Centers for Disease Control and Prevention. (2020). Centers for Disease Control and Prevention Coronavirus disease, 2019. (COVID-19).
5. Cheong, M. W. L., Brock, T., Karwa, R., & Pastakia, S. D. COVID- 19 and clinical pharmacy worldwide—A wake up call and a call to action, 2020.
6. Damdar, G. T. Role of Clinical Pharmacist in COVID-19 Crisis. *Hospital Pharmacy*, 0018578720985429, 2021.
7. Han, Y., & Yang, H. The transmission and diagnosis of 2019 novel coronavirus infection disease (COVID-19): A Chinese perspective. *Journal of medical virology*, 2020; *92*(6): 639-644.
8. He, F., Deng, Y., & Li, W. Coronavirus disease 2019: What we know?. *Journal of medical virology*, 2020; *92*(7): 719-725.
9. Jacobi, J. Clinical pharmacists: practitioners who are

essential members of your clinical care team. *Revista Médica Clínica Las Condes*, 2016; *27*(5): 571-577.
10. Li, G., & De Clercq, E. Therapeutic options for the 2019 novel coronavirus (2019-nCoV). *Nature reviews Drug discovery*, 2020; *19*(3): 149-150.
11. Li, H., Zheng, S., Liu, F., Liu, W., & Zhao, R. Fighting against COVID-19: innovative strategies for clinical pharmacists. *Research in Social and Administrative Pharmacy*, 2021; *17*(1): 1813-1818.
12. Li, L., Chen, N., Kong, L. M., Wang, R. R., Wang, X. J., Xu, Q., & Lu, X. Y. Antiviral therapeutics for 2019 novel coronavirus infection in special populations. *Chin J Mod Appl Pharm*, 2020; *37*(3): 257-263.
13. Little, P. J. Guiding principles for pharmacy student clinical education during a global health emergency Pharmacy Council Australia. Woolloongabba, Australia: Council of Pharmacy Schools, 2020.
14. Liu, S., Luo, P., Tang, M., Hu, Q., Polidoro, J. P., Sun, S., & Gong, Z. Providing pharmacy services during the coronavirus pandemic. *International journal of clinical pharmacy*, 2020; *42*(2): 299-304.
15. Liu, Y., Su, N., Shen, C., & Jiang, A. Literature analysis on the efficacy and safety of lopinavir/ritonavir in viral infectious diseases. *Herald Med*, 2020; 39(5): 621-627.
16. Pee, L. T., Rosli, H. I., & Chong, P. F. Clinical Pharmacist in a COVID-19 Hospital-A Malaysian Experience. *Malaysian Journal of Pharmacy*, 2021; *7*(1).
17. Rose, S. Medical student education in the time of COVID- 19. *Jama*, 2020; *323*(21): 2131-2132.
18. Sami, S. A., Marma, K. K. S., Chakraborty, A., Singha, T., Rakib, A.,Uddin, M. G., & Uddin, S. N. A comprehensive review on global contributions and recognition of pharmacy professionals amidst COVID-19, pandemic: Moving from present to future. *Future journal of pharmaceutical sciences*, 2021; *7*(1): 1-16.
19. Wang, R. R., Xu, Q., Li, L., Wang, X. J., Jiang, S. P., & Lu, X. Y. Pharmacological care strategy for antivirals in patients with COVID-19 complicated by underlying disorders. *Chin J Hosp Pharm*, 2020; *40*: 1-7.
20. World Health Organization (WHO). (2020). Coronavirus disease 2019 (COVID-19) Situation report, 2020; 52: 12.
21. Wu, Z., & McGoogan, J.M. (2020). Characteristics of and important lessons from the coronavirus disease (COVID-19) outbreak in China: summary of a report of 72 314 cases from the Chinese Center for Disease Control and Prevention. *jama*, 2019; *323*(13): 1239-1242.
22. Yu, K. Y., & Shi, H. P. Interpretation of "Expert advice of medical nutritional treatment for novel coronavirus-caused pneumonia patients". Natl Medical Journal China (Peking), 2020.
23. Zhang, L., Zhang, K., Chu, Y. Q. 2020. Expert consensus on accelerating the development of intelligent pharmaceutical care during the epidemic of corona virus disease. Clinical Medical Journal, 2019.
24. Zhao, J. P., Hu, Y., Du, R. H., Chen, Z. S., Jin, Y., Zhou, M., & Cao, B. Expert consensus on the use of corticosteroid in patients with 2019-nCoV pneumonia. *Chinese journal of tuberculosis and respiratory diseases*, 2020; *43*(3): 183- 184.
25. Zhu, Y. G., Deng, Z. W., & Liu, L. H. Expert Consensus on the Rational Use of Novel Coronavirus Pneumonia. Central South Pharmacy, 2020; 1-14.