

Role of Pharmacists in Public Health Disaster Management with Reference to COVID-19 Pandemic in a Public Sector Hospital of an Extremely Resource Deficient Hard Area of Pakistan

Kiran Ibrahim*

Department of Pharmacy, University of Cambridge, Cambridge, United Kingdom

ABSTRACT

Pharmacists can never be undermined during public health emergencies for their significant and most needed clinical and administrative responsibilities. During COVID-19 pandemic pharmacist community throughout the world has contributed excellently to every unit of healthcare provision including hospitals, clinics, community pharmacies, long term care, physician offices, and national and public health departments. Novel Coronavirus Disease 2019 (COVID-19) outbreak spread in China in December 2019 and later reported by various countries all over the world. World Health Organization (WHO) declared SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus-2) the very cause of novel COVID-19 as pandemic on 11th March 2020 after more than 125 countries worldwide, had been affected with more than 130,000 confirmed cases. Many pharmacists from all over the world have shared their experiences of improving and reorganizing pharmacy departments, service provision and personnel to cope with the extremely tiring physical and emotional challenges during the pandemic.

Keywords: COVID-19; Medical services; Pandemic; Pharmacist; Healthcare

INTRODUCTION

In Pakistan first COVID-19 case was confirmed on February 26th, 2020. Medical services were under enormous pressure while combating the pandemic equally in rich and low middle income countries including Pakistan [1-7]. Although Pakistan suffered drastically from this pandemic, not only WHO but many countries around the world have appreciated the efforts of Pakistan for successful management of COVID-19 emergency [8]. Keeping in view the rapid spread of COVID-19, both federal and provincial government bodies initiated urgent strategies and took emergency measures to cope with the situation [9]. Extensive adaptations were recommended and implemented amongst all public and private sector hospitals on primary, secondary, and tertiary level of health facilities with strict compliance [10]. This paper will specifically quote the efforts of hospital pharmacists in the management of newly established pharmacy department, in an extremely resource deficient and structurally developing public sector hospital of district level, named as district head quarter hospital Khushab at Jauharabad.

DHQ hospital Khushab is a newly ISO certified public sector hospital under the direct supervision of primary and secondary healthcare department, governed by ministry of health Punjab, government of Pakistan [11]. This hospital was inaugurated in December 2000 with 125 beds capacity to provide health care facilities to urban and rural population of near about 1.2 million in district Khushab. It was upgraded in 2017 to provide much better healthcare services by hiring qualified HR and providing many necessary healthcare facilities through the project of revamping by government of the Punjab, Pakistan [12]. Currently the hospital is providing 24 hours emergency and indoor services with an efficiently dedicated pharmacy department established recently in 2018 [13]. Moreover, facilities of CT scan, ultrasound, X-ray, blood bank, hepatitis and TB clinics, vaccination clinics, and laboratory are also available. This hospital is nominated as one of the best hospitals among equivalent government hospitals for particularly providing excellent pharmaceutical services.

Correspondence to: Kiran Ibrahim, Department of Pharmacy, University of Cambridge, Cambridge, United Kingdom, Tel: 447884796233; E-mail: kiran_paracha@yahoo.com

Received: 14-May-2023, Manuscript No. JAP-23-24115; **Editor assigned:** 16-May-2023, PreQC No. JAP-23-24115 (PQ); **Reviewed:** 30-May-2023, QC No. JAP-23-24115; **Revised:** 21-Dec-2023, Manuscript No. JAP-23-24115 (R); **Published:** 28-Dec-2023, DOI: 10.35248/1920-4159.23.15.397

Citation: Ibrahim K (2023) Role of Pharmacists in Public Health Disaster Management with Reference to COVID-19 Pandemic in a Public Sector Hospital of an Extremely Resource Deficient Hard Area of Pakistan. J Appl Pharm. 15:397.

Copyright: © 2023 Ibrahim K. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

LITERATURE REVIEW

Difficulties/challenges

Budgetary constraints and social issues: DHQ Khushab had been an overburdened health facility with annual liabilities and monetary restrictions even in usual circumstances. Due to exponential increase in demand for resources particularly medications, surgical and disposables, equipment and other necessary protocols, pharmacy management had to deal with severe budget shortages [14]. Moreover, many other social issues for example illiteracy, malnourishment, lack of understanding among public, overpopulation and exhaustion of resources and poor administrative control of local bodies, aggravated the situation [15].

Under acknowledged pharmacy services and lack of trust: One of the biggest issues was under acknowledged pharmacy services and lack of trust among hospital administration and local population as well. This was due to a previously implemented poor pharmacy management system with inadequate efforts and commitment towards pharmaceutical services provision. Fortunately, two years ago, whole service structure of pharmacists and pharmacy departments in public sector hospitals of Pakistan had been revised with reforms, upgraded protocols and guidelines, efficient Standard Operating Procedures (SOPs) and increased workforce under P and SHD [16]. The task was uphill, and newly deployed team had to work even harder, however, these developments and resulting efforts revolutionized the role of pharmacist in hospital management [17].

Constant change in protocols and therapeutic decisions: As there was no standard therapeutic protocol and treatment guideline for COVID-19, SOPs kept on changing continuously based on the ongoing research and clinical trials. There always remained confusion among the healthcare providers about choosing the best protocols for their patients and consequently the pharmacy department was expected to arrange all the required support in time. Many essential medications which were previously not included in the hospital medicine formulary, had to be arranged on emergency basis [18].

Medication shortage: The peripheral location of DHQH Khushab and limited travelling facilities made the procurement of non-routine medications even harder during the lockdown. With the abnormal circumstances originating due to the pandemic, as soon as a drug was reported to be useful in COVID-19 treatment, the market used to suffer severe scarcity of that particular medicine with high demand and poor availability. On the other hand, prices of the available medications sky rocketed and hospital procurement team had to purchase the same medications on way higher prices from same vendors [19].

Human resource shortage: Due to increased demand for trained and qualified personnel to fulfil the protocol requirements we had to face extreme shortage of human resources. One big reason was COVID-19 spread amongst healthcare professionals themselves as well.

Psychological issues and chaotic situation: Everyone was stressed out including patients, public and healthcare professionals. Performing duty in COVID-19 High Dependency Units (HDUs) and even quarantine areas was a big fear with psychological impact. Post duty family interaction with compromised safety protocols, fear to catch self-infection and situation of social alarm created a complex scenario [20].

The traditional team management strategies in a stable environment were no longer effective. Maintaining a balance between emotions, fatigue, cruelty of the disease, available resources, regulatory changes, new protocols, and other factors required an extremely well-coordinated and compact team working on one agenda. Since the disease caused several casualties and deaths among the medical and pharmacy staff and their family's hospital administration had to take care of the human side of relationships as well.

DISCUSSION

Management strategy and action plan

Following the disaster action plan, recommendations of the WHO, guidelines and notifications from the P and SHD and federal agencies, DHQH Khushab administration organized different committees in which pharmacy department played the most significant role.

Establishment of departmental committees: Daily meetings were held by the operational COVID-19 crisis committee, established on district level and supervised by central management in head offices, which was composed of representatives from district hospitals administrative, medical, and nursing and pharmacy departments. Moreover, allied health professionals, new management structure (administrative team), technical and assisting staff, and housekeeping department were also part and parcel of COVID-19 crisis committees. The main functions of this committee were to reorganize the hospital based on daily epidemiological reports, approve protocols, conduct various training sessions, manage and procure the utilities including medications and disposables and coordinate with other centers needing and providing help in this regard. An official group was formed by the hospital IT department to coordinate among clinical teams from medicine and pharmacy department for new research and treatment protocols. Pharmacy management played a vital role by providing latest information regarding new drugs and treatment strategies with valid references and useful discussions.

Communication plan: Due to the lockdown situation and restricted movement, face to face interaction was difficult and sometimes impossible to manage. Due to the lack of hospital official communication media like interlinked telephonic or web based email services, major communication was through personal phone calls, video linked conferences and social media like WhatsApp groups [21,22]. Pharmacy department provided 24/7 drug information to all HCPs on available communication media groups, which included queries regarding medicine availability, drugs of first choice, alternatives, drug reconstitution, administration and counselling points, dosage,

interactions, dosage modifications in comorbidities, incompatibilities, adverse drug reaction profile and contraindications.

Human resource management: Different strategies were established to reduce the impact of the pandemic on pharmacy staff and to bring the best out of the available team. Unnecessary visits of outside personnel were restricted. Duty rosters were managed according to the individual situations. Leaves and absenteeism for various reasons were compensated. Keeping in view of the physical and mental workload, staff was given adequate relief to regain energy and capacity to do work. A work from home strategy was also used in many situations (Figure 1).



Figure 1: Team pharmacy, district headquarter hospital Khushab.

In difficult times staff was requested from other departments. Hospital accommodation and conveyance were provided to some employees coming from far areas. Dedicated staff were allotted additional tasks as per need and capacity. A restricted number of volunteers were engaged and encouraged to participate and compensate for the workload. Training and education went hand in hand throughout the critical period by the pharmacy manager and clinical pharmacist in the hospital facility [23].

Rapid response task force: For effective response in minimum time, pharmacy manager established Rapid Response Call (RPC) within pharmacy department and subsequently a dedicated team namely, Rapid Response Task Force (RRTF) (Figure 2).



Figure 2: Hierarchical layout of rapid response task force.

The hierarchy was based on a closed loop system starting from primary communicators/respondents i.e., a team of pharmacy

staff which evaluated the need (either communicated or self-assessed) of provision of new service(s) and/or establishment of any mini pharmacy unit or the physical or logistic support due on part of pharmacy department. Once the need was thoroughly evaluated, it was forwarded to the pharmacy manager for final approval and/or any amendment, if needed. Then the work force including pharmacists and pharmacy assistants, who executed the approved plan of action. This model is followed to establish the satellite pharmacy in quarantine areas outside the hospital premises for suspected corona patients (Figure 3).

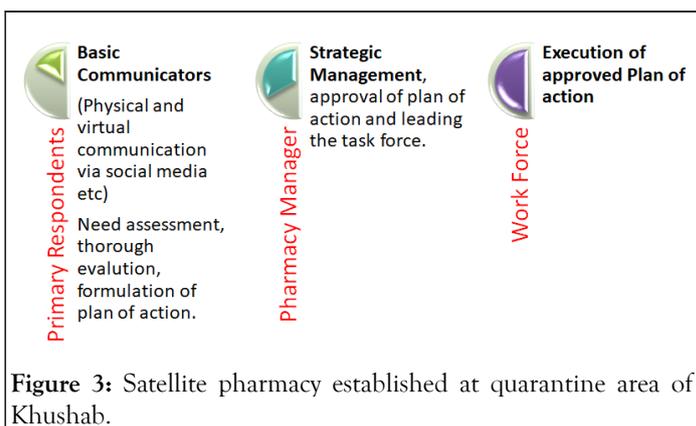


Figure 3: Satellite pharmacy established at quarantine area of Khushab.

The said unit was established on a short notice of just 3 hours starting from basic layout of unit, the medicines, surgical and allied needed, the arrangement along with supportive goods like medicine racks and emergency medicines trollies, respective labelling, deployment of human resource with a proper duty roster and pasting the supporting banners and charts along with pamphlets. Similarly, COVID-19 protection kits containing basic PPEs were designed, arranged and packed within the short slot of 4 hours.

Budgetary arrangement and pharmacoeconomics: The biggest challenge faced during the face off with Corona pandemic was financial constraints. The pharmacy manager had to manage the procurement of emergency medicines stock for COVID-19 patients along with routine medicines in the scarce hospital medicine annual budget. Details of multiple heads/quota of funds available are mentioned below.

- Hospital funds for natural disaster were utilized efficiently for the said purpose with strict monitoring and physical verification audits with the help of the dedicated team. However, we had to face a few liabilities as well.
- Funds from the local and provincial administration were requested with a very positive response after giving comprehensive briefings by pharmacy manager to higher authorities during various official hospital visits. Additional emergency relief funds were also provided by local administration, while provincial central health department provided support with top up medications, surgical supplies and necessary equipment.
- Other donations in multiple forms collected from hospital employees, medicine vendors, and local political and other notable personalities, Pakistan armed forces, NGOs and charities were utilized as well.

As patient burden from other routine ailments lessened due to lockdown and restricted admissions in hospital, the funds for local purchase of medicine were dedicatedly spent for COVID-19 patients. Due to constantly changing guidelines and protocols, many non-formulary drugs had to be purchased periodically.

Cost efficient decisions: One of the biggest achievements of pharmacy department was anticipated timely cost efficient decisions for medicine purchase. In the mere start of pandemic, the core committee of pharmacy department foresightedly assessed the expected medicines shortage and price hike in market and consequently decided to purchase dedicated medicines and PPEs stock by considering different pharmacoeconomics perspectives for example cost effectiveness analysis and local and international health regulatory bodies recommendations such as WHO, NIH and health ministry. This pragmatic decision not only saved direct and indirect costs providing opportunistic monetary benefits but also ensured the uninterrupted medicine supply.

Services: As an integral part of healthcare team, pharmacy staff was among the front line warriors and played significant role in their maximum professional capacity for patient care.

- **Establishment of pharmacy units:** Pharmacy department established fully equipped indoor and outdoor satellite pharmacies as per available resources in district quarantine areas, field hospitals, medical camps, mobile medical units and to other small healthcare facilities at tehsil and town level. These facilities were visited regularly by pharmacy manager and/or on duty pharmacists ensuring regular medicine and disposables supply with proper documentation against validated indent requests to meet the needs of each health facility [24].
- **Extended pharmacy services:** Provision of dedicated specialized pharmacy units with Medication Crash Cart Boxes (MCCBs), approved list of medications and their stock levels, basic and auxiliary medicines labelling and individualized medicines bags to be used in COVID-19 HDUs at DHQH Khushab (Figures 4 and 5) [25].



Figure 4: Satellite pharmacy established in COVID HDU.



Figure 5: MCCB trolley placed in COVID HDU.

- **Concurrent inventory management:** Regular inventory reviews were conducted to check the status of available medicine like out of stock or excess items. Demand requests were generated for out of stock items for approval from hospital procurement committee and excess medications were issued in bulk medicine to other nearby needy facilities within and out of the district, to cope with the overall state of emergency [26].
- **Prescription verification and issuance of medicines stock:** As hospital operations were being dealt manually, individualized patient prescriptions were received from COVID-19 HDUs by dedicated staff on validated indent books with all codal formalities and medications were issued after proper prescription verification by clinical pharmacist.
- **Clinical services:** Despite the extreme staff shortages, provision of 24/7 drug information was another first ever and the most needed service by pharmacy department in DHQH Khushab during pandemic. Drug information included prescription verification, pharmaceutical care plans, consultations to physicians and nurses for therapeutic and pharmaceutical alternatives, dosing, drug and food interactions and ADRs.
- **Provision of PPEs and specially designed kits:** Department of pharmacy also ensured continuous provision of individualized personal protective equipment and especially in-house prepared corona protection kits for all healthcare professionals and other assisting and technical staff. These kits included self-prepared hand sanitizers and some non-formulary essential medications needed as per WHO protocols throughout the hospital. Moreover, these safety kits were also provided to the outside supportive staff deputed in hospital premises such as, local police staff serving on Khidmat counters for additional security and information provision, local emergency management squad named as 1122, technical staff serving for the transportation of patients in local area (Figure 6).



Figure 6: COVID-19 protection kits prepared by team pharmacy at DHQ hospital Khushab.

Audits: To ensure transparency at every level, pharmacy department conducted regular audits for individual professional services, medications and supplies to avoid any misconduct/mismanagement during emergency.

Monetary audits: Monetary audits were conducted at three different levels by both internal and external auditors. Primary level audit was conducted at pharmacy departmental level by the designated drug inspector, who frequently checked the need/requisition, transparent procurement with proper documentation and dispensation to respective departments. The second level audit was conducted at hospital management level where hospital audit officer checked the accounts for the rationality of the procurement process. Both audits were carried out periodically on a monthly and/or quarterly basis. The third level annual audit was successfully conducted at provincial level, where an external auditor verified the transparency and efficiency of services throughout the hospital.

Audits for services provision: As a part of continuous evaluation of quality assurance, periodic audits were conducted by the pharmacy manager for appraisal of services provided in terms of time taken in task completion, rationality, quality, HR management and patient and hospital administration satisfaction level. Moreover, areas of improvement were identified and suggestions were made in detailed audit reports presented to central provisional health department.

Feedback system and service loop: A well-organized Feedback System (FBS) was made operational in the Pharmacy department that played pivotal role in service provision during the dark days of the pandemic. The organizational layout and its working are depicted in Figure 7.

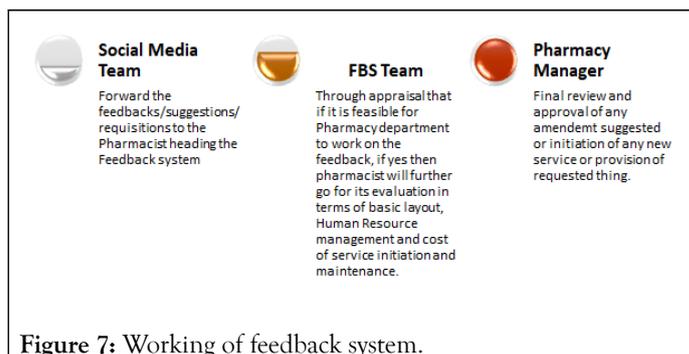


Figure 7: Working of feedback system.

Telemedicine unit's establishment: Hospital administration established telemedicine units with the help of medical and pharmacy staff to provide tele-health services for the patients who were unable to reach hospital premises. Large number of patients was facilitated *via* these units for not only medical advice but with free medicine supply. As courier services for home delivery were unaffordable for pharmacy department, a good number of hospital employees volunteered to drop off medications to the patients, living in the vicinity of their own residential areas.

Empathy, counselling and psychological support: Satellite pharmacies in COVID-19 HDUs, field hospitals and quarantine areas were decorated with encouraging quotes, nutrition tips from hospital clinical nutritionist and prayers and wishes on pamphlets and chart papers (Figure 7). Pharmacy management continuously worked on providing psychological and emotional support to healthcare providers, patients and attendants by counseling sessions arranged with the help of hospital clinical psychologist and appreciating and encouraging behaviors and attitudes. Pharmacy staff initiated another volunteer service with miscellaneous donations and charity aids to arrange groceries, extra medical help, cash money and other necessary expenses to all local needy victims of pandemic. Moreover, drinking water and food packs were distributed to healthcare teams working in camps and mobile units.

Inspiring others: Pharmacy department of DHQH Khushab inspired many others and our team helped in maximum professional capacity by telephonic communication, official visits and virtually *via* social media communication and videos of pharmacy services released from time to time by official YouTube channel of our health facility (Figures 8 and 9).

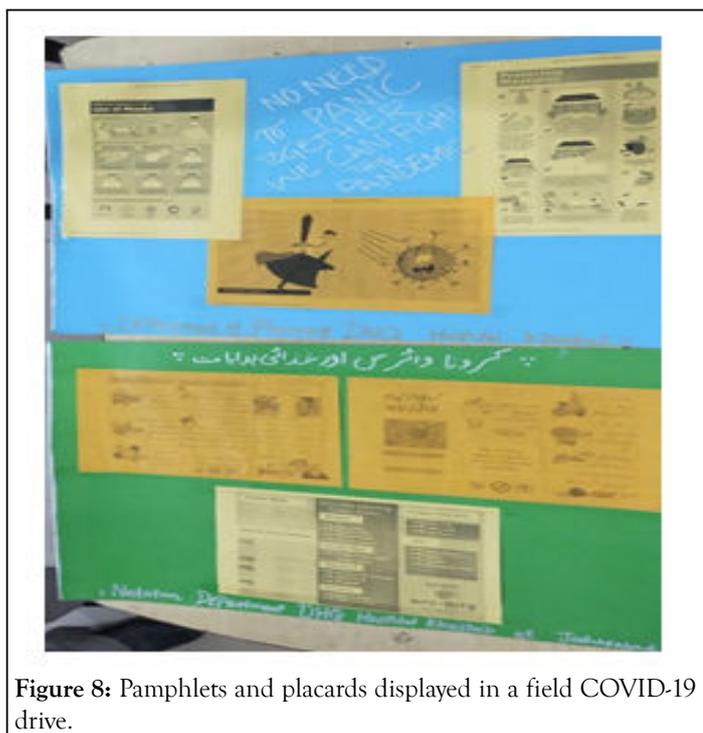


Figure 8: Pamphlets and placards displayed in a field COVID-19 drive.



Figure 9: Pharmacy manager accompanying hospital management during official visits.

CONCLUSION

As a result of the extraordinary efforts and coordinated teamwork, DHQH Khushab pharmacy department was thoroughly appreciated not only among in house hospital management but also by district and provisional health departments. DHQH Khushab pharmacy was nominated as model pharmacy among all the district level hospitals throughout the Punjab province. Moreover, honorable prime minister of Pakistan Imran Khan himself acknowledged and appreciated the services of DHQH Khushab in an official visit regarding the COVID-19 situation and management all over the country. The DHQH Khushab pharmacy department was awarded with honorary shield in Pakistan excellence award show based on a theme to honor the COVID-19 heroes conducted in January 2021, in Lahore, Pakistan.

RECOMMENDATIONS

Pharmacists across the globe have proven themselves as an essential component of qualified and expert clinical team by playing extremely significant role during COVID-19 pandemic. It is clearly evident that pharmacists are part and parcel of healthcare system not only in developed/rich countries but in low middle income countries as well. In Pakistan, acceptance and establishment of pharmacist's role is a difficult and developing task. Keeping in view the current situation of healthcare services provision and scarcity of qualified professionals in Pakistan, it is suggested to provide pharmacists with better opportunities of pharmacy practice in hospital and community for the growth and innovation in this most needed healthcare profession.

REFERENCES

1. Li H, Zheng S, Liu F, Liu W, Zhao R. Fighting against COVID-19: Innovative strategies for clinical pharmacists. *Res Social Adm Pharm.* 2021;17(1):1813-1818.
2. Goff DA, Ashiru-Oredope D, Cairns KA, Eljaaly K, Gauthier TP, Langford BJ, et al. Global contributions of pharmacists during the COVID-19 pandemic. *J Am Coll Clin Pharm.* 2020;3(8):1480-1492.
3. Hussain K, Ambreen G, Muzammil M, Raza SS, Ali U. Pharmacy services during COVID-19 pandemic: Experience from a tertiary care teaching hospital in Pakistan. *J Pharm Policy Pract.* 2020;13(1):1-4.
4. Herranz-Alonso A, Rodriguez-Gonzalez CG, Sarobe-Gonzalez C, Alvarez-Diaz A, Sanjurjo-Saez M. Pharmacy department management and organization. *Farm Hosp.* 2020;44(7):5-10.
5. Meng L, Huang J, Qiu F, Sun S. Roles of the Chinese clinical pharmacist during the COVID-19 pandemic. *J Am Coll Clin Pharm.* 2020;3(5):866.
6. Bukhari N, Rasheed H, Nayyer B, Babar ZUD. Pharmacists at the frontline beating the COVID-19 pandemic. *J Pharm Policy Pract.* 2020;13(1):1-4.
7. Visacri MB, Figueiredo IV, Lima T de M. Role of pharmacist during the COVID-19 pandemic: A scoping review. *Res Social Adm Pharm.* 2021;17(1):1799-1806.
8. Junaidi Ikram. WHO praises Pakistan's handling of COVID-19 pandemic. *DAWN, Pakistan.* September 11, 2020.
9. Lone T, Bischler J, Marzi M. Towards shock responsive social protection: Lessons from the COVID-19 response in Pakistan. *Research Report, Oxford Policy Management, UK.* 2021.
10. Khullar D, Bond AM, Schpero WL. COVID-19 and the financial health of US hospitals. *JAMA.* 2020;323(21):2127-2128.
11. Kretchy IA, Asiedu-Danso M, Kretchy JP. Medication management and adherence during the COVID-19 pandemic: Perspectives and experiences from low and middle income countries. *Res Social Adm Pharm.* 2021;17(1):2023-2026.
12. Aruru M, Truong HA, Clark S. Pharmacy Emergency Preparedness and Response (PEPR): A proposed framework for expanding pharmacy professionals' roles and contributions to emergency preparedness and response during the COVID-19 pandemic and beyond. *Res Social Adm Pharm.* 2021;17(1):1967-1977.
13. Dawoud D. Emerging from the other end: Key measures for a successful COVID-19 lockdown exit strategy and the potential contribution of pharmacists. *Res Social Adm Pharm.* 2021;17(1):1950-1953.
14. Gross AE, MacDougall C. Roles of the clinical pharmacist during the COVID-19 pandemic. *J Am Coll Clin Pharm.* 2020;3(3):564-566.

15. Atif M, Malik I, Mushtaq I, Asghar S. Medicines shortages in Pakistan: A qualitative study to explore current situation, reasons and possible solutions to overcome the barriers. *BMJ Open*. 2019;9(9):e027028.
16. Barello S, Palamenghi L, Graffigna G. Empathic communication as a “risky strength” for health during the COVID-19 pandemic: The case of frontline Italian healthcare workers. *Patient Educ Couns*. 2020;103(10):2200.
17. Gueiros LA, Melo TS, Carrard VC. A simple tool to a complex reality-WhatsApp use in a developing country during COVID-19 pandemic. *Oral Dis*. 2021;27(S3):796-797.
18. Gan WH, Lim JW, Koh D. Preventing intra hospital infection and transmission of Coronavirus disease 2019 in health care workers. *Saf Health Work*. 2020;11(2):241-243.
19. Carnevale JB, Hatak I. Employee adjustment and well-being in the era of COVID-19: Implications for human resource management. *J Bus Res*. 2020;116:183-187.
20. Liu S, Luo P, Tang M, Hu Q, Polidoro JP, Sun S, et al. Providing pharmacy services during the Coronavirus pandemic. *Int J Clin Pharm*. 2020;42(2):299-304.
21. Lee CC, Thampi S, Lewin B, Lim TJ, Rippin B, Wong WH, et al. Battling COVID-19: Critical care and peri-operative healthcare resource management strategies in a tertiary academic medical centre in Singapore. *Anaesthesia*. 2020;75(7):861-871.
22. Hong Z, Li N, Li D, Li J, Li B, Xiong W, et al. Telemedicine during the COVID-19 pandemic: Experiences from Western China. *J Med Internet Res*. 2020;22(5):e19577.
23. DAWN. PM Imran praises NCOC after Pakistan ranked among top countries for handling COVID-19 Pakistan. Editorial. July 7, 2021.
24. Poh AL, Lin W. Role of the pharmacist during the COVID-19 pandemic: A time to rethink strategies. *Singapore Med J*. 2021;62(6):315.
25. David KB, Adebisi YA. Proposed model for hospital and community pharmacy services during COVID-19 pandemic in Nigeria. *Int J Pharm Pract*. 2020;28(5):544-545.
26. Merks P, Jakubowska M, Drelich E, Swieczkowski D, Bogusz J, Bilmin K, et al. The legal extension of the role of pharmacists in light of the COVID-19 global pandemic. *Res Social Adm Pharm*. 2021;17(1):1807-1812.