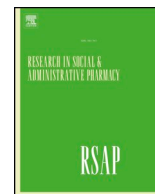




Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



Emergency preparedness and response (EP&R) by pharmacy professionals in India: Lessons from the COVID-19 pandemic and the way forward



Aruru Meghana (Ph.D., MBA, B.Pharm)^{a,*,**}, Yerramilli Aparna (Pharm.D, M.Pharm, R.Ph)^b, Sekar M. Chandra (R Ph., Ph D., FAPhA, FIPA)^c, Sharma Sanjeev (M.D., M.C.P)^d

^a Program Evaluation and Research Unit (PERU), University of Pittsburgh, School of Pharmacy, USA

^b Dept of Pharmacy Practice, Sri Venkateswara College of Pharmacy, Osmania University, Hyderabad, 500081, India

^c College of Pharmacy, University of Findlay, Findlay, 45840, OH, USA

^d Pharmacovigilance Center Coordinator, Apollo Hospitals Enterprises Ltd, Delhi, 110076, India

ARTICLE INFO

Keywords:

COVID-19

Pharmacists

Pharmacy professionals

India

Emergency preparedness and response

Disaster management

ABSTRACT

The COVID-19 pandemic highlights the importance of Emergency Preparedness & Response (EP&R) education, training, capacity building and infrastructure development in India. During the pandemic, pharmacy professionals (PPs) in India have continued to provide medications, supplies and services. India's public-private healthcare system is complex and of variable quality. Lacunae in pharmacy education, training, and lack of resolution around pharmacist roles present challenges in providing health services to patients. Such lack of differentiation creates challenges around role specifications and appropriate placement of PPs in patient care and on EP&R task forces or representation at the policy level. This study aimed to gain rapid insights from PPs in India regarding their roles and preparedness for the COVID-19 pandemic. An online survey comprising 20 questions regarding EP&R and Operations management was developed using the Qualtrics® survey software and administered to a sample of PPs. Survey results indicate that PPs were actively involved in essential pharmacy services despite minimal EP&R training. Based on lessons learned during COVID-19, lacunae in knowledge, training and regulations were identified and recommendations are provided to broaden PP roles and enable them to be better prepared and actively engaged in EP&R for future emergencies.

Introduction

COVID-19 (SARS Cov-2 virus) was identified in Wuhan, China in December 2019 and rapidly spread to 177 countries. As of April 14, 2020, there were over 1.9 million confirmed COVID-19 cases and 117,000 deaths globally.¹ While most countries saw a sudden rise in cases, India, the second most populous country with 1.38 billion people (~17.7% of the world's population) has reported 10,000 cases with 393 deaths as of April 14, 2020.²

The first COVID-19 case in India was identified on Jan 30, 2020 in the Southern state of Kerala.³ Community transmission is reported to be slow and limited. In the initial days since the first confirmed COVID-19 case, there were few testing sites with a few hundred tests conducted nationwide daily. As of April 10, 2020, the Indian Council of Medical Research designated 146 government testing laboratories and 67 private laboratories for COVID-19 testing.³ On March 24, 2020, a countrywide lockdown was announced and went into effect immediately.

This lockdown was abrupt and resulted in a mass exodus of 120 million individuals (mostly migrant and seasonal laborers).⁴ This mass exodus has been compared to the partition of India wherein, 14–15 million individuals were displaced. Results from this mass exodus in terms of COVID-19 transmission or infections in rural areas (where access to healthcare services tends to be far less than urban areas), may likely result in not only overwhelming the fragile and fragmented healthcare system but also pushing them into poverty and starvation.

India's healthcare system is a complex network of public and private providers. The public sector offers healthcare at low or no cost but is perceived as being unreliable, of low quality and generally not the first choice, unless one cannot afford private care.^{5–7} In 2018, India had 8.5 medical doctors, 17 nurses, 1.8 dentists and 8.8 pharmaceutical personnel per 10,000 population.⁸ As of March 2019, there were 1,125,222 registered pharmacists and about 650,000 registered pharmacists⁹ of varied educational backgrounds reportedly working in 800,000 retail pharmacies.¹⁰

* Corresponding author.

E-mail addresses: meghana.aruru@pitt.edu (A. Meghana), aparnayerramilli@gmail.com (Y. Aparna), sekar@findlay.edu (S.M. Chandra), sanjeevsham.cp@gmail.com (S. Sanjeev).

<https://doi.org/10.1016/j.sapharm.2020.04.028>

Received 23 April 2020; Accepted 23 April 2020

Available online 25 April 2020

1551-7411/ © 2020 Elsevier Inc. All rights reserved.

Pharmacy programs in India include: 2-year Diploma in Pharmacy (D.Pharm), 4-year Bachelor's of Pharmaceutical Sciences (B.Pharm), 2-year Masters in Pharmaceutical Sciences (M.Pharm), 6-year Doctor of Pharmacy (Pharm.D), 3-year Post Baccalaureate Pharm.D, all of whom can be registered and licensed as pharmacists under the Pharmacy Act, 1948.¹⁰ Pharmacists lack provider status and recognition.¹¹ However, community pharmacists are one of the most accessible health care professionals with potential for providing pharmaceutical care and health information, especially during pandemics like COVID-19. The number of pharmacists - clinical and staff, working in hospitals have increased steadily in the past decade with the advent of the Pharm.D program and due to hospital accreditation requirements. Lacunae in pharmacy education, training, and lack of resolution around pharmacist roles present challenges in providing health services to patients. This lack of differentiation creates challenges around role specifications and appropriate placement of clinically trained Pharmacy Professionals (PP) along with challenges of their incorporation in Emergency Preparedness & Response (EP&R).

PPs around the world have significant roles to play in emergencies as outlined by the FIP guidance,¹² Joint Statement by Pharmacy organizations in the U.S,¹³ relevant publications in the RSAP journal^{14,16} and the proposed PEPR framework.¹⁵ Since PP roles in India are often varied, limited to dispensing, and less involved in clinical decision making, we present opportunities and challenges for PPs in the COVID-19 pandemic as identified through literature and PP responses to a survey developed for this study titled 'Preparedness of Pharmacists in India to address the COVID-19 pandemic'.

Methods

An online survey comprising 20 questions regarding Emergency Preparedness and Operations management was developed using the Qualtrics® survey software and was disseminated to a convenient sample of known pharmacy networks in India through the WhatsApp messaging platform.

Results

24 PPs from 7 states (1 north, 1 west, 5 south) responded to the informal survey. Average age was 35 years (range: 24–58 years) and average years of practice were 5.83 (range: 1–27 years). Of the 24 PPs, there were 13 Pharm.Ds, 5 M.Pharm, and 4 joint M.Pharm-Pharm.D. 11 respondents work in academia ,2 in clinics and 11 in community pharmacies . Survey results are presented in [Table 1](#).

Incomplete surveys were deleted from the analysis. Of those PPs reporting undergoing COVID-19 training, 87% said that the training lasted between 1-3 hours. 11 PPs sought training on mask selection and fitting. PPs emphasized social distancing and isolation as strategies for infection control and reported increased demand for hydroxychloroquine, chloroquine, azithromycin, and antivirals, but did not report price increases for these drugs. PPs also reported screening patients for fever (67%), cough (42%), emotional and anxiety issues

Table 1
COVID-19 Survey results.

Domains	Responses (Yes)
COVID-19 emergency training provided by organization	16 (66.7%)
Adequate PPEs available for pharmacy staff protection	20 (83%)
Knowledge of mask selection and use	21 (87.5%)
Perceived preparedness for COVID-19 pandemic	20 (83%)
Challenges with procurement of hydroxychloroquine, chloroquine, azithromycin	5 (20.8%)
Collaboration with other pharmacies to procure medications and supplies	6 (25%)
Patient communication materials prepared and distributed	10 (41.7%)



Fig. 1. Maintaining social distancing. (image reproduced with permission)

(33%) alongwith numerous actions taken towards social distancing such as telephone consultations, educating patients, and disseminating information on handwashing and mask usage. PPs reported that their organizations were taking steps to address fear and anxiety among staff. (See [Fig. 1 and 2](#))

Discussion

PPs in India are beginning to experience similar challenges as exemplified in other articles in the RSAP journal. Opportunities exist to reframe the roles of PPs and include them in EP&R planning at the policy level and beyond as discussed below:

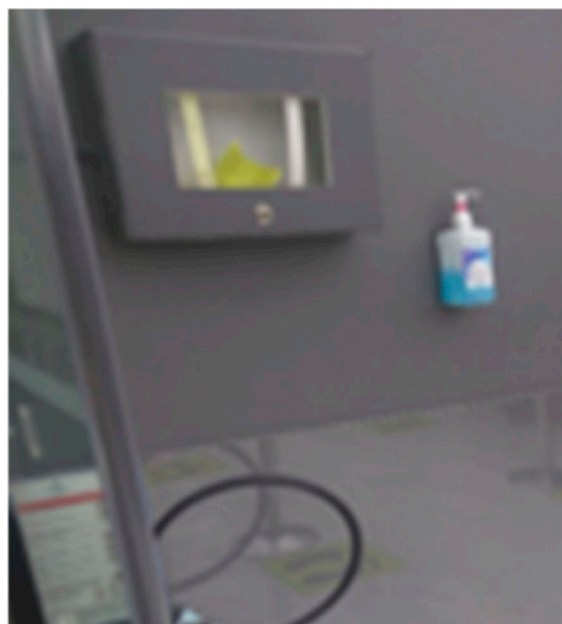


Fig. 2. Sanitizer placements in pharmacy.(image reproduced with permission)

Box 1

Case Study: Pharmacy emergency preparedness at a tertiary care hospital

Inventory control

- Coordinate with major manufacturers for supplies
- Maintain uninterrupted supplies of critical medications and PPEs
- Optimize medications and supplies to group hospitals
- Adhere to Good Retail Practices

Personnel safety

- Educate pharmacy team on Covid-19 precautions during patient interactions
- Ensure pharmacy is safe for people to visit and identify isolation areas
- Provide staff with 3-ply masks and sanitizers
- Enforce hand sanitization and social distancing by queue managers
- Regularly disinfect of pharmacy areas with hypochlorite solution
- Alternate work days for pharmacy personnel
- Suspend biometric timecard system to prevent transmission

Drug distribution and usage

- Increase dispensing frequency from daily to 3-days reducing ward visits for delivery
- Install barrier protection measures at dispensing windows
- Monitor use of selected anti-infectives and critical care drugs

Emergency preparedness and response (EP&R)

In our survey, PPs responded that they would like to be trained and better prepared for COVID-19 and other emergencies. Engaging PPs in policy making and developing a cadre of EP&R professionals to serve and respond is the first step to address this gap in India's EP&R to COVID-19 and beyond. A welcome initial step was taken by the Ministry of Health and Family Welfare by requesting the Pharmacy Council of India, the accrediting body for Pharm.D education to prepare a state-wise national list of pharmacists who can be enrolled as part of the COVID warriors health force and by making the State Pharmacy Councils as nodal offices (<https://covidwarriors.gov.in/>). Inclusion of PPs in policy making is encouraged to enable professional expansion (for e.g. in the U.S., many states have implemented collaborative practice agreements allowing PPs to bill for services such as point-of-care testing and immunizations).¹⁷

Training through continuing education programs is needed to keep PPs updated with current knowledge and practices. Such training could include EP&R modules to address medical and pharmaceutical waste management, minimize contagion, and provide accurate information to patients and communities. Currently, few schools of pharmacy address public health and community health in their curricula. Universities, accreditation bodies and educational boards should consider including EP&R in curricula to address the lacuna in training.¹⁸

In response to emergencies, the National Disaster Management Authority (NDMA)¹⁹ was enacted in 2005 to address disaster preparedness and response, including a National Disaster Response Force (NDRF)²⁰ that has 12 battalions trained and equipped to respond to natural and man-made disasters. Currently, there is no mention of PPs in the Act or among the NDRF battalions. It is recommended that PPs be included in the NDRF battalions and on task force planning and responses to chemical, biological, radiological, nuclear emergencies. Further, the Indian Council of Medical Research received U.S \$500 million from the World Bank's fast track COVID-19 facility. PPs should be included as stakeholders in the development of EP&R measures through this program.²¹

Operations management

Supply chain: Supply chains in India are currently sub-optimally designed, lack end-to-end visibility, and have been slow to adopt digital technologies.²² Challenges in procurement and distribution are likely to result from disruptions to supply chains. PPs could play an important role in estimating supplies during emergencies and when lockdowns are mandated to ensure sufficient stocks of medications for chronic

illnesses, anti-infectives, PPEs, and commonly used OTC products are available.

Inventory management

Pharmacies in India ran out of their limited PPE stock within days of the first COVID-19 case being identified. This surge in demand could not be met by small community pharmacies with limited capacity.²³ Collaboration and cooperation among pharmacies may help ensure uninterrupted medications and supplies, particularly in hard-to-reach areas, to ensure continuity-of-care and prevent contagion. PPs may extend their involvement to recommend safe and effective therapeutic alternatives while prioritizing limited supplies and medications for patients based on their clinical needs.

Patient management: Pharmacists as essential healthcare workers have continued to remain accessible and provide medications and supplies to their communities. Currently, COVID-19 patients are being treated in only government hospitals.²⁴ However, when the number of cases increase, the private sector would be required to admit patients and provide necessary treatments. Major tertiary care hospitals have emergency preparedness plans and hospital pharmacists should be included in the planning and execution of such plans to ensure optimal medication safety and usage (Box 1).

Workplace safety: India's 1.3 billion population was abruptly placed under lockdown for 21 days initially from March 24th onwards to prevent community spread. At the time of writing this paper, the duration of lockdown was extended by 2 more weeks. There were reports of healthcare professionals being harassed and at the receiving end of violent and uncivil behavior by public and law enforcement officials.²⁵ All healthcare workers should be protected, and measures need to be taken in order to ensure their physical safety as well as ensuring that they have adequate PPEs to protect themselves from contagion.

Expanding PP roles: PPs roles in India incorporate dispensing, stocking, manufacturing, quality assurance, clinical trial management, academia, and research. With the advent of the Pharm.D, these roles could be further expanded into provision of patient care and population health interventions such as screenings for infectious and certain non-communicable diseases, addressing medication adherence, evaluating medication utilization, providing stewardship on antimicrobial resistance, leading to additional support to the healthcare sector. For instance, collaborative practice agreements (CPPA) with physicians would enable PP to assess medication adherence, develop patient care plans including medication safety, monitor health outcomes, among others.¹⁷

Ethics and Integrity: Reports in media indicating challenges of hoarding hydroxychloroquine, chloroquine, azithromycin, vitamin C by healthcare professionals and public emerged in several parts of the country²⁶ following ICMR guidelines on their prophylaxis in COVID-19.²⁷ In response, the Ministry of Health and Family Welfare imparted Schedule H1 status for Hydroxychloroquine (<https://www.mohfw.gov.in/pdf/RevisedNationalClinicalManagementGuidelineforCOVID1931032020.pdf>) thereby limiting its demand and inappropriate use. India's pharmaceutical manufacturing sector was directed to increase the output of these drugs to meet surges in demand. Steps were taken to ensure that local demands were met prior to exports to countries in need. In our study, hoarding or price increases were not reported. Nevertheless, rigorous training on professional ethics and integrity needs to be reinforced in pharmacy students and healthcare professionals through ongoing and continuing education.

Research and dissemination for impact

Post introduction of the 2008 Pharm.D program in India, the number of research projects and awareness activities in hospital and community settings have increased.²⁸ Many schools of pharmacy regularly organize activities on World Health days (e.g. World TB day, No Tobacco day) to improve awareness and educate the general public.

However, programs on EP&R such as Point of Dispensing (POD) drills,²⁹ stockpiles,³⁰ public awareness campaigns are yet to be seen. Additional research and evaluation is needed, particularly in EP&R, to highlight and demonstrate the value of PPs in emergencies.

Conclusion

The COVID-19 pandemic has revealed lacunae in the healthcare system, education, and training of PPs for EP&R in India. A systematic review of the population's needs is needed to develop a PP EP&R framework to enable effective responses in emergencies. Formalizing such EP&R responses through education, training, and research would further serve to expand PPs roles and recognition as healthcare professionals in India.

Recommendations

While every country's situation and responses are unique, lessons learned in EP&R, particularly relevant for Indian PPs are provided below based on several papers addressing the topic (Table 2).

Table 2
Recommendations for Indian PPs EP&R.

Knowledge & Training	Regulations	Recommendations
EP&R knowledge and competencies <ul style="list-style-type: none"> Partnerships and knowledge sharing among pharmacy advocacy groups and public health departments Point of Dispensing (POD) drills²⁹ EP&R exercises/simulations (https://www.fema.gov/news-release/2009/01/12/national-exercise-simulation-center-nesc) 	<ul style="list-style-type: none"> Recognition as healthcare providers Inclusion in policy making and EP&R framework Inclusion of PPs in the National Disaster Management Agency (NDMA) Inclusion of PPs as stakeholders in the ICMR's India COVID-19 Emergency Response and Health Systems Preparedness Project 	<ul style="list-style-type: none"> Form a coalition of pharmacy advocacy groups Develop India PP specific EP&R framework Identify and create registry of PPs for emergency Deploy pharmacy interns during emergencies Train and deploy PPs in the NDRF and other task forces Incorporate EP&R experiences and drills into practice experiences
Operations management <ul style="list-style-type: none"> Inventory and Supply chain management; Drug shortages Contingency measures Professional ethics and integrity 	<ul style="list-style-type: none"> Creation of a national stockpile for medications and supplies Enable modification of workflow protocols during emergency Allowances for temporary leaves and work security Enforcement of Good Pharmacy Practice (GPP) 	<ul style="list-style-type: none"> Include PPs as part of the National Health task force and discussions on national stockpiles or supply chains Integrate community pharmacies with the manufacturing sector, national health schemes, IT and communication technology and logistics of delivery and distribution Develop ethical leadership and management skills for PPs
Patient Care and Population Health <ul style="list-style-type: none"> Rational use of drugs Therapeutic Interchange and substitution Infection control measures (e.g. use of PPEs) Screening of at-risk patients for symptoms and refer suspected cases Dissemination of accurate disease and drug information Immunization delivery Mental and behavioral health training 	<ul style="list-style-type: none"> Strengthen the role of the Drug Control department in preventing non-prescription dispensing and irrational use/misuse of medications Develop e-prescribing standards Guidelines from Central and State departments of health Central and State departments of health to authorize screenings and referrals Guidelines by pharmacy organizations (such as Indian Pharmaceutical Association) Authorize PP based Immunization delivery and certification Certification of core mental/behavioral health PPs 	<ul style="list-style-type: none"> Reinforce Schedule H1 registry and monitor purchase and sale of selected anti-infectives Train PPs in Good Pharmacy Practice: https://ipapharma.org/wp-content/uploads/2019/02/gpp-manua-1.pdf Provide online resources of training materials for PPs to enable dissemination to the public Remove operational barriers and facilitate contribution of PPs towards patient care Expand current efforts to provide evidence-based information such as safe medication use guidance, infection control Develop training programs for immunization certification Develop interprofessional training programs for mental/behavioral health
Pharmacy Education and Continuing Professional Education <ul style="list-style-type: none"> Degree-based competency checklist Community pharmacy training for all pharmacy programs Communication skills and collaboration with other healthcare professionals Interprofessional education and experiences 	<ul style="list-style-type: none"> Recognition of D.Pharm as 'pharmacy technicians' and grandfathering existing D.Pharm. Appropriate designations for B.Pharm./M.Pharm./Pharm.D degrees Pharmacy curriculum to include EP&R and public health communications Mandate continuing education credits for license maintenance and renewal 	<ul style="list-style-type: none"> Develop PP competencies for various roles Provide continued opportunities for faculty professional development in pharmacy practice Redesign and revise curriculum to incorporate evidence-based science and practices in EP&R and health communications Develop continuing education programs for PPs

Acknowledgements

We thank the responders of the COVID-19 survey. We thank Mr. Ashok Eku and Dr. Arun Santhosh in helping us understand the scenario in India during this epidemic. Many thanks to Mr. Satheesh Gottipati for reviewing the manuscript.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.sapharm.2020.04.028>.

References

1. WHO. <https://covid19.who.int/> Accessed April 19, 2020.
2. MoHFW. Home. Accessed April 18, 2020 <https://www.mohfw.gov.in/>.
3. Tracking India's Coronavirus Spread. Kaggle. <https://www.kaggle.com/parulpandey/tracking-india-s-coronavirus-spread-wip>. Accessed April 6, 2020.
4. India's Coronavirus Lockdown Means Millions Of Migrant Workers Can't Earn A Living: Goats and Soda: NPR. <https://www.npr.org/sections/goatsandsoda/2020/03/31/822642382/coronavirus-lockdown-sends-migrant-workers-on-a-long-and-risky-trip-home> Accessed April 18, 2020.
5. Chokshi M, Patil B, Khanna R, et al. Health systems in India. *J Perinatol*. 2016;36(3):S9–S12. <https://doi.org/10.1038/jp.2016.184>.
6. Mohanan M, Hay K, Mor N. Quality of health care in India: Challenges, priorities, and the road ahead. *Health Aff*. 2016;35(10):1753–1758. <https://doi.org/10.1377/hlthaff.2016.0676>.
7. Kasthuri A. Challenges to healthcare in India - The five A's. *Indian J Community Med*. 2018;43(3):141–143. https://doi.org/10.4103/ijcm.IJCM_194_18.
8. WHO. *Density of physicians (total number per 1000 population, latest available year)*. WHO; 2018.
9. *e-National Health Profile: Central Bureau of Health Intelligence*. Central Bureau of Health Intelligence; 2019 <https://www.cbhidghs.nic.in/index7.php?lang=1&level=0&linkid=1086&lid=1107&color=1> Accessed April 19, 2020.
10. Registration of Pharmacists. Pharmacy Council of India. http://www.pci.nic.in/pharmaact_chapter4.html Accessed April 19, 2020.
11. Corona Warriors: "PM Modi Ignored Us," Say Pharmacists as Gadkari Opens Old Wound. <https://www.outlookindia.com/website/story/india-news-corona-warriors-pm-modi-ignored-us-say-pharmacists-as-gadkari-opens-old-wound/349665> Accessed April 18, 2020.
12. *FIP Health Advisory Coronavirus SARS-CoV-2 / COVID-19 Pandemic: Information and interim guidelines for pharmacists and the pharmacy workforce*. 2020; 2020:1–48 <https://www.fip.org/files/content/priority-areas/coronavirus/Coronavirus-guidance-update-ENGLISH.pdf>.
13. Pharmacist Advocacy Groups Call for New Action to Enhance COVID-19 Patient Care | AACP. <https://www.aacp.org/article/pharmacist-advocacy-groups-call-new-action-enhance-covid-19-patient-care>. Accessed March 29, 2020.
14. Amariles P, Granados J, Ceballos M, Montoya CJ. COVID-19 in Colombia endpoints. Are we different, like Europe? *Res Soc Adm Pharm*. March 2020. <https://doi.org/10.1016/j.sapharm.2020.03.013>.
15. Aruru M, Truong H-A, Clark S. Pharmacy Emergency Preparedness and Response (PEPR) framework for expanding pharmacy professionals' roles and contributions to emergency preparedness and response during the COVID-19 pandemic and beyond. *Res Soc Adm Pharm*. April 2020. <https://doi.org/10.1016/j.sapharm.2020.04.002>.
16. Zheng S, Yang L, Zhou P, Li H, Liu F, Zhao R. Recommendations and guidance for providing pharmaceutical care services during COVID-19 pandemic: A China perspective. *Res Soc Adm Pharm*. 2020. <https://doi.org/10.1016/j.sapharm.2020.03.012>.
17. CDC. *Collaborative Practice Agreement and Pharmacists' Patient Care Services*. 8. Cent Dis Control; 2013 http://www.cdc.gov/dhds/pubs/docs/Translational_Tools_Pharmacists.pdf.
18. Pharmacy Council of India. <http://www.pci.nic.in/> Accessed April 18, 2020.
19. National Disaster Management Authority. Government of India. <https://www.ndma.gov.in/en/about-ndma/evolution-of-ndma.html> Accessed April 19, 2020.
20. National Disaster Response Force. Ministry of Home Affairs. Government of India. <http://www.ndrf.gov.in/about-us>. Accessed April 19, 2020.
21. Indian Council of Medical Research. *Preliminary Stakeholder Engagement Plan (SEP) - India COVID-19 Emergency Response and Health Systems Preparedness Project (P173836)*. 2020; 2020 <https://www.icmr.nic.in/content/preliminary-stakeholder-engagement-plan-sep-india-covid-19-emergency-response-and-health> Accessed April 19, 2020.
22. Varma N, Gupta A, Mithe R, Kavathekar A. *Supply Chains in India: A Reality Check*. 2018; 2018 <https://home.kpmg/in/en/home/insights/2018/11/supply-chains-in-india-reality-check.html>.
23. Gross AE, MacDougall C. Roles of the clinical pharmacist during the COVID-19 pandemic. *J Am Coll Clin Pharm*. March 2020. <https://doi.org/10.1002/jac5.1231>.
24. *Advisory for Hospitals and Medical Education Institutions*. 2020; 2020 <https://www.mohfw.gov.in/pdf/AdvisoryforHospitalsandMedicalInstitutions.pdf>.
25. Doctors Come Under Attack in India as Coronavirus Stigma Grows - Bloomberg. <https://www.bloomberg.com/news/articles/2020-04-13/doctors-come-under-attack-in-india-as-coronavirus-stigma-grows> Accessed April 18, 2020.
26. Hydroxychloroquine becomes a Schedule H1 drug as hoarding leads to shortage - The Economic Times. https://economictimes.indiatimes.com/industry/healthcare/biotech/pharmaceuticals/hydroxychloroquine-becomes-a-schedule-h1-drug-as-hoarding-leads-to-shortage/articleshow/74842650.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cpsst Accessed April 18, 2020.
27. Indian council of medical research. *Recommendation for empiric use of hydroxy-chloroquine for prophylaxis of SARS-CoV-2 infection*. 2. 2020; 2020.
28. Basak SC, Van Mil JWF, Sathyanarayana D. The changing roles of pharmacists in community pharmacies: Perception of reality in India. *Pharm World Sci*. 2009;31(6):612–618. <https://doi.org/10.1007/s11096-009-9307-y>.
29. Health Care Closed Points of Dispensing | CDC. <https://www.cdc.gov/cpr/readiness/healthcare/closedPODtoolkit.htm>. Accessed April 19, 2020.
30. Strategic National Stockpile. <https://www.phe.gov/about/sns/Pages/default.aspx> Accessed April 19, 2020.