

SHORT COMMUNICATION

“A community system”: A critical foundation for the epidemic prevention and control of SARS-CoV-2

Xiaoyan Zhang  | Shiyu Yang

College of Politics & Law and Public Administration, Hubei University, Wuhan, China

Correspondence

Xiaoyan Zhang, College of Politics & Law and Public Administration, Hubei University, No. 368, Youyi Avenue, Wuchang District, Wuhan 430062, China.
Email: 24420054@qq.com

Funding information

National Natural Science Foundation of China, Grant/Award Number: 71704048

Abstract

In response to COVID-19 that has constituted a global pandemic, countries around the world have successively adopted a myriad of prevention and control measures. As the first country with the COVID-19 outbreak, the Chinese government has adopted a series of timely and strict prevention and control measures against the spread of the SARS-CoV-2, which has effectively slowed down the spread of the SARS-CoV-2 and created a valuable window for the international community to overcome the epidemic. China's experience in combating the COVID-19 has shown that building a community prevention and control system is essential to control the spread of coronavirus. As the backbone of the epidemic prevention and control system, the community prevention and control system plays an important role in improving the pattern of disorderly medical treatment, screening suspected patients, preventing the input of pathogens, ensuring residents' medical needs, stabilizing public sentiment, reducing disease fear, and maintaining residents' national security. At the same time, it also exposed the problems of the community prevention and control epidemic system in terms of infrastructure, human resources, and internal systems. Based on this, this article suggests that we should improve the hardware facilities of community, improve the internal mechanism of the community, strengthen the stability of the community talent team, improve the level of linkage between the

community and other departments to prevent and control the spread of SARS-CoV-2, effectively use information technology and actively mobilize social forces to help community prevention and control COVID-19.

KEYWORDS

China, community prevention and control, COVID-19, emergency response mechanism, prevention and treatment system

In terms of the public health amid the outbreak of coronavirus disease 2019 (COVID-19), the general public itself plays the most critical role as the frontline contact with the disease.^{1,2} Earlier studies have confirmed that setting up an efficient primary health care system is fundamentally vital for managing the treatments for chronic diseases and controlling the spread infectious diseases.³⁻⁵ As the first country where COVID-19 initially broke out, the Chinese government had implemented a series of measures to contain the spread of novel coronavirus-infected pneumonia (NCIP), in order to fortify the magnitude and efficiency of the control and prevention of the epidemic. The joint teams of community workers, members of the Chinese Communist Party, and volunteers formed a frontline alliance against the COVID-19 epidemic^{6,7} and played an essential role in protecting the health of the public and minimizing social panic. Therefore, China's experience can be a source of reference for other countries in the world to fight against the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2).

At the beginning of the COVID-19 outbreak in Wuhan, due to the inadequate utilization of primary care clinics, a significant number of patients who were having fevers flocked to the hospitals, causing disconcerting levels of cross-infections in the hospitals, and overwhelming the hospitals' medical resources to the verge of collapse. Patients with active fevers who did not get the chance to see the doctors in time formed a mobile source of infections during the process of seeking medical treatment, which accelerated the spread of the epidemic and intensified social panic. As the front line of the epidemic prevention and control of COVID-19, communities also represent the most effective defense, not only for preventing outside cases from being imported into the community, but also for containing transmissions inside the community.⁸ On 11 February 2020, the Wuhan Headquarters of Epidemic Prevention and Control (HEPC) of COVID-19 issued public announcement No. 11 to advise COVID-19 patients to seek medical treatment at the closest clinic instead of visiting hospitals at their own preference.⁹ On the 20th, it issued another public announcement No. 15,¹⁰ and required the base-level personnel of all regions to begin gridded network management of the residents, conduct extensive fever screening of the public under their jurisdictions, and report information on all the suspected cases to the district HEPC. The district HEPC is the central command for dispatching all fever patients to designated medical institutions for treatment, as medical institutions were no longer accepting individual patient visits. It was at this point when the disorderly status of people seeking medical treatments began to improve, and the outbreak of the epidemic gradually came under control. In the meantime, primary care health professionals have established set locations in communities and townships to perform basic medical check-ups, and provided mobile medical services to residents in the local communities to the best of their capacities, including follow-up visits by family doctors and delivery of medical treatments and medicines.¹¹ Such set-ups have greatly mitigated the public's risk of infections while going out. These medical personnel were also responsible for contacting the hospital and assisting with the process of providing treatment for critically ill patients, ensuring timely medical care for residents in need when the whole community is practicing home isolation or quarantine. When it comes to everyday life necessities, basic consumables were purchased by the community and distributed among the residents. For COVID-19 vulnerable groups such as the elderly, the community arranged specific personnel to carry out one-to-one personal services of convenience to effectively make sure that the basic needs of the residents were met during the period of lockdown of the city. Regarding disease prevention, community workers were disinfecting the

public areas and the residential buildings within their jurisdictions on a daily basis. They have also conducted educational activities related to infectious disease prevention, raising awareness among the residents. In terms of traffic management in the community, the community workers were guarding the “entry gate” of the neighborhood very closely and were responsible for recording health information of visiting residents. The enhanced management of the migrating population was put into effect to minimize the number of imported cases from outside of the community and the transmissions among the residents inside the community. To monitor the community outbreak of the disease, the community workers present daily reports to residents on the development and status of epidemic within local communities. The intensified cautionary warnings, along with encouragements and rewards for residents who report violations of the rules and regulations of epidemic control and prevention or other illegal or criminal activities, have mobilized many people and volunteers to participate in the community prevention and control of COVID-19. In this way, a two-way monitoring system of communities and residents has been established, which greatly improves the public's compliance with all the measures that has been in place for the epidemic containment.

However, the rapid spread of the epidemic has impeded the control and prevention efforts. Ground-level management has faced tremendous challenges in a myriad of aspects, including: (a) weak infrastructures: the communities lack solid basis and have suffered from insufficient resources and shortages of necessary personal protective equipment (PPE) and materials; (b) shortage in the work force: there has been a huge gap in the community staffing, which makes it very difficult to meet the heavy workloads of infectious disease control; (c) management system flaws: the authorities and responsibilities of the community workers were not defined, and the divisions of tasks were unclear; (d) poor compliance of the residents: some residents were not cooperative and the necessary guidance to manage these people were missing. By this line of reasoning, how should we take full advantage of the base-level public management as the “fortress for public health” during an epidemic? We believe the answer lies in the measures listed as follows. **I. The hard power of base-level public management has to be enhanced in response to an epidemic outbreak.** The epidemic prevention and control system ought to provide more support and protection to the base-level management system by boosting the distribution of materials, and ensuring the adequate supplies of medical materials and PPE for the base-level personnel. For example, the government of Singapore has invested heavily to secure the normal operations of medical institutions at all levels and allowed the “PHPC” (The Public Health Preparedness Clinic) community systems to play their important roles in the prevention and control of the disease. A model-based analysis estimated that Singapore's joint community intervention initiative had reduced the number of SARS-CoV-2 infections by approximately 95%.¹² **II. Allow the base-level management to develop their initiative abilities of responding to the ever-changing situations of the epidemic.** Appropriate decentralization of the commanding power to the base-level managing teams can empower them to face the complicated events that were constantly arising during the outbreak so that these teams can develop their abilities to take on the tedious tasks of controlling the spread of viral infections. **III. Perfect the internal incentive mechanism within the base-level management system and improve the stability of the team.** On the one hand, staff working at the front line should be promoted under the internal mechanism, and rewarded under increased incentives programs (such as public commendations and bonuses) to encourage their enthusiasm for work, and create a social atmosphere of caring for the staff working for the epidemic control.¹³ On the other hand, mobilizing community workers to participate in the decision-making process of epidemic control measures at the district level can increase the sense of mission of these workers, and ensure the stability of the work force at the ground level. **IV. Strengthen inter-departmental collaborations so that each department can function optimally.** For example, in the Fujian Province, by integrating the medical resources of the city, the counties and the districts¹⁴ enhancing the standardized training of ground-level medical staff on the precautions and awareness of public health emergencies and the abilities to respond under such events, and deploying workforce within the medical consortium or commutable medical resources, the provincial government was able to safeguard the efficiencies of base-level operations during the epidemic. **V. Utilize information technology to support information sharing mechanism and the efficiency of the epidemic prevention at the base level.** Take the Zhejiang Province¹⁵ for example. It took full advantage of the “big data plus gridding” method to register every resident in the province, and screened them one by one to achieve efficient and accurate uploading of information and feedback related to the

epidemic. **VI. Actively motivate and recruit residents and volunteers to join the work forces of epidemic prevention and control organizations to achieve public prevention and public governance.**^{2,9} Establishing a community joint team of disease prevention and control is one of the best ways to implement public containment measures for the COVID-19 epidemic by leveraging the geographical locations and convenience advantages of communities.¹⁶

ACKNOWLEDGEMENTS

The authors appreciate the support of the National Natural Science Foundation of China (No. 71704048).

CONFLICT OF INTEREST

The authors declare no potential conflict of interest.

ORCID

Xiaoyan Zhang  <https://orcid.org/0000-0002-1815-5188>

REFERENCES

1. Bassett MT, Gallin EK, Adedokun L, Toner C. From the ground up: strengthening health systems at district level. *BMC Health Serv Res*. 2013;13(S2):9.
2. Andrew P, Catina OL, Carmona HR. Using formative research to tailor a community intervention focused on the prevention of chronic disease. *Eval Program Plann*. 2020;78:101716.
3. Xi L, Lu J, Shuang H, Cheng KK, Hu S. The primary health-care system in China. *Lancet*. 2017;390(10112):2584-2594.
4. Boffa JD, Bell AI, Davies TE, Paterson J, Cooper DE. The aboriginal medical services Alliance Northern Territory: engaging with the intervention to improve primary health care. *Med J Aust*. 2016;187(11-12):617-618.
5. Frank B. Making primary healthcare responsive to non-communicable diseases in sub-Saharan Africa. *Transactions of the Royal Society of Tropical Medicine and Hygiene*. 2020;114(4):229-231.
6. Lu Z, Xu H, Li L, C W. Suggestions on strengthening the construction of primary-level medical and health services—while discussing the advancing the timing of epidemic prevention and control. *Administrative Reform*. 2020;(03):23-29.
7. Peng C. Prevention and control measures of community infectious diseases. *Chin Commun Doct*. 2020;36(01):173-175.
8. Waigeng Y, Fang F, Xiumin C. Observation and reflection on the effectiveness of community governance in the prevention and control of major epidemics. *Jiangxi Social Sci*. 2020;40(03):16-24.
9. Wuhan Headquarters for Epidemic Prevention and Control of COVID-19 (No. 15). Hubei Daily. February 11, 2020. Retrieved on 31 March 2020 from http://www.gov.cn/xinwen/2020-02/11/content_5477104.htm
10. Wuhan Headquarters for Epidemic Prevention and Control of COVID-19 (No. 15). Retrieved on 30 March 2020 from <https://baijiahao.baidu.com/s?id=1659046672946541985&wfr=spider&for=pc>. February 20, 2020.
11. Koo JR, Cook AR, Park M, et al. Interventions to mitigate early spread of SARS-CoV-2 in Singapore: a modelling study. *Lancet Infect Dis*. 2020;000(4):79-81.
12. Viswanath A, Monga P. Working through the COVID-19 outbreak: rapid review and recommendations for MSK and allied health personnel. *J Clin Orthop Trauma*. 2020;11:500-503.
13. Xueping D, Xiaosong Y. Guidelines for prevention and control of the COVID-19 epidemic of in a compacted medical consortium and the integrated system of the county and the district. *China Gener Med Prac*. 2020;23(08):889-892.
14. Tschampl CA, Undurraga EA, Ledogar RJ, et al. Cost-effectiveness of community mobilization (Camino Verde) for dengue prevention in Nicaragua and Mexico: a cluster randomized controlled trial. *Int J Infect Dis*. 2020;2020:26. <https://doi.org/10.1016/j.ijid.2020.03.026>.
15. Tschampl CA, Undurraga EA, Ledogar RJ, et al. Cost-effectiveness of community mobilization (Camino Verde) for dengue prevention in Nicaragua and Mexico: a cluster randomized controlled trial. *Int J Infect Dis*. 2020;94:59-67.
16. Pan X, Ojcius DM, Gao T, Li Z, Pan C, Pan C. Lessons learned from the 2019-nCoV epidemic on prevention of future infectious diseases. *Microbes Infect*. 2020;22(2):86-91.

How to cite this article: Zhang X, Yang S. "A community system": A critical foundation for the epidemic prevention and control of SARS-CoV-2. *Int J Health Plann Mgmt*. 2020;35:1246-1249. <https://doi.org/10.1002/hpm.3005>