

# Quality of primary healthcare in China: challenges and strategies

A Wang<sup>1</sup>, PhD, B Zhu<sup>2\*</sup>, PhD, J Huang<sup>3,4</sup>, PhD, Martin CS Wong<sup>3,4,5,6,7</sup>, PhD, H Xue<sup>8</sup>, PhD

<sup>1</sup> School of Economics and Management, Xidian University, Xi'an, China

<sup>2</sup> School of Public Health and Emergency Management, Southern University of Science and Technology, Shenzhen, China

<sup>3</sup> Centre for Health Education and Health Promotion, The Jockey Club School of Public Health and Primary Care, Faculty of Medicine, The Chinese University of Hong Kong, Hong Kong SAR, China

<sup>4</sup> Editor-in-Chief, Hong Kong Medical Journal

<sup>5</sup> School of Public Health, Fudan University, Shanghai, China

<sup>6</sup> The Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, China

<sup>7</sup> School of Public Health, Peking University, Beijing, China

<sup>8</sup> Stanford Center on China's Economy and Institutions, Freeman Spogli Institute for International Studies, Stanford University, Stanford, United States

This article was published on 5 Oct 2023 at [www.hkmj.org](http://www.hkmj.org).

\* Corresponding author: [zhub6@sustech.edu.cn](mailto:zhub6@sustech.edu.cn)

Hong Kong Med J 2023;29:372–4

<https://doi.org/10.12809/hkmj235149>

China has experienced significant economic growth and social progress, leading to remarkable improvements in living standards and life expectancy.<sup>1</sup> Because of substantial increases in financial investment and the implementation of new policies, the primary healthcare system in the country has made considerable progress in the prevention and management of chronic diseases. However, several challenges persist in the provision of high-quality primary healthcare in China.<sup>2</sup> Considering the impact of the coronavirus disease 2019 pandemic and the arrival of the intelligence age, there is increasing awareness of the need for novel technologies and innovative strategies to advance the quality of primary healthcare.<sup>3,4</sup> This awareness is particularly important in the context of ageing population and the growing burden of chronic illnesses.<sup>5</sup> The quality of primary healthcare in China requires careful appraisal, with a specific focus on three key factors that contribute to suboptimal healthcare outcomes: insufficient knowledge among healthcare providers, a substantial knowledge and practice gap (ie, know-do gap), and disparities in health workforce distribution.<sup>6</sup> This editorial explores potential mitigation strategies for the aforementioned issues, which could ultimately enhance the quality of primary healthcare in China.

## Insufficient knowledge

Primary healthcare providers in China, especially in rural areas, often lack the necessary knowledge to achieve optimal health outcomes.<sup>7</sup> A cross-sectional study showed that these knowledge deficiencies can be categorised into three main areas, namely, understanding of disease symptoms, process of diagnosis, and knowledge of medications.<sup>8</sup> Importantly, these knowledge deficiencies may contribute to misdiagnosis, overtreatment, and

poor healthcare outcomes. To ensure high-quality healthcare, healthcare providers must have a comprehensive understanding of prevalent diseases and their symptoms, such as diarrhoea, heart disease, tuberculous, dementia, and childhood epilepsy.<sup>9–11</sup> Similarly, they must have knowledge of diagnostic and therapeutic processes, including communication with patients, distinction among diseases, and making appropriate treatment decisions.<sup>12,13</sup> Furthermore, primary healthcare providers often lack sufficient knowledge regarding medications, particularly antibiotics.<sup>8,14</sup> This lack of knowledge can lead to overuse or misuse, thereby promoting antibiotic resistance among pathogenic bacteria. The lack of knowledge can mainly be attributed to two factors: lack of appropriate training<sup>15</sup> and inadequate collaboration and teamwork.<sup>16</sup>

To address these issues, the government should invest in appropriate medical training, including educational workshops or programmes to promote collaboration and teamwork among local healthcare providers. This investment could help bridge the knowledge gap, while ensuring that patients receive comprehensive and coordinated care. Moreover, primary healthcare facilities would benefit from investments in computer-aided diagnostic systems (which are widely used in tertiary hospitals) to improve diagnostic accuracy, while promoting intelligent and appropriate use of medications.

## Large know-do gap

The know-do gap, a key barrier to high-quality healthcare in China, amplifies the impact of insufficient knowledge among healthcare providers.<sup>7,17–19</sup> This gap refers to the difference between practices that primary care providers know they should use and practices that they implement in the clinic. In resource-limited areas, the gap is often

greater because of factors such as limited funding, staffing shortages, inadequate infrastructure, and low incentives.<sup>20</sup> The substantial know-do gap hinders the implementation of evidence-based practices and delivery of high-quality care to the Chinese population.

Potential solutions to this challenge include changing incentive structures for primary care providers<sup>16</sup> and adopting telemedicine.<sup>21</sup> Current incentivisation practices in China prioritise patient volume over healthcare quality. If incentives are modified to prioritise healthcare quality, primary care providers may be more motivated to invest in continuous training and education with the goal of enhancing patient-centred care.<sup>1</sup> Moreover, telemedicine can provide remote support and resources for primary care providers serving underprivileged populations, allowing them real-time access to expertise and guidance.<sup>22</sup> Overall, elimination of the know-do gap in primary care in China will require a comprehensive and multifaceted approach that includes changing incentives and utilising technology to improve healthcare delivery.

## Disparities in health workforce distribution

China has the highest numbers of health professionals worldwide, from the level of primary healthcare to the level of tertiary hospitals; it also has the most diverse health workforce.<sup>23</sup> The continuity of care within tertiary hospitals is the greatest challenge that must be addressed by the primary healthcare system. In China, primary healthcare providers usually are not the first point of contact; this approach limits opportunities to integrate clinical care and public health services, leading to insufficient continuity of care throughout the healthcare system. Because hospitals and primary health institutions typically are administered and funded separately, the electronic medical record system and healthcare management are fragmented and isolated; thus, joint healthcare efforts are difficult. In some villages and communities, a pilot programme has been established to ensure that each resident is registered with a primary healthcare provider for access to high-quality healthcare; however, this programme requires further optimisation.<sup>2</sup> A major obstacle to healthcare access in China is the uneven distribution of the health workforce; central and western regions of China struggle to attract health workers because of economic underdevelopment and unfavourable geographical conditions (eg, inconvenient transportation, poor living conditions, and limited opportunities for professional development).<sup>23,24</sup> Furthermore, urban areas often receive greater healthcare resources, hindering the achievement of equitable healthcare access in rural and remote areas.<sup>25</sup> Despite substantial effort by the government

to improve the economic statuses of vulnerable regions and rural areas, fundamental economic limitations may impede future attempts to close the gap in regional healthcare access.

Critical issues here include the quantity, diversity, and combinations of skill sets. Effective institutional arrangements, deliberate policy design, and efficient human resource management initiatives should be implemented to educate, recruit, and retain health professionals, preventing the loss of this workforce from underprivileged regions. An important initiative is healthcare integration, which links/integrates three or four levels of healthcare, facilitating coordination via telehealth or collaborations that include healthcare professionals, financial services, patient demographic and medical information, public healthcare services, and logistics services. Another important initiative is the ongoing Rural Medical Education Scheme, which provides financial assistance and tuition waivers for medical graduates from rural regions who agree to serve in primary-level healthcare facilities in their home regions for a specific length of time after graduation.<sup>26</sup> The Scheme is helping to promote a balanced health workforce by addressing the difficulties involved in recruiting health workers to rural areas, which are the regions with the most severe healthcare staffing shortages.

## Summary

An organised and concerted effort to enhance the quality of primary healthcare in China is needed to improve the well-being at the population level, as stated in the Healthy China 2030 initiative. Although significant progress has been made towards this goal, some gaps require further attention. More detailed policy plans should be developed to address these gaps, including strategies to enhance knowledge through training and education involving computer-aided diagnostic systems, incentivise elimination of the know-do gap through initiatives such as telemedicine, and balance health workforce distribution through innovative approaches. Efforts to implement these strategies should consider current conditions within the Chinese healthcare system.

## Author contributions

A Wang, B Zhu and H Xue contributed to the concept, design and drafting of the editorial. J Huang and MCS Wong contributed to critical revision of the editorial for important intellectual content. All authors had full access to the data, contributed to the editorial, approved the final version for publication, and take responsibility for its accuracy and integrity.

## Conflicts of interest

All authors have disclosed no conflicts of interest.

## Funding/support

This editorial was funded by the National Natural Science Foundation of China (Ref No.: 71903149), Guangdong Basic and Applied Basic Research Foundation (Ref No.: 2022A1515011871), and Foundation of Humanities and Social Science of the Ministry of Education, China (Ref No.: 19YJCZH151). The funders had no role in study design, data collection/analysis/interpretation, or manuscript preparation.

## Ethics approval

The requirement for ethical approval was waived by the institutional review board of the Southern University of Science and Technology due to the use of secondary data in the study.

## References

1. Ma X, Wang H, Yang L, Shi L, Liu X. Realigning the incentive system for China's primary healthcare providers. *BMJ* 2019;365:12406.
2. Li X, Krumholz HM, Yip W, et al. Quality of primary health care in China: challenges and recommendations. *Lancet* 2020;395:1802-12.
3. Yang C, Yin J, Liu J, et al. The roles of primary care doctors in the COVID-19 pandemic: consistency and influencing factors of doctor's perception and actions and nominal definitions. *BMC Health Serv Res* 2022;22:1143.
4. Xue H, D'Souza K, Fang Y, et al. Direct-to-consumer telemedicine platforms in China: a national market survey and quality evaluation. Available from: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3944587](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3944587). Accessed 15 Jun 2023.
5. Wang HH, Li YT, Zhang Y, Wong MC. Revisiting primary healthcare and looking ahead. *Hong Kong Med J* 2023;29:96-8.
6. Nie J, Shi Y, Xue H. Why is a special section "Healthcare in Mainland China" so crucial for HKMJ? *Hong Kong Med J* 2022;28:6.
7. Shi Y, Yi H, Zhou H, et al. The quality of primary care and correlates among grassroots providers in rural China: a cross-sectional standardised patient study. *Lancet* 2017;390:S16.
8. Xue H, Shi Y, Huang L, et al. Diagnostic ability and inappropriate antibiotic prescriptions: a quasi-experimental study of primary care providers in rural China. *J Antimicrob Chemother* 2019;74:256-63.
9. Du S, Cao Y, Zhou T, et al. The knowledge, ability, and skills of primary health care providers in SEANERN countries: a multi-national cross-sectional study. *BMC Health Serv Res* 2019;19:602.
10. Xue H, Nie J, Shi Y. Crucial role of primary healthcare professionals in the assessment and diagnosis of dementia. *Hong Kong Med J* 2019;25:427-8.
11. Yi H, Liu H, Wang Z, et al. The competence of village clinicians in the diagnosis and management of childhood epilepsy in Southwestern China and its determinants: a cross-sectional study. *Lancet Reg Health West Pac* 2020;3:100031.
12. Guo W, Sylvia S, Umble K, Chen Y, Zhang X, Yi H. The competence of village clinicians in the diagnosis and treatment of heart disease in rural China: a nationally representative assessment. *Lancet Reg Health West Pac* 2020;2:100026.
13. Zhou Q, An Q, Wang N, et al. Communication skills of providers at primary healthcare facilities in rural China. *Hong Kong Med J* 2020;26:208-15.
14. Bai Y, Wang S, Yin X, Bai J, Gong Y, Lu Z. Factors associated with doctors' knowledge on antibiotic use in China. *Sci Rep* 2016;6:23429.
15. Yi H, Wu P, Zhang X, Teuwen DE, Sylvia S. Market competition and demand for skills in a credence goods market: evidence from face-to-face and web-based non-physician clinician training in rural China. *PLoS One* 2020;15:e0233955.
16. Li X, Lu J, Hu S, et al. The primary health-care system in China. *Lancet* 2017;390:2584-94.
17. Xue H, Hager J, An Q, et al. The quality of tuberculosis care in urban migrant clinics in China. *Int J Environ Res Public Health* 2018;15:2037.
18. Sylvia S, Xue H, Zhou C, et al. Tuberculosis detection and the challenges of integrated care in rural China: a cross-sectional standardized patient study. *PLoS Med* 2017;14:e1002405.
19. Sylvia S, Shi Y, Xue H, et al. Survey using incognito standardized patients shows poor quality care in China's rural clinics. *Health Policy Plan* 2015;30:322-33.
20. Wang HH, Li YT, Duan H, Wong MC. Physician motivation and satisfaction matter in healthcare. *Hong Kong Med J* 2023;29:8-10.
21. Cheng TC, Fu H, Xu D, Yip W. Technology platforms are revolutionizing health care service delivery in China. *NEJM Catalyst* 2022. doi: 10.1056/CAT.21.0414.
22. Cui F, He X, Zhai Y, et al. Application of telemedicine services based on a regional telemedicine platform in China from 2014 to 2020: longitudinal trend analysis. *J Med Internet Res* 2021;23:e28009.
23. Zhu B, Hsieh C, Mao Y. Spatio-temporal variations of licensed doctor distribution in China: measuring and mapping disparities. *BMC Health Serv Res* 2020;20:159.
24. Shi Y, Song S, Peng L, et al. Utilisation of village clinics in Southwest China: evidence from Yunnan Province. *Hong Kong Med J* 2022;28:306-14.
25. Chen L, Zeng H, Wu L, et al. Spatial accessibility evaluation and location optimization of primary healthcare in China: a case study of Shenzhen. *Geohealth* 2023;7:e2022GH000753.
26. Liu J, Zhang K, Mao Y. Attitude towards working in rural areas: a cross-sectional survey of rural-oriented tuition-waived medical students in Shaanxi, China. *BMC Med Educ* 2018;18:91.