Development Report on the Training and Utilization of General Practitioners in China (2022) Postprint

Authors: Wan Xiaowen, Zeng Cheng, Li Zongyou, Li Jiangbin, Wu Ning, Sheng Wenbin, Huang Rong, Chen Shuanghui, Chang Hongfei, Wuning

Date: 2024-01-11T00:00:00+00:00

Abstract

The report of the 20th National Congress of the Communist Party of China points out that it is necessary to "expand and strengthen the medical and health workforce, with a focus on rural areas and communities." General practitioners serve as the "gatekeepers" of residents' health and medical expenses, playing a vital role in basic medical and health services. Cultivating applied and interdisciplinary general practitioner talents for the new era who "can go down, stay, and perform well" will be an important step in advancing the construction of Healthy China. Based on the "China General Practitioner Training and Development Report (2018)", this report systematically reviews the team building, training and education, and reforms in utilization and incentive mechanisms of general practitioners in China from 2018 to the present, and proposes future prospects for general practitioners in China, hoping to provide materials for further research on general practice medicine in China.

Full Text

Training and Utilization Development Report of General Practitioners in China (2022)

WAN Xiaowen[1], ZENG Cheng[1], LI Zongyou[2], LI Jiangbin[2], WU Ning[2]*, SHENG Wenbin[1], HUANG Rong[1], CHEN Shuanghui[1], CHANG Hongfei[3]

[1]School of Economics and Management, Jiangxi University of Chinese Medicine, Jiangxi 330004, China
[2]Monitoring and Statistical Research Center, National Administration of Traditional Chinese Medicine, Beijing 100600, China
[3]Hongde Academy of Beijing University of Chemical Technology, Beijing 100600, China

Corresponding author: WU Ning, Researcher fellow; E-mail: 18500059621@163.com

Abstract

The report of the 20th CPC National Congress emphasized the need to "develop and strengthen the medical and health workforce, focusing efforts on rural areas and communities." General practitioners (GPs) serve as "gatekeepers" of residents' health and medical expenses, playing a crucial role in basic medical and health services. Training applied and interdisciplinary GPs for the new era who can be deployed, retained, and utilized effectively represents an important step toward advancing the Healthy China initiative. Building upon the *Training Development Report of GPs (2018)*, this report systematically reviews China's GP team construction, training and education, and reforms in utilization and incentive mechanisms from 2018 to the present, while offering future prospects for GPs in China. We hope this will provide valuable information for further research on general practice in China.

Keywords: General practitioners; Education; Utilization; Present situation; Research report

---

General practitioners are highly comprehensive medical professionals who primarily deliver integrated services at the grassroots level, including preventive care, diagnosis and referral of common diseases, patient rehabilitation, chronic disease management, and health management. They are known as the "gatekeepers" of residents' health [1]. The *"Healthy China 2030" Planning Outline* [2] proposes that "focusing on the people's health and prioritizing primary-level care" is essential to achieving the strategic core of "joint construction, shared benefits, and health for all." The report of the 20th CPC National Congress also calls for "strengthening the health management of major chronic diseases, improving primary-level disease prevention and treatment capabilities, developing and strengthening the medical and health workforce with a focus on rural areas and communities, and emphasizing mental health and psychosocial well-being." Unlike specialists who focus primarily on "treating diseases," GPs center their work on "health management" under a people-oriented principle. They emphasize chronic disease patients and susceptible populations within flexible doctor-patient relationships, focus on the impact of disease risk factors on communities, and provide comprehensive health consultation and management services [3], aligning with the goals of Healthy China construction. International experience [4-6] also demonstrates that establishing a well-developed hierarchical diagnosis and treatment model featuring primary-level first contact, two-way referral, acute-chronic disease separation, and vertical integration—centered on GP-led medical teams delivering prevention-oriented, integrated health services—is crucial for improving the efficiency of medical resource utilization within the healthcare system.

Previous research on GPs has mainly focused on service models, international

experience, job attractiveness, performance evaluation, and service effectiveness. Li et al. [7] found that by the end of 2017, research on GP training and team construction in China remained limited. A CNKI search using "general practitioner training" as the keyword revealed that by November 2023, China had published 1,231 relevant papers, with over half published after 2018. This surge can be attributed to the 2018 release of the *Opinions of the General Office of the State Council on Reforming and Improving the Training and Incentive Mechanisms for General Practitioners*, which provided an important impetus for research on GP training and incentive mechanisms. To implement the spirit of the 20th CPC National Congress and General Secretary Xi Jinping's important instructions, advance Healthy China construction, improve GP training models, and strengthen talent management mechanisms, our research group continues the *GP Training Development Report (2018)* with this *Training and Utilization Development Report of General Practitioners in China (2022)*. This report systematically reviews GP training and development since 2018 to promote support for general practice development across society, accelerate GP team expansion, and provide strong talent support for deepening medical reform and building Healthy China.

This report comprises four sections: The first section examines the current status of GP team construction, using descriptive analysis of data from the 2018-2023 *China Health Statistics Yearbooks* [8-13] to analyze GP numbers and distribution. The second section reviews policy progress in GP training and utilization, summarizing national expectations for GP development through an analysis of relevant policy documents issued since 2018. The third section summarizes GP training and incentive mechanisms based on thematic reports and other materials. The fourth section presents prospects for GP development in China, focusing on future priorities and reform directions in GP training and incentives.

---

1. Current Status of GP Team Construction

1.1 GP Team Size According to the 2022 *Health Statistics Yearbook*, GP numbers refer to the sum of physicians registered in general practice and those registered as rural general practice assistants. Physicians with GP training certificates are no longer included in GP statistics. Therefore, this study uniformly defines "GP numbers" as "physicians registered in general practice and rural general practice assistants," with data sourced from the 2018-2023 *Health Statistics Yearbooks*. By the end of 2022, China had 463,000 GPs, accounting for 3.2% of total health personnel and 10.4% of licensed (assistant) physicians, representing increases of 6.0% and 1.9% respectively compared to 2018. Among them, 367,000 were registered in general practice and 96,000 as rural general practice assistants, yielding 3.28 GPs per 10,000 population. From 2018 to 2022, China's GP workforce grew by 306,000 (a 1.9-fold increase), including 159,000 primary-level GPs (a 1.3-fold increase) and 51,000 GPs in general hospitals (a 2.4-fold

increase). The number of GPs per 10,000 population rose from 0.22 to 3.28 .

1.2 GP Distribution Institutional Distribution: GPs are primarily distributed across hospitals, community health service institutions, and township health centers. In 2022, hospitals employed 72,000 GPs (15.6% of the total), averaging 1.9 GPs per hospital. Community health service institutions had 106,000 GPs (22.9%), averaging 2.9 GPs per center/station. Township health centers employed 174,000 GPs (37.6%), averaging 5.1 GPs per center. From 2018 to 2022, primary-level GPs grew at an average annual rate of 23.3%, lower than the 36.1% growth rate in hospitals .

Regional Distribution: In 2022, eastern China had 235,000 GPs (4.16 per 10,000 population), higher than central China's 125,000 GPs (3.42 per 10,000) and western China's 103,000 GPs (2.69 per 10,000). At the provincial level, Jiangsu, Shanghai, and Hunan had the highest GP density at 5.38, 4.53, and 4.02 per 10,000 population respectively, while Jiangxi, Tibet, and Xinjiang had the lowest at 1.67, 1.43, and 1.42 per 10,000 respectively .

---

2. Policy Progress Review

In 2011, the State Council issued the *Guiding Opinions on Establishing the General Practitioner System*, marking the formal implementation of China's GP system as a national policy. Since then, supporting documents on GP training and incentives have increased continuously. Between 2011 and 2023, China released 19 GP-related policy documents, over half issued by the State Council and its General Office. Comparing issuance frequency before and after 2018 reveals that the state has promulgated GP-related documents annually since 2018, demonstrating strong commitment to continuous GP team development .

Policy content comparison shows that pre-2018 documents focused on broad, guidance-oriented statements about expanding training channels, reforming practice patterns, and establishing incentive mechanisms. Post-2018 policies have become more specific and targeted, addressing GP team building in impoverished and remote areas, strengthening general practice thinking in medical education, and ensuring efficient 衔接 between undergraduate education, postgraduate training, and continuing education under the framework of medical-education coordination. Human resource management policies now prioritize improving salary levels, streamlining recruitment, adjusting staffing allocations, and optimizing professional title evaluations to enhance GP job attractiveness.

Recent GP policies feature more concrete and detailed requirements that better reflect real-world needs, providing clearer direction for training and talent management. The 2018 *Opinions of the General Office of the State Council on Reforming and Improving the Training and Incentive Mechanisms for*

General Practitioners [14] outlined training tasks including "deepening medical-education coordination to reform undergraduate general practice education, establishing and improving postgraduate general practice training systems, consolidating continuing medical education, and accelerating GP team expansion in impoverished areas." It also introduced incentives such as "reforming GP compensation systems, improving performance-based salary distribution, raising salary levels in primary-level institutions, ensuring GP staffing within approved establishment quotas in government-run primary-level institutions, and simplifying recruitment procedures." The 2019 *Notice of the General Office of the National Health Commission on Further Strengthening Health Talent Team Building in Impoverished Areas* [15] called for "improving GP continuing education systems, vigorously developing remote continuing education to achieve full coverage." The 2020 *Guiding Opinions of the General Office of the State Council on Accelerating Innovation in Medical Education* [16] demanded "increasing efforts to train general practice talent," while the 2020 *Key Tasks for Deepening Medical Reform in the Second Half of 2020* [17] required "strengthening epidemiology and public health training for clinical doctors including GPs." The 2021 *Guiding Opinions on Establishing Long-term Mechanisms to Protect, Care for, and Support Medical Personnel* [18] clarified that "localities may establish GP allowance programs within performance-based salary distributions based on family doctor contract service progress." The 2021 *Key Tasks for Deepening Medical Reform* [19] proposed "strengthening training of GPs and other scarce talent." The 2021 *Opinions on Promoting High-Quality Development of Public Hospitals* [20] advocated "advancing family doctor contract services with GPs as the main body, effective linkage between general and specialized practice, and integration of medical care and prevention." The 2022 *"14th Five-Year Plan" for Health Talent Development* [21] proposed "raising income levels for primary-level health personnel, aligning GP salaries in township health centers and community health service institutions with those of clinical physicians of equivalent qualifications in local county-level public general hospitals." The 2022 *Key Tasks for Deepening Medical Reform* [22] set a target to "train 35,000 GPs through various channels including rural order-directed free medical student programs." The 2023 *Notice on Key Tasks for Deepening Medical Reform in the Second Half of 2023* [23] proposed "strengthening primary-level team building with GPs as the focus, expanding the GP workforce," and "implementing registration or scope-of-practice endorsement for qualified GPs, ensuring compensation, optimizing professional position structures in primary-level institutions with a focus on GPs, conducting county-village health talent capacity-building training programs, and guiding localities to enroll village doctors in basic pension insurance."

---

3. GP Training and Incentive Mechanisms

3.1 GP Training System 3.1.1 Undergraduate Education: (1) The number of general practice education institutions is gradually increasing. According to the 2020 *National Survey Report on General Practice Education in Higher Education Institutions* [25] by the Ministry of Education's Humanities and General Practice Teaching Guidance Committee, among 175 surveyed institutions, 45 (25.7%) established university-level general practice education institutions, 107 (61.1%) established general practice teaching and research offices, and 108 (61.7%) had 452 undergraduate primary-level teaching practice bases. The number of GP postgraduate training sites continues to grow; by 2017, 109 medical schools nationwide had master's degree authorization in general practice [26], and six institutions had established doctoral programs.

(2) General practice curricula are continuously improving. The *Report* noted that 121 of 175 institutions (69.1%) offered required general practice courses at the undergraduate level, all including theoretical components, with approximately 28.2% incorporating clinical clerkships and 28.9% using formative assessment. Among the 175 institutions, 63 (36.0%) offered general practice electives, with over 50% scheduling them in the second year and 75.4% making them available to both clinical and non-clinical majors. All electives included theoretical components, and 19.0% implemented formative assessment.

(3) GP internship formats are becoming more diverse. Undergraduate GP internships primarily consist of primary-level healthcare service internships and hospital general practice department internships. The *Report* indicated that 68 institutions (38.9%) offered primary-level healthcare service internships for general practice, with 52 using bedside teaching and lectures, while 15 also employed problem-based learning (PBL), case-based learning (CBL), flipped classrooms, and sandwich teaching methods. Additionally, 22 institutions (12.8%) offered internships in large hospital general practice departments, with an average duration of (45.9$\pm$14.2) days.

3.1.2 Postgraduate Education: Training base construction is gradually improving. First, the number of training bases continues to increase. From 2007-2008, the former Ministry of Health organized applications for general practice specialist training bases, with 34 bases (including clinical and community bases) passing review. In September 2014 and April 2017, the former National Health and Family Planning Commission selected 760 national standardized residency training bases, including 450 qualified for general practice training, based on the *Trial Standards for Recognizing Standardized Residency Training Bases*. These standards detailed requirements for base scale, department setup, faculty strength, and disease spectrum, with all bases required to be Grade A tertiary hospitals. Second, general practice departments in bases have been established successively. In 2018, the National Health Commission's Science and Education Department issued the *Notice on the Guiding Standards for Establishing*

General Practice Departments in Standardized Residency Training Bases (General Hospitals) [27], requiring general hospitals undertaking residency training to strengthen general practice base construction, add general practice medical subjects, and establish independent general practice departments. Liu et al. [28] surveyed 41 general hospitals in 2018 and found most had independently established general practice departments with dedicated outpatient and inpatient services and fixed community practice bases. Faculty development is also improving. The 2012 *Implementation Opinions on General Practice Faculty Training (Trial)* [29] emphasized demand-oriented faculty training to ensure GP training quality. It recommended clinical faculty hold undergraduate degrees or higher, have attending physician or higher professional titles, possess rich clinical and teaching experience, demonstrate strong general practice concepts and clinical thinking abilities, and show passion for GP training and familiarity with primary-level healthcare. Primary-level practice faculty should hold college degrees or higher and intermediate professional titles or higher, with extensive primary-level clinical and public health service experience. These requirements align with international GP faculty standards, focusing on clinical competence, teaching ability, and passion without rigid title requirements.

3.1.3 Continuing Medical Education: Continuing medical education is crucial for GPs to update knowledge and improve competency and teaching ability [30-31]. The July 2011 *Guiding Opinions on Establishing the General Practitioner System* stated that "GP continuing education should be guided by new knowledge and technologies in modern medical development, enhancing practicality and relevance." The January 2018 *Opinions* [14] called for "vigorously developing remote continuing education," while the September 2020 *Guiding Opinions on Accelerating Innovation in Medical Education* [16] demanded "accelerating GP talent training and deepening continuing medical education reform." China's continuing medical education primarily includes traditional face-to-face education, online courses, teaching activities, and self-study materials [31]. In 2023, a national capacity-building training program for rural order-directed GPs, planned and taught by GP leaders, was successfully held, significantly improving primary-level service capacity. While face-to-face methods remain effective, online continuing education is gaining popularity due to its convenience, replayability, and flexibility. Beijing developed the "Hundred-Day Drills" mobile learning APP for GP continuing education, with an empirical study of 5,033 users finding that online education can serve as an effective method for GP continuing education [32].

3.2 GP Incentive Mechanisms (1) Encouraging Two-Way GP Mobility: Regarding deployment, China's policies encourage diverse measures to promote two-way GP mobility between primary-level institutions and higher-level hospitals through medical consortium construction and general hospital general practice development. This establishes talent and technical cooperation mechanisms, enhances GP practice management, gradually improves GP competency, and advances the hierarchical diagnosis and treatment model. Addi-

tionally, demand-oriented county (district)-level talent coordination and flexible mobility mechanisms are being explored to equalize health human resource allocation through unified staffing, personnel agency, and deployment based on work needs.

(2) Streamlining GP Recruitment: Recruitment procedures are simplified for medical graduates with undergraduate degrees or higher, or GPs who have completed standardized residency training, allowing direct appointment through interviews and organizational reviews. GPs completing residency training who practice in rural primary-level institutions may implement a "county-managed, township-used" model, while assistant GPs completing training who work in village clinics may follow a "township-managed, village-used" model.

(3) Professional Title Evaluation Incentives for Primary-Level GPs: The proportion of senior professional positions in primary-level institutions is increased. Physicians and nurses working in township health centers and community health service institutions may take intermediate-level professional exams one year earlier. Medical graduates with undergraduate degrees or higher who complete GP residency training and work in primary-level institutions may directly take intermediate-level exams and be appointed upon passing. Title promotion policies further favor impoverished areas, encouraging urban hospital GPs to serve in primary-level institutions, with urban hospital doctors required to accumulate one year of primary-level service before promotion to attending or associate chief physician. Additionally, health professionals performing outstandingly in major public health emergencies receive priority in evaluation. Evaluation methods include establishing separate primary-level professional title evaluation committees or groups for remote and hard-to-reach areas, implementing "targeted evaluation, targeted use" policies where obtained titles are restricted to those areas.

(4) Practice-Oriented Evaluation Standards: Following the growth patterns of health professionals and the realities of primary-level work, the evaluation system has been improved by optimizing conditions and standards and establishing long-term mechanisms. Paper publications and foreign language proficiency are no longer mandatory requirements for professional title applications in township health centers and community health service institutions. For long-serving, high-performing primary-level health professionals, educational requirements may be relaxed with priority given in evaluations. Medical graduates with primary-level work experience receive priority in postgraduate admissions under equivalent conditions. According to monitoring surveys of 288 sample counties in 2019, 92.0% and 85.8% of sample counties had eliminated foreign language and computer requirements, respectively, representing increases of 30.3 and 33.4 percentage points from 2015 (61.7% and 52.4%). Evaluation indicators have shifted from over-reliance on research, papers, and credentials to a practice-oriented focus on competency and performance. During the 13th Five-Year Plan period, the senior title accreditation pass rate in primary-level institutions gradually improved, reaching 75.3% by 2019, with county hospitals and township

health centers seeing increases of 7.7 and 5.4 percentage points respectively compared to 2015 .

Since 2017, the number of physicians registered in general practice has grown rapidly, reaching 2.2 GPs per 10,000 population in 2018—achieving ahead of schedule the target set in the *Opinions* of "2-3 GPs per 10,000 population by 2020." This demonstrates that China has established a relatively comprehensive GP training system and incentive mechanism, showing high-level commitment to GP team building. However, we must also recognize that China's GP training system remains imperfect, mechanisms constraining GP team building are not yet fully developed, incentives adapted to GP characteristics have not been established, and necessary job attractiveness is still lacking [Figure 1: see original paper]. Therefore, further strengthening organizational leadership, improving GP training systems adapted to industry characteristics, and innovating GP utilization incentive mechanisms are critical steps for deepening medical reform and advancing Healthy China construction.

---

4. Future Prospects

4.1 Improving GP Training Systems Adapted to Industry Characteristics **(1) Undergraduate Education:** General practice was introduced relatively late in China. After continuous exploration and improvement, China has basically formed a characteristic GP training model dominated by the "5+3" model (5-year undergraduate + 3-year residency) supplemented by the "3+2" model (3-year junior college + 2-year assistant GP training). Given China's national conditions, GP educational backgrounds mainly include junior college, undergraduate, and postgraduate students. Compared with "5+3" undergraduates, "3+2" assistant GP trainees mostly come from junior college medical students and rural doctors, often lacking self-discipline and focus, resulting in suboptimal training outcomes. China's current GP training syllabus only specifies training content without providing corresponding standards for tiered training and assessment. The tiered progressive model, widely applied in recent years, effectively accommodates individual differences, respects diverse learning abilities, and actively promotes talent development [33]. As modern society and healthcare resources evolve, medical education is gradually shifting toward personalization with increasingly higher quality requirements for medical students [34]. Medical talent training should adopt progressive education models where different academic years emphasize different aspects. Instructors should employ different training methods tailored to different trainees, avoiding a "one-size-fits-all" approach to fully engage trainees.

(2) Postgraduate Education: Zhang et al. [35] found in interviews with the first batch of order-directed GPs in Zhejiang that nearly 80% considered "excessive rotation departments without focus, preventing in-depth learning" as a major cause of dissatisfaction during standardized training. GP training con-

tent is broad and fragmented, compromising continuity and systematic learning. Clinical rotations often cultivate GPs using specialist thinking, leaving trainees with good clinical knowledge but incomplete general practice thinking and inadequate mastery of common disease diagnosis and treatment. GP training content should consist of three components: basic general practice theory and comprehensive clinical skills, primary-level healthcare practice, and general practice clinical thinking training. The theory and skills component should focus on clinical needs and primary-level work requirements, selectively rotating through clinical departments with emphasis on common disease management. Primary-level practice should establish people-centered, family-based, and community-oriented concepts, developing abilities to provide continuous, comprehensive, coordinated, and personalized services for individuals and populations, combined with practical work for problem identification, solution, and research. Clinical thinking training should primarily use case discussions throughout the training process to improve clinical thinking abilities regarding common health problems and chronic disease management. Rao's survey of 220 hospital trainees [37] found only 44 (20.0%) believed faculty were familiar with general practice teaching plans. To improve postgraduate training quality and clarify key training content, continued efforts are needed to strengthen base construction and faculty development to match high-quality postgraduate education.

(3) Continuing Medical Education: General practice emerged in the 1960s and was introduced to China in the late 1980s, making it a relatively new clinical secondary discipline still in its early development stage with an imperfect training system. This has prevented general practice concepts from gaining widespread acceptance among medical schools and healthcare professionals. The 2016 *"Healthy China 2030" Planning Outline* [2] identified "prioritizing primary-level care" as a key principle for building Healthy China. Low GP professional identity constitutes an important reason for the shortage of primary-level healthcare talent in China. Liu et al. [38] found that continuing education is crucial for improving GP professional identity. However, preliminary surveys of primary-level GPs revealed that over 73.0% reported rarely or never having opportunities for continuing education after employment. Moving forward, we should explore establishing online associations or alliance networks to provide remote research guidance and technical training for primary-level GPs, promote information sharing at national and local levels, and share experiences to train and support GPs in remote areas. Emphasis should be placed on keeping primary-level GPs informed about cutting-edge medical information and emerging technologies, providing continuous support for in-service GP continuing education, particularly in rural and remote areas, to improve primary-level healthcare service capacity and change residents' mindset of seeking care at large hospitals for all conditions, thereby enhancing GP professional identity.

4.2 Innovating GP Utilization Incentive Mechanisms Balancing material and spiritual incentives is essential for creating a positive cultural atmosphere and maximizing employee motivation [39].

(1) Material Incentives: Current GP salary and benefits are mismatched with actual workloads. In 2021, primary-level institution employees earned an average of ¥91,000, equivalent to 0.9 times the social average and 59.0% of hospital salaries. Township health center employees averaged ¥83,000—70.0% of urban community salaries and 79.0% of county hospital salaries [40]. Low primary-level GP compensation and difficulty implementing incentive policies hinder the attraction of high-quality talent. IKEGAMI's [41] research shows that in Japan, GP incomes were already at least twice those of specialists by the 1990s, prompting many hospital specialists to leave for primary-level practice. Although the *Plan* [21] proposes aligning primary-level GP salaries with those of equivalent clinical physicians in county-level public general hospitals, field research reveals that GP incomes remain low in some areas, with policies proving difficult to implement. To address this, we can learn from Australia's Practice Incentives Program (PIP), where a third-party independent regulatory organization supervised by national health insurance departments coordinates and improves GP compensation [42], thereby implementing incentive policies to enhance job satisfaction and reduce turnover intentions. In China, primary-level GPs must provide both basic medical services and heavy public health services. This unequal effort-reward ratio significantly affects GP satisfaction. We recommend allowing primary-level institutions to use surplus funds, after deducting costs for basic medical and public health services upon passing assessment, as incentives for GPs or as public health service allowances, establishing incentive mechanisms suited to China's primary-level GP service context.

(2) Spiritual Incentives: Low professional identity and poor social recognition contribute to high turnover intentions among Chinese GPs [43]. Enhancing GP social status is an effective approach to strengthening spiritual incentives. Residents' long-standing inadequate understanding of general practice, lack of primary-level first-contact concepts, and bias that GPs are "generalists but not specialists" lead patients to prefer large hospitals for chronic and common diseases [44]. Persistent stereotypes have eroded trust in GPs, and within the healthcare system, GPs often hold lower status than specialists. Low social recognition creates a vicious cycle: "low social recognition → insufficient professional attraction → slow team building → declining service quality," which has perpetuated the inverted triangle of medical resource allocation even after a decade of medical reform. Therefore, we must vigorously promote specialized division of labor between general and specialized practice to better develop the unique characteristics of general practice [45]. We recommend increasing national funding support, deepening undergraduate general practice education reform, strengthening education and training base construction and faculty development, and establishing discipline evaluation systems to create better environments for training new general practice talent. Additionally, we should broaden GP functional positioning. In recent years, China has emphasized the strategic purchasing function of medical insurance and its leverage role in the "three-medical linkages" (medical care, medical insurance, and pharmaceuticals). However, medical insurance fund management agencies have limited

staff, mostly non-clinical professionals, restricting their ability to achieve strategic purchasing. In the UK's NHS, GPs are responsible for healthcare purchasing and cost management by complying with relevant policies and regulations. Their advantages include: (1) frontline work providing intimate knowledge of patients and available services; (2) clinical expertise enabling them to challenge and question other physicians' services; and (3) symbiotic relationships between clinicians and managers significantly improving efficiency beyond independent work [46]. Against the backdrop of healthcare system reform, we can attempt to use medical insurance policy as a lever to enhance GP professional attractiveness.

Although China's GP system started relatively late compared to mature practices in other developed countries, decades of vigorous development have seen many regions achieve breakthroughs in improving talent training systems and innovating incentive mechanisms. Building upon the *Training Development Report of GPs (2018)*, this report systematically reviews China's GP policy evolution, team construction, training and education, and incentive mechanism reforms since 2018, offering future prospects to provide a foundation for advancing Healthy China construction, improving primary-level healthcare service systems, and further strengthening general practice talent.

Author Contributions

WAN Xiaowen and ZENG Cheng conducted feasibility analysis and drafted the manuscript. LI Zongyou, LI Jiangbin, and WU Ning conceived and designed the study and revised the manuscript. SHENG Wenbin, HUANG Rong, CHEN Shuanghui, and CHANG Hongfei collected literature and data. WAN Xiaowen, ZENG Cheng, and WU Ning organized the literature and data. LI Zongyou and LI Jiangbin were responsible for quality control and review. WU Ning provided overall supervision and management.

Conflict of Interest Statement: The authors declare no conflicts of interest.

ORCID IDs:
WAN Xiaowen: https://orcid.org/0009-0005-6275-4195
WU Ning: https://orcid.org/0009-0006-7800-6084

Received: December 1, 2023; **Revised:** December 11, 2023
(Edited by WANG Shiyue)

References

[1] State Council. *Guiding Opinions of the State Council on Establishing the General Practitioner System* [A/OL]. (2011-07-01) [2023-11-06]. https://www.gov.cn/gongbao/content/2011/content_{1907087}.htm.

[2] Central People's Government of the People's Republic of China. *"Healthy China 2030" Planning Outline Issued by the CPC Central Committee and State Council* [A/OL]. (2016-10-25) [2023-12-27]. https://www.gov.cn/xinwen/2016-10/25/content_{5124174}.htm.

[3] JIN LY, YIN M. Discussion on the "Great Health" concept: from disease to health [J]. *Chinese Medical Ethics*, 2017, 30(7): 908-910. DOI: 10.12026/j.issn.1001-8565.2017.07.13.

[4] YANG SX, HUANG J, DAI T. Development experience and enlightenment of the British general practitioner system [J]. *Chinese Journal of Social Medicine*, 2016, 33(3): 261-264. DOI: 10.3969/j.issn.1673-5625.2016.03.020.

[5] MAJEED A. Primary care in England: between a rock and a hard place [J]. *J Ambul Care Manage*, 2013, 36(2): 126-128. DOI: 10.1097/JAC.0b013e3182887132.

[6] WENSING M, BAKER R, SZECSENYI J, et al. Impact of national health care systems on patient evaluations of general practice in Europe [J]. *Health Policy*, 2004, 68(3): 353-357. DOI: 10.1016/j.healthpol.2003.10.010.

[7] LI HY, HUANGFU HH. Visual analysis and prospects of general practitioner research based on knowledge mapping [J]. *Chinese General Practice*, 2019, 22(27): 3387-3394. DOI: 10.12114/j.issn.1007-9572.2019.00.348.

[8] National Health Commission. *China Health Statistics Yearbook 2018* [M]. Beijing: Peking Union Medical College Press, 2018.

[9] National Health Commission. *China Health Statistics Yearbook 2019* [M]. Beijing: Peking Union Medical College Press, 2019.

[10] National Health Commission. *China Health Statistics Yearbook 2020* [M]. Beijing: Peking Union Medical College Press, 2020.

[11] National Health Commission. *China Health Statistics Yearbook 2021* [M]. Beijing: Peking Union Medical College Press, 2021.

[12] National Health Commission. *China Health Statistics Yearbook 2022* [M]. Beijing: Peking Union Medical College Press, 2022.

[13] National Health Commission. *2023 China Health Statistics Summary* [M]. Beijing: Peking Union Medical College Press, 2023.

[14] General Office of the State Council. *Opinions of the General Office of the State Council on Reforming and Improving the Training and Incentive Mechanisms for General Practitioners* [A/OL]. (2018-01-24) [2023-12-08]. https://www.gov.cn/zhengce/content/2018-01/24/content_{5260073}.htm.

[15] General Office of the National Health Commission. *Notice of the General Office of the National Health Commission on Further Strengthening Health Talent Team Building in Impoverished Areas* [A/OL]. (2019-03-29) [2023-12-08]. https://www.gov.cn/zhengce/zhengceku/2019-10/08/content_{5437001}.htm.

[16] General Office of the State Council. *Guiding Opinions of the General Office of the State Council on Accelerating Innovation in Medical Education* [A/OL]. (2020-09-23) [2023-12-08]. https://www.gov.cn/zhengce/content/2020-09/23/content_{5546373}.htm.

[17] General Office of the State Council. *Notice of the General Office of the State Council on Key Tasks for Deepening Medical Reform in the Second Half of 2020* [A/OL]. (2020-07-23) [2023-12-27]. https://www.gov.cn/zhengce/zhengceku/2020-07/23/content_{5529417}.htm.

[18] Central People's Government of the People's Republic of China. *Guiding Opinions of the National Health Commission, Ministry of Human Resources and Social Security, and Ministry of Finance on Establishing Long-term Mechanisms to Protect, Care for, and Support Medical Personnel* [A/OL]. (2021-05-13) [2023-12-08]. http://www.mohrss.gov.cn/xxgk2020/fdzdgknr/rcrs_{4225}/sydwrsgl/202105/t20210513_{414602}.h

[19] General Office of the State Council. *Notice of the General Office of the State Council on Key Tasks for Deepening Medical Reform in 2021* [A/OL]. (2021-06-17) [2023-12-27]. https://www.gov.cn/zhengce/zhengceku/2021-06/17/content_{5618799}.htm.

[20] General Office of the State Council. *Opinions of the General Office of the State Council on Promoting High-Quality Development of Public Hospitals* [A/OL]. (2021-06-04) [2023-12-27]. https://www.gov.cn/zhengce/zhengceku/2021-06/04/content_{5615473}.htm.

[21] National Health Commission. *Notice of the National Health Commission on Issuing the "14th Five-Year Plan" for Health Talent Development* [A/OL]. (2022-08-03) [2023-12-08]. https://www.gov.cn/zhengce/zhengceku/2022-08/18/content_{5705867}.htm.

[22] General Office of the State Council. *Notice of the General Office of the State Council on Key Tasks for Deepening Medical Reform in 2022* [A/OL]. (2022-05-25) [2023-12-27]. https://www.gov.cn/zhengce/content/2022-05/25/content_{5692209}.htm.

[23] Central People's Government of the People's Republic of China. *Notice on Key Tasks for Deepening Medical Reform in the Second Half of 2023* [A/OL]. (2023-07-21) [2023-12-08]. https://www.gov.cn/zhengce/zhengceku/202307/content_{6894073}.htm.

[24] General Office of the State Council. *Guiding Opinions of the General Office of the State Council on Promoting High-Quality Development of Disease Prevention and Control* [A/OL]. (2023-12-26) [2023-12-27]. https://www.gov.cn/zhengce/zhengceku/202312/content_{6922484}.htm.

[25] Ministry of Education Humanities and General Practice Teaching Guidance Committee. *National Survey Report on General Practice Education in Higher Education Institutions* [R]. 2020.

[26] DUAN LP, CUI S, CHI CH, et al. Construction and practice of a high-level general practice talent training system [J]. *Chinese Journal of Medical*

Education, 2018, 38(1): 32-35. DOI: 10.3760/cma.j.issn.1673-677X.2018.01.007.

[27] National Health Commission. *Notice on Issuing the Guiding Standards for Establishing General Practice Departments in Standardized Residency Training Bases (General Hospitals) (Trial)* [A/OL]. (2018-09-03) [2023-12-08]. http://www.nhc.gov.cn/qjjys/s3593/201809/951a65647c41459b858ccf1c26fc1acb.shtml.

[28] LIU Y, JIANG GP, REN JJ. Current status and development strategies of general practitioner training in China [J]. *Strategic Study of Chinese Academy of Engineering*, 2019, 21(2): 74-78. DOI: 10.15302/J-SSCAE-2019.02.005.

[29] *Implementation Opinions on General Practice Faculty Training (Trial)* [J]. *General Practice Clinical and Education*, 2013, 11(2): 121-122. DOI: 10.13558/j.cnki.issn1672-3686.2013.02.001.

[30] JIN HS. Continuing education in health talent team building [J]. *China Medicine Guide*, 2015, 13(24): 293-294. DOI: 10.15912/j.cnki.gocm.2015.24.228.

[31] JI Y, YAN CZ, SUN YG, et al. Forms and applications of continuing medical education for general practitioners [J]. *Chinese General Practice*, 2021, 24(1): 88-91. DOI: 10.12114/j.issn.1007-9572.2019.00.715.

[32] ZHANG L, ZHANG RY, MA L, et al. Empirical study on mobile learning models for general practitioners based on mobile APPs: a case study of Beijing GPs' "Hundred-Day Drills" APP platform [J]. *Chinese General Practice*, 2019, 22(19): 2374-2379. DOI: 10.12114/j.issn.1007-9572.2019.00.377.

[33] YU QY, SU YJ, XU YP, et al. Effect of homogeneous management of traditional Chinese medicine nursing techniques using the "2+1+X" progressive model [J]. *Nursing and Rehabilitation*, 2022, 21(4): 50-52.

[34] SHI HB, MIAO XZ, SHI HL, et al. Cultivation of comprehensive research quality and ability of medical postgraduates [J]. *Continuing Medical Education*, 2023, 37(8): 141-144. DOI: 10.3969/j.issn.1004-6763.2023.08.036.

[35] ZHANG YH, MA MY, NI HD, et al. Investigation on career development of primary-level general practitioners: a case study of the first batch of order-directed GPs in Zhejiang Province [J]. *China Higher Medical Education*, 2020(2): 27-28. DOI: 10.3969/j.issn.1002-1701.2020.02.014.

[36] WU X, ZHONG JH, LIU JX, et al. Study on the effectiveness of standardized training for general practitioners from the perspective of residency graduates [J]. *Chinese Journal of Social Medicine*, 2022, 39(5): 526-530. DOI: 10.3969/j.issn.1673-5625.2022.05.010.

[37] RAO X. Current status and exploration of general practitioner training at West China Hospital, Sichuan University [J]. *West China Medical Journal*, 2012, 27(11): 1717-1720.

[38] LIU B, ZHU RH, LI ZR, et al. Investigation on standardized neurology training for general practitioners [J]. *China Continuing Medical Education*, 2023, 15(16): 127-131. DOI: 10.3969/j.issn.1674-9308.2023.16.027.

[39] QIN JJ, SONG H. Analysis of green culture hierarchy in logistics enterprises under the "dual carbon" goals [J]. *Commercial Economic Research*, 2023(22): 168-171.

[40] Vanke School of Public Health, Tsinghua University. *Investigation Report on Rural Order-Directed Medical Talent Free Training Program* [R]. 2022.

[41] IKEGAMI N. Japanese health care: low cost through regulated fees [J]. *Health Aff (Millwood)*, 1991, 10(3): 87-109. DOI: 10.1377/hlthaff.10.3.87.

[42] Services Australian. Types of payments [EB/OL]. [2022-06-12]. https://www.servicesaustralia.gov.au/types-practice-incentives-program-payments?context=23046.

[43] GAN Y, YANG TT, YANG YD, et al. Research progress on occupational attractiveness of general practitioners at home and abroad [J]. *Chinese General Practice*, 2019, 22(28): 3490-3494, 3500. DOI: 10.12114/j.issn.1007-9572.2019.00.333.

[44] SHEN X, FENG J, GAN Y, et al. SWOT analysis of enhancing occupational attractiveness of general practitioners [J]. *Chinese General Practice*, 2021, 24(22): 2765-2769. DOI: 10.12114/j.issn.1007-9572.2021.00.152.

[45] DAI T, HUANG J, MA XJ. Development history of international general practitioner systems: influencing factors and policy implications [J]. *Chinese Journal of Health Policy*, 2015, 8(2): 1-7. DOI: 10.3969/j.issn.1674-2982.2015.02.001.

[46] CHEN XY, YOU LL, WANG HQ, et al. Study on job satisfaction and influencing factors of basic public health service personnel in primary-level medical and health institutions [J]. *Chinese General Practice*, 2021, 24(28): 3597-3601. DOI: 10.12114/j.issn.1007-9572.2021.00.152.

Note: Figure translations are in progress. See original paper for figures.