Chinese General Practice Journal 2 (2025) 100084

Contents lists available at ScienceDirect

Chinese General Practice Journal

journal homepage: https://www.keaipublishing.com/en/journals/chinese-general-practice-journal/

Ten-year development of general practice in China: Opportunities and challenges

Yang Hui[a,b,*], Han Jianjun[b], Xu Yanli[b], Gao Xiaohuan[b], Wang Yang[b], Yang Yunli[b], Cao Xinyang[b]

[a] *Monash University, Melbourne 3168, Australia*
[b] *Publishing House of Journal of Chinese General Practice, Beijing 100053, China*

ARTICLE INFO

Keywords:
General practice
General practitioners
Industry report
Outcome and process assessment
Health care
Health policy
Health manpower
Health expenditure

ABSTRACT

Objective: To review the strengths and limitations of the development of general practice in China during the last decade (2010—2020) and to assess the opportunities and challenges for its future development.

Methods: Data were collected from statistic reports, journal articles and official policies and guidelines regarding general practice development in China from 2010 to 2020. Donabedian model was applied to examine and assess the quality of general practice services in China. SWOT analysis was used to identify internal and external determinants of general practice development in China.

Results: (1) Structural quality of general practice:the ten-year policies about general practice development were a continuation of the past relevant policies in essence but with developments, with highlights on continuous construction of general practice workforce and discipline, tiered diagnosis and treatment and regional medical consortium, but relevant fiscal and management policies still need improvements. The number of general practice workforce has increased rapidly, while the lion share of them are still allocated at tertiary hospitals. Full-time equivalent is suggested to be used to predict the staffing and assess the performance of general practice professionals. The number of community health centres showed a steady increase, but its growth rate was still slower than that of hospital facilities. Relevant health economics data need to be further supplemented. (2) Process quality of general practice:in 2020, there were 2.045 billion visits in community health centers (stations) and township health centers, that is, 1.5 visits per person per year on average. There was a significant development when found only 1 visit per person per year for primary care in 2010. However, the frequency of visits for primary care was still lower than that of visiting hospital-based outpatients (an average of 2.7 visits per person per year) . The COVID-19 pandemic had a significant impact on community health services/general practices, and the number of outpatient visits dropped by about 20%. The number of general practice research articles reached a peak in 2018, mainly focusing on dual-directional referrals, tiered diagnosis and treatment, general practitioners (GPs) /family doctors, general medicine, community health services, chronic disease management (especially hypertension and diabetes) , and analysis of factors associated with aspects involved in general practices. General practice research is expected to provide more support for developing innovative and critical thoughts, more practice based evidence for clinical services, and more assistance for service quality and patient outcomes improvement as the discipline advances. (3) Results of implementing general practices:there is no sufficient evidence on the influence of general practices on people's health. The experiences and views of people including healthy individuals and patients indicated that those receiving general practices or contracted family doctor services perceived positive experience and expressed high satisfaction, but perceptions and views of general population in the community toward general practices need to be explored. GPs' own experience and opinions on general practice were quite

Peer review under the responsibility of Editorial Office of Chinese General Practice Journal.

The Chinese version of this paper was published in Chinese General Practice on [2021-12-29] (DOI: 10.12114/j.issn.1007-9572.2021.00.337). The current English paper is a compliant secondary publication by Chinese General Practice Journal after obtaining copyright permission from both the authors and Chinese General Practice.

* Corresponding author.
E-mail address: hui.yang@monash.edu (Y. Hui).

https://doi.org/10.1016/j.cgpj.2025.100084
Received 2 October 2025; Received in revised form 29 October 2025; Accepted 14 November 2025

different. Gender, age, professional title, urban and rural areas, and geographical location may be associated with their experience and job satisfaction. There may be instability in the general practice workforce, mainly due to personal income, workload and time pressure. (4) The major strengths of developing general practice in China are as follows:strong policy-based promotion and government leadership;rapidly constructing and developing GPs teams owing to the excellent resource allocating ability shown by the centralized system from central to all local governments;significantly enhanced general practice education and training systems;increased core professionals as general practice educators and trainers;special development of general practice characterized by the integration of medical sciences and Chinese traditional humanistic theories. (5) The development of general practice in China has been facing limitations similar to those in other countries. Besides that, its evident limitations include late development of the discipline, unsatisfactory quality of workforce, high work pressure and high prevalence of burnout in the workforce, as well as impact of generation gap on education and practice among GPs. In addition, the relation between specialists and GPs is on transition of from undifferentiated attachment to self-recognised uniquity, and further seeking transdisciplinary. The teaching competences of GPs teachers, especially those teaching community and clinical care, are inadequate. GPs team building and management need to advance from the formation to the storming and performing phases. (6) Opportunities for further development of general practice in China include strategies for achieving the goals of Healthy China, and an all-round well-off society, the important role of primary health care in sustainable development and universal health coverage reaffirmed by the Declaration of Astana, as well as significantly improved health literacy of people. (7) Challenges for the development of general practice in China include population ageing, and aging-related changes in burden of disease and socio-economic status, the aging and dynamic changes of GPs human resources, the variation of urban and rural areas and regional differences, and the inverted pyramid structure of allocation of medical and health resources (namely, the largest part is allocated to tertiary care while the smallest to primary care) . Relevant recommendations to address these challenges comprise strengthening the advocacy of the development of general practice services, establishing a wide-ranging community collaborative network, and developing general practice professional organizations.

Conclusion: The development of general practice in China is advancing, which is manifested as rapidly increased number of general practitioners(GPs), strong government promotion, quickly improved accessibility of essential medical services, and notably increased utilization rate of primary care services. However, the development is facing challenges, such as high discipline and social expectations regarding general practice, instability in the workforce due to high work pressure of the knowledge- and labor-intensive job, GPs' insufficient recognition of their self-identity, and unclear status of financial funding for general practice development. Given that there are unprecedented favorable conditions for general practice development, medical industries and GPs are suggested to make efforts to turn challenges into opportunities to develop general practice, thereby universal health outcomes will be improved.

A robust system of general practice is essential for promoting equity, efficiency, and effectiveness in health care. It has been demonstrated that a well-developed primary care system contributes to better population health outcomes.[1] In China, general practice is an emerging clinical subdiscipline that has developed over nearly three decades since the establishment of the General Practice Branch of the Chinese Medical Association in 1993. The development of general practice in China faces promise and challenges. It constitutes a cornerstone of the "Healthy China" strategy, health care system reform, population health achievement. This article represents the first industry report on general practice in China published by Chinese General Practice. Focusing on the past decade (2010-2020), it reviews the strengths and weaknesses of the discipline and examines the opportunities and challenges within its development. In addition, we highlight several questions that remain unresolved and welcome scholars, physicians, and educators to join the discussion.

Data and methods

This study adopted Donabedian's conceptual model[2] as the framework to examine and evaluate the quality of China's primary care system. In addition, SWOT analysis was applied to assess the internal and external conditions influencing the development of general practice in China. Data sources included publicly available China Health Statistics Reports (2010-2020), peer-reviewed research articles published in academic journals, and official health policies and guidelines issued by government authorities. Analyses of the internal and external conditions of the general practice system were further informed by relevant formally published academic reports.

Current status of general practice in China: a Donabedian model perspective

Resource framework of general practice

Policies related to general practice

In this report, "policies" refer to those issued by government agencies and professional organizations, including specialized and micro policies targeted at promoting general practice development. The policies are classified into workforce development policies (covering education and training, teaching staff development), financial policies, infrastructure policies, management policies, and evidence-based guidelines. Between 2010 and 2020, policies concerning general practice in China were primarily continuations and extensions of earlier initiatives.

Several foundational policies issued in the preceding decades laid the groundwork for subsequent developments in the field. These include: (1)Decision of the Central Committee of the Communist Party of China and the State Council on Health Reform and Development (CPC Central Committee Document No. 3, 1997); (2)Opinions on Promoting the Development of Urban Community Health Services, jointly issued by the former Ministry of Health and nine other ministries (Document No. 326, 1999); (3)Notice on Issuing the Opinions on the Development of General Practice Education (Document No. 34, 2000), together with supporting documents such as the General Practitioner Training Outline, the Trial Measures for Standardized Training of General Practitioners, and the Standardized Training Curriculum for General Practitioners; (4)Notice on Accelerating the Development of Urban Community Health Services, jointly issued by the former Ministry of Health and 11 other ministries (Document No. 186, 2002); (5)Guiding Opinions of the State Council on the Development of Urban Community Health Services (Document No. 10, 2006) and the Guiding Opinions on Strengthening the Urban Com-

Table 1
Major policies on general practice in China (2010–2020).

Year	Policy Title	Issuing Body	Document No.	Key Focus
2010	Plan for Strengthening the Primary Care Workforce with a Focus on General Practitioners	NDRC + multiple ministries	No. 561 (2010)	Target of training 300,000 GPs by 2020
2011	Guiding Opinions on Establishing the General Practitioner System	State Council	No. 23 (2011)	"5+3" training model; first-contact care; 2–3 GPs per 10,000 residents
2012	Standards for Standardized Training of GPs (Trial); Standards for Assistant GPs (Trial); Implementation Opinions on GP Faculty Training (Trial)	MOH, MOE, +3 ministries	No. 151 (2012)	Training standards; assistant GP training; faculty development
2013	Guiding Opinions on Establishing the Standardized Residency Training System	NHFPC + 6 ministries	No. 56 (2013)	Establishment of residency training system
2014	Opinions on Medical–Education Collaboration; Administrative Measures for Residency Training (Trial); Accreditation Standards and Training Content (Trial)	MOE + NHC + others	No. 2 (2014); No. 49 (2014); No. 48 (2014)	Institutionalization of residency training; GP departments in medical colleges
2015	Opinions on Further Improving the Graduates of Bonded Medical Program	MOE + 5 ministries	No. 6 (2015)	Bonded medical program graduates training
2017	Opinions on Deepening Medical–Education Coordination for Medical Education Reform and Development	State Council	No. 63 (2017)	Coordination between medical education and service
2018	Opinions on Reforming and Improving GP Training and Incentive Mechanisms	State Council	No. 3 (2018)	Training reform and Incentive mechanisms for GPs
2019	Notice on Employment Placement and Contract Management for Graduates of Bonded Medical Program	NHC + 6 ministries	No. 21 (2020)	Employment placement and compliance management
2019	Notice on Promoting the Construction of Compact County-Level Medical and Health Communities	NHC, National Administration of TCM	No. 121 (2019)	County-level health consortia to improve primary care
2019	Notice on Launching Pilot Programs for Community Health Centres Development	NHC Department of Primary Care	No. 210 (2019)	Pilot community health centres development
2020	Notice on Evaluation Standards and Monitoring Indicators for Compact County-Level Medical and Health Communities (Trial)	NHC, NHSA, National Administration of TCM	No. 12 (2020)	Evaluation standards; strengthening county-level service capacity
2020	Notice on Fully Promoting Community Health Centres Development	NHC Department of Primary Care	No. 12 (2020)	Comprehensive promotion of community health centres; enhance prevention and treatment integration

munity Health Workforce (Document No. 69, 2006); (6)Opinions of the CPC Central Committee and the State Council on Deepening the Reform of the Medical and Health System (2009).

Between 2010 and 2020, policies concerning general practice in China primarily focused on workforce development and disciplinary development. Key policy documents are summarized in Table 1.

Within a policy environment emphasizing macro-level policies and the development of the general practice workforce, economic and financial policies, as well as those concerning management and quality assurance, remain weak. In China, the distinction between government policies and industry policies is not clearly defined. However, academic societies and associations play an irreplaceable role in shaping the policy framework for general practice, particularly in developing clinical guidelines and formulating implementation strategies.

Policy discussions on the future development of general practice in China center on several critical issues. One area concerns economic and financial policy, for example, how health insurance schemes can be structured to ensure that patients who first seek care in general practice receive the highest reimbursement, and how fiscal measures can be used to support universities in strengthening general practice departments. Another focus lies in discipline development, such as where funding mechanisms could play a vital role in promoting multidisciplinary and cross-disciplinary collaboration, how to guide and prioritize key investment directions for the discipline based on "General Practice Development Fund", how to improve management strategies of general practice services, and develop general practice systems at scale, foster a more orderly and competitive service environment.

Workforce in general practice

Total health workforce

A 2011 study indicated that China's health workforce remains insufficient in quantity and quality with a reversed physician-to-nurse ratio.[3] In the same year, the Ministry of Health announced to reach 4.62 million primary care practitioners by 2020, including more than 300,000 GPs. The plan also called for establishing standardized residency training system and GP system, implementing support programs for primary care services.[4] In 2020, China had approximately 4.09 million licensed physicians (including assistant physicians), corresponding to 2.90 per 1,000 population. Among them, GPs numbered 2.90 per 10,000 population, representing about 10% of the total physician workforce.[5] Between 2010 and 2020, China's total health workforce expanded steadily. Compared with 2010, the number of health workers and health technical personnel in 2020 increased by 64.2% and 81.7%, respectively. Within this group, licensed physicians (including assistant physicians) grew by 64.2%, while registered nurses increased by 129.9%. Growth in physicians was greater in primary care facilities than in general hospitals (approximately 587,000 vs. 329,000), with higher relative growth rates as well (61.9% vs. 26.1%).

By contrast, the absolute increase in nurses occurred mainly in general hospitals, although the relative growth rate in primary care facilities was much higher due to a lower baseline (126.3% vs. 62.9%). Over the past decade, the overall health workforce has expanded substantially. By 2014, the number of registered nurses in general hospitals surpassed that of licensed physicians, enlarging the health workforce distribution pyramid. Nevertheless, the physician–nurse imbalance has not been fully resolved, the number of primary care practitioners remains lower than in hospitals, and GPs in primary care facilities still outnumber nurses[5–7] (Table 2).

With sufficient scope, the health workforce situation during 2010–2020 could be analyzed in greater depth. In particular, it would be valuable to examine the distribution of health personnel across regions at different stages of development (eastern, central, western, and northeastern China), across administrative levels (province, prefecture/municipality, county/district), and between urban and rural areas; as well as the distribution of primary care personnel in urban and rural areas across different ownership types and internal levels of institutions

Table 2
Number of licensed (assistant) physicians and registered nurse in China, 2010—2020.

Personnel Category	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Healthcare personnel	820.8	861.6	911.6	979.0	1 023.4	1 069.4	1 117.3	1 174.9	1 230.0	1 292.8	1 347.5
Healthcare technicians	587.6	620.3	667.6	721.1	759.0	800.8	845.4	898.8	952.9	1 015.4	1 067.8
Practicing (Assistant) physicians	241.3	246.6	261.6	279.5	289.3	303.9	319.1	339.0	360.7	386.7	408.6
General hospitals	126.1	130.7	140.4	150.3	158.4	169.3	180.3	193.3	205.4	152.7	159.0
Primary care facilities	94.9	96.0	101.0	105.0	106.4	110.2	114.5	121.4	130.5	143.7	153.6
Registered nurses	204.8	224.4	249.7	278.3	300.4	324.1	350.7	380.4	409.9	444.5	470.9
General hospitals	146.9	162.8	183.0	204.1	222.2	240.8	261.3	282.2	302.1	230.9	239.3
Primary care facilities	46.7	49.3	52.8	57.7	60.4	64.7	69.6	76.9	85.2	96.0	105.7

Table 3
Number of general practitioners (registered as GPs or obtaining a GP certification after training) in China, 2012—2020.

Personnel Category	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total	109 794	145 511	172 597	188 649	209 083	252 717	308 740	365 082	408 820
Registered as General Practitioners	37 173	47 402	64 156	68 364	77 631	96 235	156 800	210 622	255 867
Obtained General Practitioner Training Certification	72 621	98 109	108 441	120 285	131 452	156 482	151 940	154 460	152 953
Hospitals	21 074	25 758	30 428	31 382	34 654	49 400	51 071	60 499	72 090
Registered as General Practitioners	5 817	6 260	9 395	8 936	9 517	11 223	20 966	26 931	36 396
Obtained General Practitioner Training Certification	15 257	19 498	21 033	22 446	25 137	38 177	30 105	33 568	35 694
Community Health Centers	47 863	60 181	68 914	73 288	78 337	83 933	95 603	103 841	110 190
Registered as General Practitioners	18 502	23 499	31 202	33 169	36 513	41 327	56 506	68 001	78 447
Obtained General Practitioner Training Certification	293 361	36 693	37 712	40 119	41 824	42 606	39 097	35 840	31 743
Township Health Centres	38 557	56 825	70 296	80 975	92 791	110 900	134 538	161 658	179 411
Registered as General Practitioners	12 304	16 836	22 594	25 434	30 718	41 181	64 117	90 244	110 862
Obtained General Practitioner Training Certification	26 253	39 989	47 702	55 541	62 073	69 719	70 421	71 414	68 549

(e.g., township versus village), and the distribution patterns imply for equity in the allocation of health resources.

Development of the general practitioner workforce

The number of GPs in China who completed professional training and obtained registration increased steadily over the past decade. Between 2012 and 2020, the total number of GPs expanded by 2.72-fold, representing remarkable growth. Notably, the rate of increase varied across different types of institutions. The number of GPs working in general hospitals grew by 2.42-fold, while those in community health centres increased by 1.30-fold, indicating that GPs in general hospital growth outpaced that in primary care facilities. The most striking growth occurred in township health centres, where the number of GPs increased by 3.65-fold, largely attributable to the relatively small baseline in 2012[5–7] (Table 3).

When analyzing the number of GPs, several key distinctions should be noted. Statistical reports usually differentiate between the number of physicians who hold a certificate of completion in GP training and the number formally registered as GPs. Not all physicians who complete GP training proceed to register as GPs or list general practice within scope of practice; some instead transition into other clinical specialties or health administration roles. Furthermore, registration as a GP does not necessarily imply employment in a community health centre. Many are actually based in general practice department of general hospital. For this reason, statistical reports categorize GPs by practice setting, distinguishing those working in general hospitals from those in primary care facilities such as community health centres, township health centres, and village clinics.

Further analysis of the GP workforce in China warrants attention. First, current health statistics reports do not provide estimates of full-time equivalents (FTEs), meaning the number of physicians adjusted to reflect full-time working hours. This omission is important because, although many physicians may have completed GP training, registered as GPs, and are employed in community health centres, not all of them practice on a full-time basis. From a human resources perspective, FTEs provide the most meaningful measure of actual service capacity. A critical question therefore arises: of the reported 300,000 GPs in China, how many correspond to full-time equivalents? In addition to quantity, workforce analysis should also consider quality—for example, how many GPs have demonstrated the competencies needed to deliver effective primary care service? Second, the GP workforce is dynamic. Statistics at a single point in time represent the result of inflows, retention, and attrition. Current statistics may underestimate the extent of attrition, underscoring the need for targeted investigations into workforce dynamics. Such studies should examine inflows (e.g., through standardized residency training, on-the-job or retraining programs, and interprovincial recruitment), retention (e.g., full-time employment in community health centres, FTEs), and attrition (e.g., retirement, reassignment, or leaving clinical practice). Understanding these dynamics and their underlying causes is essential for assessing and strengthening workforce stability. Third, as a secondary clinical discipline, the relative share of GPs compared with physicians in other specialties remains unclear. In the China Health Statistics Yearbook, general practice did not appear as a separate category under “physicians by specialty” until 2017. Yet in the China Health Statistics Briefing, physicians working in general practice are still aggregated under the residual category of “other,” rather than being reported as a distinct specialty.

Facilities for general practice services, education, and research

Number of primary care facilities

Between 2010 and 2020, the total number of primary care facilities nationwide increased by 9.2%. Over this period, the number of general hospitals grew by 67.3%, whereas primary care facilities increased by only 7.7%, indicating that hospital expansion was substantially higher than primary care facilities. From 2011 to 2020, within the category of primary care facilities, the number of community health centres rose by 6.9%, while both township health centres and village clinics declined in number[5–7] (Table 4).

It should be noted that the number of facilities does not reflect the structural quality of service. Several research questions concerning structural quality need further investigation: (1) The core attributes of each primary care facility, such as staffing composition, equipment availability, service volume and characteristic related to process quality; (2) Comparative analyses of the number and quality of facilities across regions with different development situation, across administrative di-

Table 4
Number of healthcare institutions in China, 2010—2020.

Institution Category	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Medical Institutions	936 927	954 389	950 297	974 398	981 432	983 528	983 394	986 649	997 433	1 007 579	1 023 000
Hospitals	20 918	21 979	23 170	24 709	25 860	27 587	29 140	31 056	33 009	34 354	35 000
Primary care facilities	901 709	918 003	912 620	915 368	917 335	920 770	926 518	933 024	943 639	954 390	971 000
Community health Centres	32 739	32 860	33 562	33 965	34 238	34 321	34 327	34 652	34 997	35 013	35 000
Township Health Centres	37 836	37 295	37 097	37 015	36 902	36 817	36 795	36 551	36 461	36 112	36 000
Village Health Clinics	648 424	662 894	653 419	648 619	645 470	640 536	638 763	632 057	622 001	616 094	610 000
Outpatient Departments	181 781	184 287	187 932	195 176	200 130	208 572	216 187	229 221	249 654	266 659	290 000
Specialized Public Health Institutions	11 835	11 926	12 083	31 155	35 029	31 927	24 866	19 896	18 033	15 958	14 000
Disease Prevention and Control Centres	3 513	3 484	3 490	3 516	3 490	3 478	3 481	3 456	3 443	3 403	3 384

visions, and especially between urban and rural areas; (3) Although the number of hospital beds is not a directly relevant structural indicator for general practice services, assessing bed capacity in township health centres may provide useful context-specific insights.

General practice teaching, training, and research institutions

Institutions supporting general practice education and training in China can be broadly categorized into four types: (1) departments or teaching units of general practice within universities; (2) general practice training centers at various administrative levels (national, provincial, municipal, etc.); (3) hospital-based teaching and training bases, typically located within general practice departments; (4) training bases established in community health service centers. To date, no publicly available and reliable statistical or survey data exist on the number or distribution of these institutions, requiring further attention and research.

Health economics in general practice

Total health expenditure

The proportion of total health expenditure in relation to gross domestic product (GDP) in China increased from 4.85% in 2010 to 7.10% in 2020. Within this period, the share of government health expenditure fluctuated around 30%, while the proportion of out-of-pocket spending by individuals declined markedly—from 35.29% in 2010 to 27.65% in 2020. In absolute terms, per capita health expenditure rose from 7,051 Chinese Yuan(CNY) in 2010 to approximately 20,000 CNY in 2020.[5]

At present, there are no official statistics on the proportion of direct expenditures for general practice within China's total health expenditure—an important question for health economists to address. Comparative data from other countries may provide useful references for future studies. For example, a report from the Australian Institute of Health and Welfare indicated that direct expenditures on general practice accounted for 5.5% of Australia's total health care spending, while hospital inpatient services, pharmaceuticals, and specialist services accounted for 29%, 24%, and 10%, respectively. For the role as "gatekeepers" of GPs in health care system, a relatively small share of spending on general practice exerts substantial influence on the much larger expenditures for hospital, pharmaceutical, and specialist services in Australia.[8] Hospitals in China, particularly general hospitals, represent the largest share of health care institutional assets. In 2020, hospitals accounted for 80.3% of the total assets of all health care institutions nationwide, whereas primary care facilities represented only 9.8% (Table 5).

Government investment in community health and general practice services

The scale and form of government investment in general practice are shaped by national health financing structures and fiscal policies, as well as by the extent to which responsibility for funding is shared among government, the market, and the community. Capital investments include fixed assets such as facilities, rental costs, and equipment; one-time production inputs; expenditures on information technology and management; and support for human resources, including subsidies for education and training and incentives for recruitment and retention. Recurrent investments mainly involve financial compensation for services delivered by GPs, such as salaries under employment-based systems, capitation prepayments, and fee-for-service payments purchased through health insurance.

Income and expenditure of community health services

Community health services in China operate under two main ownership models: public and private. In the national health system, hospitals generate 75.3% of the total income—most of which comes from general hospitals—whereas primary care facilities contribute only 15.4%. Within hospitals, government budget allocations account for 14.0% of total income, compared with 33.1% in primary care facilities. By contrast, medical service income represents 82.1% of hospital income but only 56.0% of income in primary care facilities. On the expenditure side, personnel costs constitute 34.5% of total health care spending, with a slightly higher proportion in community health centres compared with hospitals (36.2% vs. 33.5%)[5] (see Table 6).

Income of GPs

The China Health Statistics Yearbook and official bulletins do not report direct data on physician earnings. A study conducted in two tertiary hospitals in Hangzhou and Ningbo (Zhejiang Province) found that 58% of physicians earned less than 5,000 CNY per month.[9] GPs typically earn less than their hospital-based counterparts, evidence also indicates that, despite rising workloads, GP incomes declined, with the income gap between GPs and specialists remaining particularly pronounced.[10] For physicians in public hospitals, inadequate salaries or limited health insurance reimbursement can undermine the accessibility of medical services. Moreover, if physicians attempt to compensate for low earnings by increasing patient cost-sharing or introducing additional self-pay services, this may reduce utilization of essential primary care among disadvantaged populations.[11]

Processes and performance of general practice service

Assessing the performance of general practice services using official health statistics is challenging, primarily caused by that service in primary care facilities are not solely attributable to GPs. Furthermore, a proportion of general practice service is reported within hospital-based statistics, where it is not disaggregated from other clinical departments.

Patient visits in health care institutions

Between 2011 and 2019, the total number of visits in community health centres, township health centres, and other primary care facilities demonstrated a consistent upward trend.

Across all health care institutions, the number of visits increased by nearly 40.0% (39.1%). The sharpest growth occurred in hospitals, where visits rose by 70.0%, while primary care facilities experienced only a modest increase of 19.0%. Within the primary care system, visits to community health centres increased by 57.0%, and those to township health centres increased by 35.1%[5–7] (see Table 7).

Based on 2019 data, if visits to community health centres and township health centres are considered seeking of primary care services, the

Table 5
Assets and liabilities of healthcare institutions in China, 2020.

Institution Category	Total Assets			Liabilities	Net Assets
	Total	Current Assets	Non-Current Assets		
Total	595 201 456	257 664 323	325 653 519	264 499 718	318 321 670
Hospitals	477 948 913	213 199 918	264 747 149	235 426 394	242 521 472
General Hospitals	338 612 989	149 369 721	189 241 422	170 861 356	167 750 214
Primary Care Facilities	58 297 287	22 084 157	25 245 672	15 394 462	31 933 508
Community Health Centres	14 457 288	8 170 280	6 287 008	5 102 160	9 354 840
Township Health Centres	32 493 398	13 725 057	18 768 341	10 146 210	22 345 617

Table 6
Revenue and expenditures of healthcare institutions in China, 2020.

Institution Category	Total Income				Total Expenses / Total Expenditure	Personnel Expenses within Total Expenses
	Total	Government Funding Income	Business Income	Medical Income		
Total	486 899 801	97 144 963	364 550 410	357 136 076	500 186 278	168 163 188
Hospitals	368 703 016	51 514 877	304 588 293	302 740 140	344 467 905	123 401 846
General Hospitals	264 065 419	34 415 743	220 627 669	219 366 227	249 025 255	87 994 814
Primary Care Facilities	75 196 747	24 874 395	43 424 079	42 113 754	93 405 078	29 516 148
Community Health Centres	22 176 206	8 413 375	12 939 246	12 547 644	22 050 583	8 024 204
Township Health Centres	34 415 464	16 265 624	16 709 267	16 299 302	31 037 313	14 827 551

Table 7
Number of outpatient visits of healthcare institutions in China, 2010—2020.

Institution Category	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total	58.38	62.71	68.88	73.14	76.02	76.93	79.32	81.83	83.08	87.20	77.41
Hospitals	20.40	22.59	25.42	27.42	29.72	30.84	32.70	34.39	35.77	38.42	33.23
General Hospitals	15.11	16.74	18.74	20.16	21.82	22.57	23.85	25.02	25.89	27.79	23.86
Primary Care Facilities	36.12	38.06	41.09	43.24	43.64	43.42	43.67	44.29	44.06	45.31	41.16
Community Health Centres	4.85	5.47	5.99	6.57	6.85	7.06	7.19	7.67	7.99	8.59	7.55
Township Health Centres	9.01	8.78	9.78	10.17	10.38	10.63	10.91	11.23	11.28	11.86	11.07

combined total reached 2.045 billion (2.045×10^9) visits, this corresponds to an annual average of 1.5 visits per person among 1.4 billion residents China. However, this frequency remained lower than hospital visits, which averaged 2.7 visits per person per year. In comparison, in 2010, visits to community health centres and township health centres totaled 1.386 billion (1.386×10^9). With a national population of 1.338 billion at that time, this translated into approximately 1.0 visit to primary care facilities and 1.5 hospital visits per person per year.[6,7] These data suggest that the utilization of primary care services in China increased by 50% over the past decade (from 1.0 to 1.5 visits per person annually). Even a modest rise represents a substantial improvement given the large population base in China. Yet, in comparison with other countries and regions, the utilization of primary care remains relatively low and requires further strengthening. Notably, hospital service utilization grew even by 80% during the same period (from 1.5 to 2.7 visits per person annually).

In 2020, the COVID-19 pandemic had a profound impact on health service utilization, leading to a decline in patient encounters in both hospitals and primary care facilities. Hospital visits declined to levels reported in 2015, while utilization of primary care services fell back to levels reported in 2010. For instance, in Shenzhen, the number of outpatient visits in 2020 dropped to the level recorded in 2012, and hospital admissions were lower than in 2019. Visits to community health centres in Shenzhen decreased from 36.15 million in 2019 to 29.30 million in 2020.[12]

Performance assessment of primary care services

In August 2020, the National Health Commission of China and the National Administration of Traditional Chinese Medicine jointly issued the Guidelines on Strengthening Performance Assessment of Primary Care Facilities (Trial) (Document No. 9 [2020]). This initiative launched a nationwide system of monitoring at the national level and performance evaluation at the provincial level. The process-based indicators defined in the guidelines provide a useful framework for assessing the quality of general practice services.[13]

Research in general practice

A bibliometric analysis was conducted using the China National Knowledge Infrastructure (CNKI) database with the following keywords: “全科医生;医师, 家庭;家庭医师;社区卫生服务;家庭医生签约服务;全科医学;普通医疗医师;家庭医学;综合保健;综合医疗保健;初级卫生保健;社区医学;分级诊疗;基层医生”.

The results indicated that publication output declined between 2011 and 2013, but then rose steadily year by year, surpassing 3,500 articles in 2018. Research hotspots were mainly concentrated on tiered diagnosis and two-way referral, GPs/family doctors, general practice, community health services, chronic diseases(particularly diabetes and hypertension), and analyses of influencing factors.

Journals with the highest publication volumes included Chinese General Practice, Chinese Community Doctors, Shanghai Medical & Pharmaceutical Journal, China Health, Health News, Chinese Primary Health Care, China Hospital CEO, Journal of Community Medicine, Chinese Journal of General Practitioners, and China Health Human Resources. Research capacity and publication output can serve as indicators of a discipline’s development and sustainability, as well as colleagues’ reflections on practice and even on conceptual foundations. Beyond the descriptive statistics of publication volume and thematic focus presented above, further analyses of research on general practice and commu-

nity health services in China are available in relevant reports.[14] Looking ahead, colleagues should continue to uphold and foster innovative thinking in general practice research, paying attention to how research findings inform evidence-based practice, quality improvement, and patient outcomes.

Outcomes of general practice services

Residents' and patients' perceptions and experiences

One of the defining features of a mature discipline or profession is the extent to which its stated competencies are acknowledged by key stakeholders.[15] In general practice, stakeholders include not only policymakers and administrators (e.g., government agencies, health insurance authorities, and system managers), but also—crucially—patients, the general population, and society organizations. Understanding residents' and patients' perceptions, experiences, and views of general practice services is therefore essential to evaluating the discipline.

"Family doctor contracted services" have been a key focus of research on residents' and patients' perspectives. A meta-analysis by ZHANG et al.[16] found that overall satisfaction among contracted residents reached 77.7%. Similarly, a survey conducted by HAN et al.[17] among rural older adults with chronic diseases showed that 87% of contracted participants perceived the comprehensiveness of the services, yet only 17% recognized the professional medical aspects of care. Despite these findings, few studies have explored the views of non-contracted residents, limiting the generalizability of current evidence to the broader community population. The "two-way referral" mechanism—another feature often highlighted in general practice—also illustrates this gap. LIU et al.[18] found that among middle-aged and younger office workers, only 17% were aware of the service, and as few as 4% reported being satisfied or very satisfied with it.

To gain genuine recognition from residents and patients, general practice services require not only stronger public awareness efforts but, more importantly, a focus on residents' and patients' actual sense of benefit and on the perceived gap between what they expect and what they actually experience. Surveys have shown that many residents still lack trust in family doctors—partly due to doubts about their professional competence, and partly because they worry that the first-contact system in community-based contracted services may restrict their freedom to choose doctors or even delay treatment. Some scholars further note that patients' trust in family doctors is influenced not only by clinical competence but also by non-medical factors such as empathy, and interpersonal relationships.[19] Therefore, building residents' trust remains the cornerstone for embedding general practice within communities, and future studies on this issue should adopt multidisciplinary and cross-disciplinary approaches.

Attitudes, perspectives, and experiences of GPs

The experiences and job satisfaction of GPs are closely associated with their perceptions of the profession's future prospects and broader development context. Conversely, a strong intention to leave the profession often reflects concerns about its outlook and declining confidence in its long-term sustainability.

(1) Professional Identity.

HOU et al.[20] conducted a survey on the professional identity of GPs and found that GPs generally demonstrated a good level of professional identity, though further enhancement was still possible. Similarly, FENG et al.[21] reported that professional identity among Chinese GPs was generally high with notable regional differences.

(2) Job Satisfaction.

Empirical findings regarding job satisfaction among GPs across China remain inconsistent, reflecting both regional disparities and methodological differences. A survey by CHEN et al.[22] in Henan Province reported that 77% of respondents were satisfied with their work. However, other studies have indicated that GPs' overall job satisfaction remains low, particularly concerning remuneration systems. Contributing factors include mismatches between existing skills and job demands, suboptimal working environments, excessive temporary assignments, and inadequate performance appraisal mechanisms.[21] LIU et al.,[23] in a survey of staff in township health centre of Shaanxi Province, found that most were employed on a temporary basis. Their relatively low educational attainment, title, and income levels contributed to diminished job satisfaction. Similarly, LIU et al.[24] reported that primary care practitioners in Hubei Province showed low engagement with the family doctor contracted service policy and exhibited generally low levels of job satisfaction.

(3) Turnover Intentions

FENG et al.[25] conducted a survey of GPs in China and found that 20.6% expressed strong and 50.5% moderate intentions to leave their current positions. The main contributing factors were job stress and burnout, both of which significantly influenced GPs' intention to leave the profession.

(4) Professional Burnout

GPs' perceptions and experiences of their work directly influence their mental health. A study by LIU et al.[26] in Beijing revealed a high prevalence of burnout among GPs. To mitigate burnout, the authors recommended addressing anxiety and depressive symptoms among family doctors, fostering psychological resilience in sanguine, reducing contracting volume, improving remuneration, and strengthening doctor–patient relationships. However, burnout should not be interpreted as an indicator of the discipline's developmental outlook. Rather, it is associated with work-related stressors such as excessive workload, time pressure, frequent interruptions during consultations, and fear of litigation.[27,28] In addition, GPs generally earn less than their specialist counterparts. In most developed countries, GPs are regarded as belonging to the upper social stratum,[28] whereas the professional and social status of GPs in China remains an area in need of further research.

SWOT analysis of internal and external conditions for the development of general practice in China

Strengths of general practice in China

General practice is a clinically based discipline rooted in medical practice. The foundation of its development in China lies in the extent to which it has developed and accumulated various forms of "capitals." These forms of "capitals" include natural and physical capital, cultural and social capital, as well as economic and political capital.

Above all, they encompass human capital, which is essential for sustainable development. When evaluating the progress of general practice over time or comparing it with peer systems in other countries and regions, these forms of capital serve as key parameters for comparison.

The strengths of general practice in China include

(1) Strong government leadership and policy support:Centralized governance system demonstrates capacity for policy coordination and resource mobilization.
(2) Rapid expansion of the GP workforce: As noted earlier, the number of GPs—defined as those certified and registered as GPs—increased rapidly from 110,000 in 2012 to 410,000 in 2020.
(3) An expanding community of practitioners, educators, and researchers: A growing number of universities across China have established departments of general practice, offering undergraduate programs and postgraduate degree training. These academic units have become key forces in advancing general practice education and training at both local and national levels. Early GP training relied mainly on in-service programs, but in recent years, standardized residency training, retraining programs and assistant GP training have gradually become the dominant models.

(4) Integration of medical science and the humanities: A vibrant modern medical discipline combines evidence-based medicine with experiential practice.[29] General practice discipline in China developed on this foundation. Its most distinctive difference from earlier forms of folk medicine lies in its grounding in evidence-based medicine, while its strongest continuity with traditional medical practice is person-centered ethos. The early development of general practice in China coincided with the establishment of evidence-based medicine. Almost all clinical interventions and patient management strategies in general practice are derived from scientific evidence, supported by validated studies. At the same time, the discipline has inherited both the humanistic traditions of Chinese culture and the Hippocratic spirit of the Kos school, emphasizing the values of comfort, compassion, and empathy. Nonetheless, greater alignment between evidence and experience remains an area for improvement, and both evidence generation and experiential learning are inherently long-term processes.

Weaknesses of general practice in China

(1)Common challenges

The weaknesses of general practice are intertwined with its strengths and are shared by general practice systems in other countries. A key issue is that general practice prioritizes breadth over depth. While its emphasis on equity and accessibility limit the depth in addressing specific issues. This characteristic also impacts patient volume. Public health policies generally encourage residents to seek hospital care for serious conditions and community-based care for minor illnesses. However, in the absence of a clear gatekeeping system, societal perceptions often persist that "serious conditions should go to hospitals, while minor conditions do not necessarily require community care." Therefore, analyzing patients' journey is crucial for understanding the demander of general practice. However, limited health literacy and lack awareness of self-management of patients restrict rational care utilization patterns and effective patient pathways when GPS struggle with necessary competency and proactive service delivery.

(2)Late development of the discipline

While China has a history of folk medicine and experience with "barefoot doctors" and community doctors, the development of primary care and general practice as distinct academic disciplines has only occurred in the past three decades.

(3)Quantity and Quality of Human Resources

With the shift from short-term transfer training to standardized residency programs, the training of GPs in China is becoming more structured. However, achieving deeper professional expertise still requires prolonged learning and practical experience. Current education and training in general practice still face challenges such as delayed initiation, short training periods, and a lack of continuity. Delays in updating medical school curricula mean that many new trainees are only exposed to the concept and philosophy of general practice during standardized residency training. Moreover, influenced by traditional teaching models, many GPs still lack strong motivation for self-directed lifelong learning. The significant disparities between urban and rural areas further compound these challenges.

(4)Workload and pressure

General practice is often described as a typical "first-contact" service. A busy GP may face over 50, or even more than 100 patient consultations per day. While community cases show common conditions cluster and seasonal epidemiological patterns, contrasting with specialty outpatient clinics, the presenting complaints of each patient are often unknown until they arrive. Furthermore, patients in primary care facilities commonly present with undifferentiated early-stage symptoms, psychosomatic issues, or multiple chronic conditions and polypharmacy. Given the typically brief 5–10 minute consultation time, it is almost impossible for GPs to fully address the diverse needs of each patient or to manage the complexities of coordinating care effectively.

(5)Generational gap among GPs

The average age of Chinese GPs is currently 35–40 years, meaning that many were born between 1980 and 1985 and entered medical school around the turn of the millennium. Today, these GPs are often serving as associate chiefs or chiefs in general practice department. They represent the younger and middle-aged generations of Chinese GPs, carrying forward the ideals of their predecessors while simultaneously training and mentoring younger GPs. This generation faces the dual challenge of quickly updating outdated knowledge while committing to lifelong learning. Unlike previous generations, they may not dedicate their entire careers to general practice, but they are unlikely to abandon it entirely. Future generations of GPs are expected to value personal autonomy and freedom more, with Generation X and Y GPs seeking a better work-life balance and evolving lifestyles. Although this generational gap, driven by broader social changes, is not a flaw of general practice, it does present challenges. It may influence GPs' morale and, consequently, impact the accessibility and quality of general practice services.

(6)Blurring boundaries between general practice and specialties

General practice has gone through phases of dependency, independence, and integration during its development. In the West countries, this distinction emerged in the 1960s, while in China, it came about in the 1990s. Over the past three decades, GPs have increasingly become recognized as community-based care providers. The discipline has articulated its identity through frameworks such as the "3P3C model(Primary care provides comprehensive, continuous, and coordinated care to patients, individuals, and populations)" and the "tree of general practice," signaling to other medical specialties: "I am not you.[30]" However, this stage of independence is rapidly followed by integration. Today, an increasing number of specialty services are also delivered in community health centres. Many chronic disease specialists, and even emergency physicians, are moving beyond hospitals and specialty clinics into communities and households, providing alternatives to hospital care. Services addressing substance use, occupational health, sexual health, palliative and hospice care, geriatric care, and mental health are included in community health services, making 'community-based' no longer an exclusive label of general practice.[31–35] At the same time, mature GPs are developing extended skills through self-directed learning and cultivating special interests. This shift creates opportunities for GPs to broaden their scope, but it also blurs the boundaries between general practice and specialties, where both can claim: "I am part of you."

(7) Insufficient teaching capacity, particularly in community-based training

Being a good physician does not automatically make one a good teacher.[36] In vertically integrated educational models, physicians are expected to be both teachers and learners, but their pedagogical training is often insufficient.[37] This is particularly evident during standardized residency training, where effective teaching-learning partnerships are still underdeveloped. Medical education remains dominated by an authoritative, top-down teaching approach. Community-based training sites remain underdeveloped, leading to a lack of clinical supervision and inadequate generalist skills among trainees.

(8)Limited capacity for team-based practice

Like individuals and diseases, teams go through cycles of emergence, growth, development, decline, and renewal.[38] Compared to more established hospital-based care systems, teams in China are still in their formative stage, where their symbolic importance currently exceeds their functional performance. Their ability to deliver comprehensive '3P3C' services is still developing and needs further enhancement.

Short-term strategies to address weaknesses

(1) Strengthening teamwork: General practice is no longer an individual pursuit but a highly inclusive and collaborative field.
(2) Targeted support programs: Regional collaboration is essential to support the development of general practice in rural and remote areas.

(3) Integrating generalists and specialists: GPs focus on the broader community, often addressing early-stage health issues, while specialists typically manage patients with well-established, advanced conditions—'the fully developed cases.' Neither generalists nor specialists can cure all patients, or even all those who should be curable. By maximizing performance through the division of labor, GPs can manage early-stage, undifferentiated conditions and provide long-term care for chronic diseases. Meanwhile, their role in coordinating and directing care will help define the 'clinical relational mechanisms' between GPs and specialists. This, in turn, will foster a seamless and cooperative interface, enhancing the clinical performance of both disciplines.

Medium-term strategies to address weaknesses

(1) Educational reform: Revise undergraduate medical curricula to ensure that students are introduced to general practice at an earlier stage of their education.
(2) Faculty development: Strengthen the training of teaching staff, especially in community clinics, with a focus on adult education and practice skills.
(3) Continuing professional development and quality improvement: Encourage self-directed learning and establish peer-learning groups such as journal clubs.
(4) Dynamic workforce management: Implement strategies for training, retention, and attrition management. Physicians cannot be expected to remain indefinitely in rural or primary care facilities, so it is crucial to provide opportunities for continuous career development and support to retain them in the workforce.
(5) Team-based learning as a foundation for team-based care
(6) Performance through management: Instead of merely expanding the workforce, greater performance efficiency can be achieved by improving the management and utilization of existing human resources.

Long-term strategies to address weaknesses

(1) Sustained attention to discipline development: Efforts should continue to refine curricula at both the undergraduate and standardized residency training levels. Additionally, scientific research should be advanced, while fostering the development of innovative theories and applications in general practice.
(2) Strengthening general practice research: It is essential to actively promote studies that reflect the unique characteristics of general practice. These studies should focus on specific populations, health issues, and context-specific interventions. In addition to increasing the volume of research output, equal emphasis should be placed on building research capacity and providing substantial support and investment for researchers. Furthermore, training in research methodology and ethics (including medical, research, and teaching ethics) should be enhanced.

Opportunities for the development of general practice in China

Opportunities for the development of general practice arise from addressing its weaknesses, reflecting the removal of barriers through broader systemic reforms.

Healthy China Initiative: The achievement of equitable and universal health is a crucial indicator of national progress and prosperity. At the policy level, the Healthy China vision provides an unprecedented opportunity for general practice.

In this framework, improved health is not exclusive to socially advantaged groups, but is to be achieved through universal participation and the provision of accessible, equitable primary care services, ensuring health benefits for all citizens.[39]

Commitment to social justice and equity: China's rural "barefoot doctors" and the three-tiered prevention network, spanning county, township, and village levels, represent valuable experiences that shaped the 1978 WHO–UNICEF Alma-Ata Declaration. More recently, the Astana Declaration reaffirmed the importance of primary care and achieved broad international consensus.[40] The people-centered health concept emphasizes that health is not only a guiding principle for medical services but also a fundamental value for societal development.

(3) Increasing public awareness of health and improvements in health literacy

(4) Deepening health system reforms: In particular, reforms in health insurance payment methods—such as capitation, value-based purchasing linked to health outcomes, and the integration of social health insurance with commercial insurance—present significant opportunities for expanding and strengthening general practice.

Challenges facing the development of general practice in China

The challenges facing general practice in China share many similarities with those encountered globally. These challenges include government investment in building primary care systems, the level of recognition and acceptance of general practice by stakeholders, and the integration of primary care with other relevant social systems. However, general practice in China also faces unique challenges specific to its context.

(1) Population Aging: Population aging not only increases the proportion of older adults among the patients visiting GPs but also complicates and exacerbates the health problems encountered in primary care. The burden of chronic diseases and their risk factors continues to rise, with an increasing number of individuals suffering from one or more chronic conditions or risk factors. If general practice services remain disconnected from specialty care, these emerging health issues cannot be effectively addressed. Clinical guidelines and recommendations, which have primarily been developed within specialized, disease-specific frameworks, often fail to align with the practical realities of general practice. The phenomena of polypharmacy and "prescribing cascades" are prime examples of this misalignment.
(2) Demographics of the General Practice Workforce: Population aging also affects the general practice workforce, leading to an older GPs population and, in some cases, outdated or declining clinical knowledge and skills. In China, the rapid pace of demographic aging has created a widening gap between the competencies of the current generation of GPs and the evolving demands of modern primary care.
(3) Compensation Mechanisms for General Practice Services:

Whether medical students choose general practice as a career, whether residents are willing to work in community health centres, whether GPs tend to retain, and whether GPs who graduated from the bonded medical program retain rural primary care facilities, —all depend on the extent and structure of economic compensation. In surveys of satisfaction and experience in GPs, nearly all factors affecting job satisfaction or turnover are directly linked to compensation and income.

(4) Urban–Rural and Regional Disparities:

Despite considerable political, economic, and social efforts to reduce urban–rural disparities, significant gaps remains in access to basic health services, as well as general practice services.[41–43]

(5) Inverted Pyramid of Health Care Resources:

Compared to a decade ago, the inverted pyramid of health care resources still remains in China, with general hospitals growing faster than primary care facilities. Therefore, efforts are underway to restrain the "unhealthy" expansion of general hospitals, but substantial rebalancing will take time. Realistically, government investment in general practice and basic health care is unlikely to surpass general hospitals. The key question include how general practice can maximize its coordinating role in resource allocation and service delivery, how to address "brain drain" from primary care facilities to general hospitals based on medical consortiums/medical group, and how to resolve the conflict between the government and market.

Strategies for addressing challenges

Not all systemic challenges can be resolved by medical system, including general practice.[44] Therefore, general practice requires a proactive advocacy approach and the ability to turn risks into opportunities.[45] To address the challenges above, several strategies are suggested: strengthening the role of GPs within the healthcare system; engaging professional general practice organizations in the development and delivery of services; establishing collaborative networks within the medical community and across the broader society; and achieving greater equity in basic health services through more balanced resource allocation.

Conclusion

General practice in China is currently in a period of rapid growth. Over the past decade, GPs expanded driven by strong government policies. On average, each person visits community health centres and township health centres 1.5 times per year, reflecting substantial improvements in accessibility. As a field that is both knowledge- and labor-intensive, general practice carries high expectations from both the profession and society. However, it also faces considerable pressures, including workforce challenges and the need to strengthen professional identity among GPs. Compared with other healthcare services, general practice services continue to suffer from insufficient financial investment and unclear fiscal policy support. Research in the field has made significant progress over the past decade, with academic institutions and teaching departments playing a crucial role. We highlight both the strengths and limitations of general practice in China and proposes short-term, medium-term, and long-term strategies to address these challenges in this paper. We argue that general practice is developing within an unprecedentedly favorable context, and medical professionals must catch this opportunity to promote its further growth. At the same time, broader structural constraints must be acknowledged, with an emphasis on transforming challenges into opportunities to achieve better population health outcomes. Finally, given the limited availability of data and gaps in prior research, some analyses in this paper could not be explored in depth. These limitations are presented as research questions and expectations for future studies, with the aim of stimulating more focused and systematic research to advance general practice discipline.

Declarations

Not applicable.

Ethical approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data and materials

Not applicable.

Funding

Not applicable.

Declaration of competing interest

Y.H. and W.Y. are the editorial members of Chinese General Practice Journal, X.Y. and C.X. are editors of Chinese General Practice Journal, they are not envolved in the editorial review or the decision to publish this article. All authors declare that there are no competing interests.

CRediT authorship contribution statement

Yang Hui: Conceptualization, Formal analysis, Funding acquisition, Project administration, Resources, Supervision, Validation, Writing – original draft, Writing – review & editing. **Han Jianjun:** Conceptualization, Writing – review & editing. **Xu Yanli:** Conceptualization, Writing – review & editing. **Gao Xiaohuan:** Methodology, Data curation. **Wang Yang:** Writing – review & editing. **Yang Yunli:** Methodology, Data curation. **Cao Xinyang:** Methodology, Data curation.

Acknowledgements

Not applicable.

References

1. Starfield B. Primary care: an increasingly important contributor to effectiveness, equity, and efficiency of health services. *Gac Sanit*. 2012;26(Suppl 1):20–26. doi:10.1016/j.gaceta.2011.10.009.
2. Donabedian A. Evaluating the quality of medical care. 1966. *Milbank Q*. 2005;83(4):691–729. doi:10.1111/j.1468-0009.2005.00397.x.
3. Zhang GS. Analysis and forecasting on the demand for health human resources in China. Chinese. *Chin J Health Policy*. 2011;4(12):1–5. doi:10.3969/j.issn.1674-2982.2011.12.001.
4. Ministry of Health. Medium- and long-term talent development plan for medicine and health (2011-2020) [Internet]. (Chinese). 2011 [cited 2021 Oct 1]. Available from: http://www.gov.cn/zwgk/2011-04/28/content_1854246.htm.
5. National Health Commission of the People's Republic of China. *(Chinese). China Health Statistics Yearbook 2021*. Beijing: Peking Union Medical College Press; 2021.
6. National Health Commission of the People's Republic of China. China health statistics yearbook (2011–2019) [Internet]. (Chinese). [cited 2021 Oct 1]. Available from: http://www.nhc.gov.cn/mohwsbwstjxxzx/tjzxtjsj/tjsj_list.shtml.
7. National Health Commission of the People's Republic of China. *(Chinese). China Health Statistics Yearbook 2020*. Beijing: Peking Union Medical College Press; 2021.
8. Australian Institute of Health and Welfare (AIHW). Health expenditure Australia 2003-04 [Internet]. 2005 [cited 2021 Oct 1]. Available from: http://www.aihw.gov.au/publications/index.cfm/title/10204.
9. Chen X, Liu M, Liu CJ, et al. Job satisfaction and hospital performance rated by physicians in China: a moderated mediation analysis on the role of income and person-organization fit. *Int J Environ Res Public Health*. 2020;17(16):5846. doi:10.3390/ijerph17165846.
10. Richardson J, Walsh J, Pegram R. *Government Department of Health and Ageing Canberra. General practice in Australia: 2004*. Financing general practice, health services and expenditures. Canberra: Government Department of Health and Ageing Canberra; 2005.
11. Ruse WH. The decline in bulk-billing and increase in out-of-pocket costs for general practice consultations in rural areas of Australia, 1995–2001. *Med J Aust*. 2003;178(9):470–471. doi:10.5694/j.1326-5377.2003.tb05298.x.
12. Shenzhen Municipal Health Commission. 2020 Shenzhen health statistics summary [Internet]. (Chinese). 2021 [cited 2021 Oct 1]. Available from: http://wjw.sz.gov.cn/jksz/sjjd/content/post_9049884.html.
13. Qin JM, Wang F, Lin CM, et al. Recent developments in performance assessment policies and practices in primary healthcare in China. (Chinese). *Chin Gen Pract*. 2021;24(16):1989–1994. doi:10.12114/j.issn.1007-9572.2021.00.194.
14. Yu DH, Wang ZX, Lu Y, et al. Evaluation and prospect of scientific research capacity of community health service centers in China (2019). (Chinese). *Chin Gen Pract*. 2019;22(28):3406–3410. doi:10.12114/j.issn.1007-9572.2019.00.511.
15. Cockerham W. *Medical Sociology. (Chinese)*. Beijing: Huaxia Publishing House; 2000 Yang H, Zhang TH, translators.
16. Zhang YJ, Yin WQ, Yan Y, et al. Residents' satisfaction with family doctors contract services in China: a meta-analysis. (Chinese). *Chin J Evid Based Med*. 2021;21(10):1148–1153. doi:10.7507/1672-2531.202106177.
17. Han XR, Qin CX, Wu Y, et al. Accessibility and comprehensiveness of contracted family doctor services in rural areas using perceived quality framework. (Chinese). *Chin Gen Pract*. 2021;24(19):2428–2434. doi:10.12114/j.issn.1007-9572.2021.00.181.
18. Liu TX, Hao Y, Cui YQ, et al. Perception, utilization and satisfaction regarding bi-directional referral services in young and middle-aged white-collar workers working in office buildings. Chinese. *Chin Gen Pract*. 2021;24(16):2044–2050. doi:10.12114/j.issn.1007-9572.2021.00.048.
19. Yin D, Zhang JR, Wang Z, et al. Delivery status of contractual services from family doctors in China and advances in the related studies. (Chinese). *Chin Gen Pract*. 2018;21(7):753–760. doi:10.3969/j.issn.1007-9572.2018.07.001.
20. Hou H, Dai RH, Wu J, et al. Professional identity of family doctor team members and influencing factors: a survey. Chinese. *Chin Gen Pract*. 2021;24(19):2445–2451 2458. doi:10.12114/j.issn.1007-9572.2021.00.211.
21. Feng J, Shen X, Wu JX, et al. Status quo and influencing factors of professional identity among general practitioners in China. Chinese. *Med Soc*. 2021;34(10):13–16. doi:10.13723/j.yxysh.2021.10.002.
22. Chen DM, Ren WC, Wang YJ, et al. Surveying the satisfaction degree of general practitioners in Henan Province. Chinese. *Chin Health Serv Manag*. 2021;38(3):212–215.

23. Liu JL, Feng G, Du ZQ, et al. Study on the current status of talents team career development and the influencing factors of career development satisfaction of township health centers in Western China. (Chinese). *China Med Herald*. 2021;18(12):74–77 89.
24. Liu CY, He TT, Wang Q. Responses to the supportive policies for the implementation of contracted family doctor services and job satisfaction in primary healthcare workers. Chinese. *Chin Gen Pract*. 2019;22(10):1160–1164. doi:10.12114/j.issn.1007-9572.2019.10.006.
25. Feng J, Shen X, Gan Y. *Turnover Intention and its Influencing Factors Among General Practitioners in the Eastern, Central and Western China [Internet]. (Chinese)*. Chin J Public Health; 2021 citedAvailable from: *https://kns.cnki.net/kcms/detail/21.1234.R.20210814.1834.014.html* .
26. Liu MX, Ding J, Ji Y, et al. Burnout prevalence and associated factors among family doctors in Xicheng District of Beijing. (Chinese). *Chin Gen Pract*. 2021;24(13):1656–1664. doi:10.12114/j.issn.1007-9572.2020.00.537.
27. Schattner P, Mazalin D, Pier C, et al. GP registrar well-being: a cross-sectional survey. *Asia Pac Fam Med*. 2010;9(1):2. doi:10.1186/1447-056X-9-2.
28. Schattner PL, Coman GJ. The stress of metropolitan general practice. *Med J Aust*. 1998;169(3):133–137. doi:10.5694/j.1326-5377.1998.tb116013.x.
29. Egger G, Katz D, Sagner M, et al. The art and science of chronic disease management come together in a lifestyle-focused approach to primary care. *Int J Clin Pract*. 2014;68(12):1406–1409. doi:10.1111/ijcp.12500.
30. Murtagh J, Rosenblatt J. *John Murtagh's General Practice*. 7th ed. Melbourne: McGraw Hill; 2018.
31. Pollard L, Rogers S, Shribman J, et al. A study of role expansion: a new GP role in cardiology care. *BMC Health Serv Res*. 2014;14(1):205. doi:10.1186/1472-6963-14-205.
32. Ross S, Gillies JC. Characteristics and career intentions of Scottish rural and urban GP registrars: cause for concern. *Health Bull*. 1999;57(1):44–52.
33. Ying MK, Liu Y, Ren JJ. The specialists' views on general practitioners with special interests. Chinese. *Chin Gen Pract*. 2019;22(16):1936–1939. doi:10.12114/j.issn.1007-9572.2019.00.288.
34. Liu Y, Chen SH, Qiu Y, et al. GPs with special interests training in China and relevant recommendations. (Chinese). *Chin Gen Pract*. 2018;21(22):2664–2667. doi:10.12114/j.issn.1007-9572.2018.22.004.
35. Trumble S. Being a specialist GP. *Aust Fam Phys*. 2005;34(1-2):5.
36. Trumble S. The GP as a teacher. *Med J Aust*. 1991;155(5):322–324.
37. Thomson JS, Anderson K, Haesler E, et al. The learner's perspective in GP teaching practices with multi-level learners: a qualitative study. *BMC Med Educ*. 2014;14(1):55. doi:10.1186/1472-6920-14-55.
38. Natvig D, Stark NL. A project team analysis using Tuckman's model of small-group development. *J Nurs Educ*. 2016;55(12):675–681. doi:10.3928/01484834-20161114-03.
39. Central Committee of the Communist Party of China, State Council. Outline of "Healthy China 2030" plan [Internet]. (Chinese). 2016 [cited 2021 Oct 1]. Available from: http://www.nhc.gov.cn/guihuaxxs/s3586s/201610/21d120c917284007ad9c7aa8e9634bb4.shtml.
40. Yang H, Chen YD. The Astana Declaration and preventive medicine in China. Chinese. *Chin J Prev Med*. 2019;53(2):136–140. doi:10.3760/cma.j.issn.0253-9624.2019.02.003.
41. Shi J, Jin H, Shi L, et al. The quality of primary care in community health centers: comparison among urban, suburban and rural users in Shanghai, China. *BMC Fam Pract*. 2020;21(1):178–192. doi:10.21203/rs.3.rs-28943/v2.
42. Leiyu S. Health care in China: a rural-urban comparison after the socioeconomic reforms. *Bull World Health Organ*. 1993;71(6):723–736.
43. Xu S, Dong X, Zhou R, et al. Health service utilization following symptomatic respiratory tract infections and influencing factors among urban and rural residents in Anhui. *China. Prim Health Care Res Dev.*. 2019;20:e150. doi:10.1017/S1463423619000896.
44. Blayney DW. Strengths, weaknesses, opportunities, and threats. *J Oncol Pract*. 2008;4(2):53. doi:10.1200/JOP.0820501.
45. Trumble S. Advocacy, guardianship and the GP. *Aust Fam Phys*. 1993;22(2):188–191 194.