A Comparative Analysis of General Practitioner Training between China and Germany and Its Implications Postprint

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Abstract

General practice in China has developed rapidly in recent years and achieved significant progress; however, a substantial gap remains compared with developed countries in Europe and America, and the training of general practitioners remains imperfect. Germany has demonstrated remarkable effectiveness in primary health care system construction and general practitioner training, achieving high population health levels and high patient satisfaction with primary health care services under a system of universal health insurance coverage and tiered diagnosis and treatment. Therefore, this study compares China and Germany in the construction of postgraduate education and continuing medical education for general practice, analyzes the pain points and difficulties in China's general practice education reform, draws on the conceptual framework of German general practice education, and proposes targeted solutions and recommendations as follows: 1. For standardized residency training in general practice: appropriately increase rotation flexibility to promote personalized competency development among trainees, incorporate standardized psychosomatic medicine curricula and Balint group activities to improve trainees' psychosomatic medicine capabilities, promptly establish unified community-based teaching faculty selection criteria and promote unified training and development of community teaching faculty, and re-examine the rotation duration in general practice (including community) after improving the level of community teaching faculty; 2. For continuing medical education: incorporate subspecialty and mini-specialty expertise into the general practice continuing education system to enhance the functional medicine characteristics of general practice and promote diversified career development for general practitioners, and establish a nationally unified general practice continuing medical education curriculum platform. More practical research and resource investment will still be needed in the future to perfect China's general practitioner training system.

Full Text

Preamble

A Comparison and Analysis of Chinese and German Practices in General Practitioner Training

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Abstract

General practice in China has developed rapidly in recent years with remarkable progress, yet a substantial gap remains compared with developed countries in Europe and the United States, and the training system for general practitioners remains imperfect. Germany has achieved notable success in primary healthcare system construction and general practitioner training, attaining high population health levels and high patient satisfaction with primary healthcare services under a system of universal health insurance coverage and hierarchical diagnosis and treatment. This study compares postgraduate and continuing education in general practice between China and Germany, analyzes the challenges and pain points in China's general practice education reform, and draws upon the conceptual framework of German general practice education to propose targeted solutions and recommendations: (1) For standardized residency training of general practice: appropriately increase rotation flexibility to facilitate individualized competency development; incorporate standardized psychosomatic medicine curricula and Balint group activities to improve trainees' psychosomatic medicine competence; promptly establish unified community faculty selection criteria and promote standardized training for community faculty; and re-examine the duration of general practice (including community) rotations after improving community teaching faculty qualifications. (2) For continuing education: incorporate special interests and small specialties into the general practice continuing education system to enhance the functional medicine characteristics of general practice and promote professional diversification of general practitioners; and establish a national unified platform for general practice continuing education courses.

Future improvements to China's general practitioner training system will require additional practical research and resource investment.

Keywords: General practice; General practitioners; Education, medical, continuing; Standardized residency training; Psychosomatic medicine; Special in-

terest; Small specialties

Introduction

Previous studies have demonstrated that high-quality primary healthcare services contribute to reduced all-cause mortality, increased life expectancy, alleviation of healthcare disparities caused by insufficient medical resources, and reduced total healthcare expenditures [1]. Over the past several decades, China has faced challenges including inconsistent service quality among primary healthcare providers, low patient utilization rates, and "over-medicalization" in some general hospitals, leading to increased healthcare costs, heavier burdens, reduced relative efficiency in resource utilization, and exacerbated healthcare inequities [2]. Against the backdrop of accelerated population aging, declining birth rates, and frequent public health emergencies in China, promoting the development of general practice and establishing a robust primary healthcare system has become increasingly urgent. While general practice serving primary healthcare has made substantial progress through government policy support and the unremitting efforts of medical educators, numerous difficulties and pain points persist in general practitioner training.

Germany stands out as a leader in both Europe's healthcare system and medical education. Despite severe aging, Germany has achieved equitable, near-universal health insurance coverage and high-quality primary healthcare service delivery under its hierarchical diagnosis and treatment system. Germany's average life expectancy exceeds the European average, and during the COVID-19 pandemic, the country maintained lower infection and mortality rates than most European nations at relatively low economic and social costs [3,4]. According to a 2020 sampling survey by the German Federal Association of Statutory Health Insurance Physicians (KBV), patient satisfaction with clinic-based physicians, including general practitioners, reached 91% [5]. This study uses Germany as a case example to compare similarities and differences in general practitioner training between China and Germany, examine challenges in China's general practitioner training, and provide solutions.

Literature search strategy: Chinese literature was retrieved from CNKI, Wanfang Data, and Baidu using keywords including "general practice," "continuing education," "training," "standardized residency training," "psychosomatic medicine," and "faculty." English literature was searched on PubMed, Google Scholar, and Google using terms such as "primary care," "general practice," "general practitioner," "training," "continuing education," "postgraduate," "health," "Germany," and "China." German literature was searched on Google using terms including "Allgemeinmedizin," "Weiterbildung," "Weiterbildungsordnung," "Weiterbildungsbefugnis," "Fortbildung," "Patientenzufriedenheit," and "Psychosomatische Grundversorgung." Inclusion criteria comprised high-relevance, high-quality literature (including original research, practice-based

surveys, recent studies, and highly-cited reviews) and official documents from German medical institutions (e.g., "Bundesärztekammer," "Deutsche Gesellschaft für Allgemeinmedizin und Familienmedizin"). Exclusion criteria included duplicate literature and low-relevance studies.

Current State of General Practice Training in China

Standardized Residency Training for General Practice

China's standardized residency training is uniformly arranged and managed by individual training bases. The national general practice training syllabus specifies a total duration of three years with strictly mandated rotation departments, resulting in a broad rotation scope but short duration in most departments [6,7]. A survey of general practice residents at Sichuan West China Hospital from 2016-2018 revealed low satisfaction and high burnout rates [8]. Another survey from Shenzhen People's Hospital showed that only 23.8% of general practice residents were satisfied with the rotation plan, with trainees 普遍认为 that the seven surgical departments were excessive—only orthopedic and gastrointestinal surgery rotations proved substantially helpful—while outpatient opportunities were insufficient in endocrinology (2 months), rheumatology and immunology (1 month), and obstetrics and gynecology (1 month), and rotations in cardiology (2.5 months) and emergency medicine (2.5 months) were too brief [9].

The current 2022 edition of the general practice training syllabus has improved the specificity of surgical department rotations, yet its fundamental characteristic of requiring broad departmental rotations remains unchanged, leaving most department rotations at 1-2 months. This "skimming the surface" approach neither highlights teaching priorities nor meets diverse learning needs, while the fragmented rotation schedule also increases teaching difficulty in departments with short rotation periods. Additionally, the 2022 syllabus allocates only 10 months to general practice (including community) rotations—less than one-third of total training duration—potentially providing inadequate training in managing multimorbidity and differential diagnosis capabilities. A Zhejiang study further indicated that community rotation training plans were poorly structured with unclear priorities, such as excessive ward rotations and excessive preventive care training [10]. Therefore, China's general practice residency training content design requires further refinement to meet actual needs, necessitating pilot studies and reforms, with specific implementation practices still needing improvement.

Community Teaching Faculty

Due to the relatively short development history of general practice in China, teaching faculty remains weak, representing a major pain point in Chinese general practitioner training, particularly evident in community-based training where some community physicians lack basic teaching competence and have

weak teaching consciousness [10]. Since the 19th National Congress, general hospitals designated as standardized residency training bases have successively established general practice departments to cooperate with community joint training initiatives, attempting to compensate for weak community teaching faculty [11]. A 2021 study from Shanghai Changhai Hospital's general practice teaching and research section revealed that while 83.3% of community teaching faculty in Shanghai had experience learning from experts from secondary and tertiary hospitals, and over 80% possessed excellent general practice medical capabilities, only 5.6% held master's degrees or higher, 27.78% lacked capacity in managing multimorbidity, and merely 44.4% completed required faculty training courses and obtained certification annually [12].

Another recent Shanghai study emphasized that national/provincial faculty training represents an important pathway to improve community teaching capacity, with relevant units annually organizing community faculty to participate in such training and sending 1-2 faculty members for practical training in countries like Canada and the UK, though this also highlights substantial regional disparities in community faculty training across China [13]. Furthermore, China currently lacks unified faculty selection criteria. A Shanghai study attempted to construct a weighted scoring system for individual competency-based selection criteria for general practice clinical faculty [14], yet no application studies have been reported due to unresolved issues. The absence of unified community faculty selection criteria substantially affects the implementation and effectiveness of community faculty training, consequently impacting community residency teaching quality.

Continuing Education in General Medicine

China's general practice community has recognized the importance of continuing education and begun discussing its content design. A 2018 Zhejiang study recommended incorporating special interest training into general practitioner continuing education. Special interest refers to specialized medical competencies beyond basic medical capabilities required in general practice residency, such as pediatrics, gynecology, etc. [15]. One survey found that 96.4% of patients believed general practitioners should develop special interests and preferred receiving care from GPs with such expertise [16]. The survey indicated patient preferences for GP special interests, in descending order: internal medicine diseases, nutrition and rehabilitation, mental health diseases, and pediatric diseases. Currently, China lacks a unified special interest training model and a national general practice continuing education platform, though some hospitals have begun piloting special interest training for general practitioners. One Zhejiang hospital implemented a teaching plan integrating special interest cultivation within the general practice residency scope, which, while receiving majority trainee approval, faced issues including short course duration, high intensity, and difficulty digesting content [15]. A Sichuan general practice team adopted an approach of "conducting a 2-year special interest standardized train-

ing program after completing general practice residency," but this conflicts with doctoral training timelines and appears too lengthy for grassroots GPs, lacking feasibility [17]. A national unified general practice continuing education platform should be established, with content designed to align with actual needs of community GPs and patients, and with reasonable scheduling for practical implementation.

German General Practitioner Training System

Standardized Residency Training for General Practice

In Germany, postgraduate medical education (Weiterbildung, equivalent to China's standardized residency training) is not uniformly arranged by institutions but is self-organized by trainees through applying for training positions at medical institutions, which can be completed segmentally at different facilities. The total duration of general practice postgraduate education, consistent with other specialties (e.g., internal medicine), is 60 months. The 2003 German General Practice Postgraduate Education Regulations (Weiterbildungsordnung, equivalent to China's standardized residency training syllabus) required trainees to complete 36 months of internal medicine training (including at least 18 months of internal medicine ward rotation, with the remaining 18 months completed either in internal medicine wards or internal medicine clinics) and 24 months of general practice training (in general practitioner clinics, as hospitals lack independent general practice departments). Additionally, trainees were required to complete 80 hours of psychosomatic medicine courses [18].

To meet new-era teaching requirements, the 2018 Federal Medical Association revised the regulations based on the fact that internal medicine-related diseases account for only 32%-40% of consultations in general practice clinics [19]. The new regulations reduced internal medicine ward rotation to a minimum of 12 months while maintaining the 24-month general practice clinic training and psychosomatic medicine course requirements. Consequently, general practice residents have 24 months to flexibly allocate to specialty directions of their interest and determine corresponding durations (with 6 months required in directions other than internal medicine and general practice) [20]. German state medical associations have subsequently adopted this new version, with most states (including Baden-Württemberg, Bavaria, and Hesse) not imposing more detailed restrictions on rotation department scope. Typically, general practice residents first complete 6 months of general practice clinic training to understand which specialty disease diagnosis and treatment capabilities are required as a GP, helping them decide subsequent specialty rotations. A European survey showed the most frequently selected rotation specialties were gynecology, pediatrics, surgery, and psychiatry [21]. Notably, the minimum valid training duration for a recognized specialty direction is 3 months, as shorter periods typically insufficiently develop competency in a specialty. Research indicates

that reforms to the general practice postgraduate education regulations have further increased training flexibility [22], and high autonomy promotes highly personalized medical competency development and improvement [23].

Faculty Selection Criteria for General Practice Clinics

Given Germany's long-standing general practice system, its general practice clinic training faculty and selection criteria are relatively mature, with specific criteria for GP faculty selection established since 2012. These criteria were developed through a Delphi process involving the German Society of General Practice and Family Medicine (DEGAM) Presidium, DEGAM Postgraduate and Continuing Education Departments, the German Young Physicians Association, and a GP email forum, with updates every 2-3 years [19]. The criteria comprise three components: applicant competency qualifications, clinic practice scope, and clinic infrastructure, with a maximum total score of 63. Applicants scoring 26-32 points obtain 6-month teaching qualification, while those scoring 33-39 points receive 12-month qualification, with higher score ranges corresponding to longer teaching authorization periods. Since Chinese GPs primarily work in community hospitals rather than Germany's individual GP clinics (functioning as family doctor clinics), only the first component—applicant competency qualifications—is introduced here for reference.

The competency qualifications encompass four primary indicators: psychosomatic medicine capability, sports surgery and minor surgery, quality of care and teaching competence, and research awareness. Quality of care and teaching competence includes eight secondary indicators (detailed in), covering educational background (whether structured general practice postgraduate education was received), medical competence and maintenance (special interest possession, peer recognition, participation in quality circles), teaching experience and achievements (faculty training participation, long-term teaching engagement, successful GP cultivation). These selection criteria are comprehensive yet concise, ensuring high-quality, easily implementable GP clinic faculty selection in Germany, thereby further facilitating GP resident training.

Continuing Education in General Medicine

After completing postgraduate education and passing the Specialist Examination for General Practice (Facharztprüfung für Allgemeinmedizin), German GPs obtain specialist qualification (equivalent to attending physician status in China), though education does not terminate. According to German Federal Medical Association regulations, specialists (including GPs) must participate in continuing medical education (CME) courses, accumulating 250 CME credits every five years (45-minute course = 1 credit), with credits resetting every five years—excess credits do not carry forward—to ensure lifelong learning and maintain healthcare quality [24]. CME courses are available through multiple channels: professional articles in German medical journals (e.g., Deutsches Ärzteblatt), training courses organized by state medical associations, and online

medical learning platforms (e.g., Amboss). Course formats vary from theoretical to theory-practice combinations, typically scheduled on weekends. Training course information (time, location, organizer, registration links) can be queried on the Federal Medical Association platform, allowing cross-state and cross-disciplinary participation. German GPs can both refresh knowledge (through review courses and specialty updates) and develop specialized medical skills (through state medical association courses on early skin cancer screening, sexual medicine, surgical and minor surgery skills), forming unique practice characteristics and expertise to provide high-quality care for specific patients [25].

Comparative Analysis and Recommendations

Standardized Residency Training Models

Compared with Germany, China's general practice residency training has a shorter total duration, more rotation departments, minimal time allocated to multiple departments, formulaic content lacking autonomy, resulting in teaching difficulties and low trainee satisfaction. Since German general practice residency is not uniformly managed and offers substantial flexibility, trainees can self-organize rotations at departments or specialty clinics, eliminating China's rotation-related problems. China's general practice residency could 借鉴 Germany's flexible training mechanism by appropriately loosening mandatory multi-department rotation requirements in the training syllabus. After initial short-term general practice (including community) rotations to clarify medical service content and individual competency strengths and weaknesses, trainees could freely select desired rotation departments and durations, increasing both satisfaction and personalized development. Furthermore, Chinese training bases require additional research analyzing local GP practice scopes to clarify training priorities.

Duration of General Practice (Including Community) Rotations

The proportion of time allocated to general practice (including community) rotations in China's training is smaller than Germany's and shorter than that in the UK and Australia (both exceeding one year) [26], despite comparable total training durations. Current research on appropriate rotation duration for general practice (including community) components is insufficient. Future revisions to rotation content arrangements and community faculty capacity improvements should prompt re-examination of general practice (including community) rotation duration.

Psychosomatic Medicine in Residency Training

Psychosomatic medicine, fundamental to general practice, has demonstrated its importance in Chinese general practice and gained widespread recognition,

yet its foundational status in residency training remains unestablished, with problems including faculty shortages, non-standardized teaching materials, and uncertain teaching formats [27]. A 2016 study proposed incorporating Balint groups (psychosomatic medicine discussion groups focusing on doctor-patient relationships) into general practice residency [28], and a 2018 report from Xiangya Second Hospital indicated high satisfaction among GPs, who found Balint groups highly beneficial for managing psychological stress and improving doctor-patient relationships [29]. Unfortunately, without inclusion in the general practice training syllabus, such psychosomatic medicine courses have not been widely implemented nationwide. Given psychosomatic medicine's crucial role, a suitable curriculum should be designed and integrated into China's general practice residency system, with Germany's approach offering valuable lessons. Germany's 80-hour (one hour = 45 minutes) psychosomatic medicine foundation course comprises three units organized by state medical associations: Unit 1—20 hours (2-day) basic psychosomatic medicine theory; Unit 2—30 hours (3-day) doctor-patient communication; Unit 3—30 hours of Balint group practice, recommended to be completed in multiple sessions over at least six months for optimal effectiveness [30]. China could adopt similar formats to clarify psychosomatic medicine content in general practice residency, promoting courses to enhance GPs' psychosomatic health and disease management capabilities while fostering harmonious doctor-patient relationships.

Community Faculty Selection in Residency Training

Current community faculty teaching capacity in China's general practice residency shows substantial regional variation, with faculty development methods also differing regionally, urgently requiring unified selection criteria and standardized training. Since 2012, Germany has had specific, mature criteria for GP clinic faculty selection. While China's community-based GP practice differs from Germany's individual clinics, the scoring system and framework offer reference value. Germany's criteria do not include academic degrees as a primary indicator because German medical education is elite-based, admitting only top high school students. Given differences in China's medical education and the low community service willingness among highly-educated GPs, academic degrees should be included in selection criteria with incentive mechanisms to attract highly-educated GPs to community general practice and teaching. China's community faculty selection could adopt Germany's scoring system for clear evaluation criteria, with details modified according to Chinese contexts. Criteria should be concise, powerful, easily quantifiable, and suitable for widespread supervision. Special interest competencies (psychosomatic medicine, sports surgery/minor surgery, gynecology, pediatrics) constitute substantial weight in Germany's criteria and warrant continued attention in China's standard development.

Referencing Germany's criteria, four primary selection standards could be considered: (1) Educational background (e.g., bachelor's +1 point, master's +2

points, special interest training experience +3 points); (2) Medical competence and maintenance (e.g., high patient satisfaction +2 points, peer recognition +2 points, active continuing education participation +2 points); (3) Teaching capacity (e.g., high previous trainee satisfaction +3 points, excellent previous trainee performance +1 point, participation in provincial/ministerial faculty training +3 points); and (4) Research awareness (e.g., leading/participating in community clinical research +1 point). Score ranges could determine recertification intervals.

Continuing Education in General Medicine

Continuing education is particularly important for grassroots physicians, effectively maintaining and improving overall medical quality [31,32]. Given China's regional imbalances in general practice continuing education development, and the critical role of primary healthcare quality in population health, authorities should pay greater attention to general practice continuing education development. Following Germany's model, geographical barriers should be eliminated by promptly establishing a national, cross-provincial online platform for general practice continuing education offering diverse courses at different depths. Disciplinary barriers should be broken by providing cross-disciplinary continuing education pathways to promote multidisciplinary competency development.

Some Chinese general practice continuing education bases have begun considering special interest training courses to deeply enhance GPs' multidisciplinary capabilities, but implementation remains unreasonable in timing and content. Conducting special interest training during residency appears time-constrained, necessitating post-residency in-depth cultivation. Following Germany's continuing education model, advanced special interest courses could be divided into multiple sessions delivered via weekend online/offline training. Content should align with actual community patient needs, such as internal medicine diseases, nutrition and rehabilitation, mental health diseases, and pediatric diseases mentioned in relevant research [16]. Beyond special interest training, small specialty (specific medical skill) training could be incorporated into Chinese general practice continuing education. Small specialties encompass narrower knowledge/skill scopes than special interests, require shorter training duration, and can help general practice exert functional medicine roles beyond primary healthcare. Small specialty training content could reference German continuing education courses such as sexual medicine, travel medicine, sleep medicine, and addiction treatment. China could also develop deep training programs for common community chronic diseases such as diabetes, hypertension, and cardiac insufficiency as individual small specialty projects.

Conclusion

China's general practice postgraduate and continuing education faces numerous challenges, and Germany's general practice education model offers potential solutions. Future improvements will require more practical research and resources to implement relevant policies and evaluation standards. Due to space limitations, this paper has not conducted more extensive comparative discussions, with unaddressed content to be presented in future studies.

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