

Postprint: Analysis of Current Status, Problems, and Countermeasures for Continuing Medical Education of Order-Oriented General Practitioners in Rural Guizhou Province

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Abstract

Background: Rural contracted medical graduates who have completed standardized general practice residency training (hereinafter referred to as contracted general practitioners) have attracted widespread attention regarding their competency in fulfilling primary care positions; strengthening continuing medical education constitutes an important measure to enhance the competency of contracted general practitioners in their roles.

Objective: To investigate the current status, problems, and needs of continuing medical education for contracted general practitioners in Guizhou Province, thereby providing evidence for improving continuing medical education for this group.

Methods: From November to December 2021, using a combination of purposive and snowball sampling, 42 contracted general practitioners from 39 township health centers across 9 cities (prefectures) in Guizhou Province were selected as research subjects for semi-structured interviews. The grounded theory methodology was employed to conduct coding analysis of interview results, extracting and summarizing the current status, problems, and needs of continuing medical education.

Results: Through three-level coding, 145 concepts, 23 categories, and 5 main categories related to continuing medical education for contracted general practitioners were ultimately identified, forming one storyline: the continuing medical education of contracted general practitioners is influenced by multiple factors, wherein current reality constitutes the main obstacle, competency serves as the external driving force, the policy system provides important guarantee, personal

needs act as internal motivation, and improving training process management represents the key link.

Conclusion: The training willingness of contracted general practitioners in Guizhou Province needs strengthening; the quality of continuing medical education training, the alignment between training content and needs, and the attention from primary care institutions all require improvement. It is necessary to strengthen support for continuing medical education and information platform construction, and to improve training content and formats suitable for contracted general practitioners, thereby enhancing the quality and effectiveness of continuing medical education.

Full Text

Current Situation, Problems, and Strategies of Continuing Medical Education for Rural Order-Oriented General Practitioners in Guizhou Province

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Abstract

Background The competency of rural order-oriented medical graduates who have completed standardized general residency training (abbreviated as oriented general practitioners) in fulfilling their primary care service commitments has attracted widespread attention. Strengthening continuing medical education represents a crucial measure for enhancing the competency of these practitioners. **Objective** To understand the current status, problems, and needs of continuing medical education for oriented general practitioners in Guizhou Province, thereby providing evidence for improving their continuing medical education system. **Methods** From November to December 2021, 42 oriented general practitioners from 39 township hospitals across 9 cities (prefectures) in Guizhou Province were selected through purposive and snowball sampling for semi-structured interviews. Using the procedural grounded theory approach, interview data were coded and analyzed to extract and summarize the current situation, problems, and needs related to their continuing medical education. **Results** Through three-level coding, 145 concepts, 23 categories, and 5 main

categories were identified, forming a central storyline: The continuing medical education of oriented general practitioners is influenced by multiple factors, where actual circumstances constitute the primary barrier, competency requirements serve as external drivers, policy systems provide important guarantees, personal needs represent intrinsic motivation, and improving training process management is the key link. **Conclusion** In Guizhou Province, the training motivation of oriented general practitioners needs strengthening, while the quality of continuing medical education, alignment between training content and actual needs, and attention from primary care institutions require improvement. Enhanced support for continuing medical education and development of information platforms are needed, along with improved training content and formats suitable for oriented general practitioners, to enhance the quality and effectiveness of continuing medical education.

[Key words] Rural order-oriented medical students; General practitioners; Continuing medical education; Primary care facilities; Grounded theory

Introduction

Establishing and improving the general practitioner training system and cultivating a qualified general practitioner workforce constitute important initiatives in China's current medical and health system reform. As a vital component of the medical education system, continuing medical education serves as a primary pathway for health professionals to acquire new theories, knowledge, technologies, and methods, playing a significant role in continuously improving service capabilities and facilitating career development. In recent years, person-centered general practice services have gradually become an inevitable trend in primary healthcare development, attracting widespread attention from national and local governments. In 2018, the General Office of the State Council issued the "Opinions on Reforming and Improving the Incentive Mechanisms for General Practitioner Training and Utilization" (State Office [2018] No. 3), requiring the consolidation and improvement of general practice continuing medical education, formulation of guidelines, vigorous development of remote continuing education, popularization of appropriate general practice technologies, and universal coverage of continuing medical education for all general practitioners. In 2020, the "Guidance on Accelerating the Innovative Development of Medical Education" (State Office [2020] No. 34) set targets for 2025, including optimized medical education structure, more scientific management systems, deep integration of medicine with multiple disciplines, establishment of a high-level medical talent training system, and improved incentive mechanisms for medical personnel.

With order-oriented medical graduates completing standardized general residency training and fulfilling their service commitments in primary care institutions, grassroots medical service capacity has significantly improved. How-

ever, the current status of their continuing medical education remains unclear. Therefore, this study aims to explore the current situation, problems, and needs of continuing medical education for oriented general practitioners in Guizhou Province, propose relevant strategies, and provide evidence for improving their continuing medical education system.

Methods

Study Participants

From November to December 2021, based on the distribution characteristics of oriented general practitioners in Guizhou Province, we employed purposive and snowball sampling to conduct semi-structured interviews with 42 oriented general practitioners from 39 township hospitals across 9 cities (prefectures), meeting the sample size requirements for qualitative research. Inclusion criteria were: (1) oriented general practitioners who had completed standardized residency training and were fulfilling their service commitments in township hospitals; and (2) those in a calm emotional state without resistance who voluntarily agreed to interviews. Exclusion criteria were: (1) those unable to complete the interview due to work status such as clinical duties or meetings; and (2) those unwilling to participate due to personal reasons. During participant selection, we continuously revised the criteria to account for individual factors and differences among township hospitals to ensure data saturation. Theoretical saturation was achieved when no new concepts emerged after interviewing the 37th participant; saturation was confirmed after extending to 42 participants.

Interview Methods

The research team developed the interview outline through literature review and expert discussion, with pre-testing for refinement. The outline covered: (1) basic unit information, job position, and work performance; (2) current competency level, ability to meet work demands, and existing shortcomings; (3) participation in continuing medical education and encountered problems; (4) changes brought by continuing medical education, current challenges, and quality assessment; (5) deficiencies in training content, format, and scheduling; and (6) specific needs and expectations for support and improvement. Two graduate students trained in interview techniques conducted one-on-one interviews at participants' workplaces. After introducing themselves and the research purpose and presenting credentials to alleviate concerns, they obtained consent for audio recording. The interviewers created a relaxed atmosphere, built trust and rapport, probed deeper when necessary, and extended interview duration as appropriate to ensure reliability and completeness. Interviews lasted 20-30 minutes, after which participants completed a basic information form. All interviews were conducted following ethical principles and voluntary participation, with strict confidentiality guaranteed and informed consent obtained.

Data Analysis

Personal information was analyzed using Excel, and interview recordings were transcribed into Word documents and imported into NVivo 12.0 for management and analysis. Following the procedural grounded theory approach established by Strauss and Corbin, we conducted open coding, axial coding, and selective coding on the 42 interview transcripts through reading, summarizing, extracting, and coding to construct theoretical concepts and categories. Open coding involves conceptualizing and categorizing data with similar attributes. Axial coding establishes connections among categories to clarify internal logical relationships. Selective coding identifies a core category that integrates all findings into a “storyline” to construct a substantive theoretical framework.

To ensure reliability, two researchers conducted coding simultaneously, then compared and discussed their work, with discrepancies resolved through group discussion. Throughout the process, continuous comparison and reflection were applied to refine the coding results and logical framework. The coding reliability coefficient R was calculated as 0.91 ($R \geq 0.90$ indicates good reliability), based on 471 consistent codes out of an average of 526 codes. After comparative analysis, 526 initial concepts were finalized, which were further refined into 145 concepts and 23 categories (denoted as a+), as shown in and .

Results

Open Coding

Two researchers independently coded the interview data using NVivo 12.0, extracting 536 and 498 initial concepts respectively related to continuing medical education for oriented general practitioners. After reliability testing, 526 initial concepts were finalized. Due to the large number and overlapping nature of these concepts, they were further refined and categorized into 145 concepts, which were then grouped into 23 categories (denoted as a+), as illustrated in and .

Axial Coding

Based on the procedural grounded theory paradigm model (conditions \rightarrow phenomena \rightarrow action/interaction strategies \rightarrow results), we integrated the 23 categories from open coding to analyze logical relationships and construct a relationship model of the current situation of continuing medical education for oriented general practitioners ([Figure 1: see original paper]). Through further abstraction using the paradigm model, five main categories were identified (denoted as A+): actual circumstances, policy systems, training process management, personal needs, and competency requirements ().

Selective Coding

Through comprehensive review and analysis of all concepts, categories, and their relationships, the core category was identified as “development needs of continuing medical education for oriented general practitioners.” The following storyline emerged: The continuing medical education of oriented general practitioners is influenced by multiple factors, where actual circumstances constitute the primary barrier, competency requirements serve as external drivers, policy systems provide important guarantees, personal needs represent intrinsic motivation, and improving training process management is the key link. Based on this storyline, a theoretical model of development needs was constructed ([Figure 2: see original paper]), with all concepts and categories abstracted into four threads: current situation of continuing medical education, competency and personal needs, training process management, and policy systems.

Participant characteristics: Mean age was (29.6 ± 2.4) years; 26 males (61.9%) and 16 females (38.1%); 31 held intermediate professional titles (73.8%), 10 held junior titles (23.8%), and 1 had no title (2.4%); 20 (47.6%) held partial management responsibilities, and 5 (11.9%) were appointed as hospital directors or deputy directors.

Discussion

Current Situation of Continuing Medical Education

As a vital component of the medical education system, continuing medical education enables healthcare professionals to acquire new theories, knowledge, technologies, and methods after qualification. For oriented general practitioners, it shares common characteristics with other clinicians while possessing unique features. Our in-depth interviews revealed four key threads in their continuing medical education.

Currently, continuing medical education for oriented general practitioners in Guizhou Province primarily follows the trial measures for clinical specialists, involving credit-based online learning plus video training or practical sessions organized by health administrative departments, medical schools, and supporting hospitals. Most practitioners reported completing annual online credit requirements, with those in better-developed township hospitals having more training opportunities. However, several pervasive problems exist: (1) Healthcare personnel shortages and heavy workloads in township hospitals create prominent “work-study conflicts,” making it difficult for practitioners to find time and energy for external training or long-term further study, as they often hold multiple positions simultaneously. (2) Training content lacks specificity and fails to align with actual work needs, resulting in poor practical applicability at the grassroots level. (3) Since daily practice mainly involves common and chronic diseases, many practitioners feel competent and lack motivation for continuing educa-

tion. (4) The learning environment in township hospitals is poor with minimal competition, and the absence of supervising physicians means personal skills lack oversight and standardization, hindering professional growth. (5) Primary care institutions show insufficient emphasis on staff competency development and doubt whether oriented general practitioners will remain after their service period, limiting training opportunities. (6) Some practitioners have inadequate professional cognition, with unclear understanding of primary care and general practice prospects, weakening their desire for competency improvement.

Although most recognize the importance of continuing medical education for work performance and express willingness to participate, satisfaction with current programs remains low due to these factors. Health administrative departments and primary care institutions should strengthen awareness, enhance support (both software and hardware), employ innovative training methods suitable for oriented general practitioners, and develop general practice education platforms using information technology to improve accessibility and resolve work-study conflicts. Establishing mentor groups from higher-level hospitals could help improve clinical competencies and career development. Simultaneously, practitioners should be encouraged to embrace lifelong learning to stimulate intrinsic motivation.

Competency and Personal Needs

While oriented general practitioners have effectively increased the quantity and quality of rural primary care providers, our interviews revealed gaps between their competencies and both community health needs and job requirements, including insufficient diagnostic and treatment abilities, inadequate public health service capacity, and weak foundational knowledge. Some practitioners reported insufficient learning motivation during undergraduate studies due to pre-signed employment contracts, coupled with inadequate training in public health services and community practice, resulting in weak public health and clinical practice capabilities. Although standardized residency training improved clinical standardization, insufficient rotation time in departments with common grassroots diseases and suboptimal community base training led to poor adaptability to primary care settings and inadequate competency in managing common diseases.

Most practitioners acknowledged that township hospital service levels still fail to meet local residents' needs, often referring difficult or critical cases to higher-level hospitals to avoid medical risks, which undermines community trust. The COVID-19 pandemic also highlighted deficiencies in public health emergency response, reporting, and management capabilities. Given challenges such as population aging, urbanization, and rising chronic disease burden, implementing tiered diagnosis and treatment systems and promoting family doctor contract services require higher competencies from oriented general practitioners. As a crucial supplement to undergraduate and postgraduate medical education, continuing medical education should provide targeted training based on local

disease spectra, covering diagnosis and treatment of common diseases, chronic disease management, mental health education, doctor-patient communication, rational medication use, emergency care, home visits, and auxiliary examination interpretation. This would enhance comprehensive capabilities, align practitioner competencies with job requirements, improve community trust, and create a positive cycle where enhanced capabilities retain patients and promote primary care development.

Training Process Management

Effective training process management is critical for program outcomes. Current continuing medical education faces controversies regarding implementation forms and methods, characterized by single organizational formats, simplistic implementation, and low satisfaction. Training programs often diverge from grassroots needs: online content is overly theoretical with limited practical applicability, while offline training can consolidate basic knowledge and improve diagnostic skills but sometimes fails to integrate with service demands and regional disease patterns, lacking hands-on practice opportunities. Since some practitioners hold management positions, they require training beyond clinical skills, including public health services, hospital management, medical insurance, and health law. Preferred formats include remote education, in-house training, and further study programs. County-level hospitals, with their comprehensive case mix and disease spectrum similar to grassroots practice, were identified as suitable venues for short-term further study to enhance service capabilities.

Practitioners have clear purposes for continuing education: to acquire deficient knowledge and skills for providing affordable, quality care to rural residents. Providers should assess these needs and offer richer, more practical, targeted programs to ensure comprehensiveness and choice. A general practice continuing education platform could be established with scientific training plans, content design, and assessment management, integrating academic conferences, online videos, and lectures for free access. Strengthening general practice departments in county hospitals and utilizing medical consortiums to pool regional expertise would enable structured further study programs. Practitioners with management potential could receive targeted leadership training to enrich their career development.

Policy and Institutional Framework

In recent years, national and local governments have emphasized improving the quality and service capacity of practicing general practitioners to align with overall healthcare reform trends. However, no specific regulations guiding general practitioner continuing medical education were found in relevant policy documents. Incomplete laws, policies, and institutions directly affect the priority placed on continuing medical education by health administrative departments and primary care institutions, leading to unstandardized management, inadequate funding, weak process supervision, and misaligned incentive mechanisms.

Practitioners reported insufficient organizational support, inadequate teaching staff, and disconnected evaluation systems that compromise training quality, expressing desire for comprehensive policy guarantees.

Currently, Guizhou Province's general practitioner continuing medical education follows trial measures for clinical specialists. However, general practitioners differ fundamentally from specialists: they are widely distributed in economically disadvantaged grassroots areas with varying educational backgrounds and competency levels, making specialist measures inadequate. As the general practitioner workforce expands, continuing medical education requires not only broad social attention and active participation but also a "General Practitioner Continuing Medical Education Measures" framework suited to China's context and aligned with international standards. Such a framework should specify target audiences, objectives, content, requirements, formats, duration, and cost-sharing mechanisms to ensure institutional, financial, and operational support for sustainable development.

Limitations and Future Directions

This study primarily explored continuing medical education from the perspective of oriented general practitioners, with some subjectivity in concept and category extraction. Additionally, specific content of continuing medical education needs was not examined in depth, limiting the scope. Future research will investigate curriculum design and training formats for oriented general practitioners to further improve their continuing medical education system.

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