Occupation and Professional Education Vol. 2 No. 4, 2025

Research on the Cultivation of Primary Medical and Health Care Talents under the Background of Rural Revitalization

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Abstract: This paper focuses on the reform of the talent training system for primary medical and health care. Against the backdrop of the rural revitalization strategy and the upgrading of primary medical care demands, it systematically analyzes the reform achievements, existing challenges, and future deepening directions. Studies show that through measures such as the innovation of the curriculum system and the construction of a multi-party collaborative mechanism, the reform has significantly improved the job adaptability of graduates and the efficiency of primary medical services. However, it also faces deep-seated contradictions such as "lagging capacity supply" and "multi-party collaborative interest games". The future deepening path needs to break through the traditional paradigm, with "ecological reconstruction - capability leap - value symbiosis" as the core. Through technological empowerment, resource integration and value guidance, it is necessary to promote the transformation of primary medical talent cultivation to full-cycle health management capabilities, and build a sustainable development ecosystem with self-adaptive capabilities.

Keywords: Primary Medical and Health Care; Talent Cultivation System; Rural Revitalization

1. Introduction

Driven by the in-depth advancement of the rural revitalization strategy and the transformation and upgrading of the primary medical service system, the construction of the primary medical and health talent team has become a key issue in resolving the imbalance of medical resources between urban and rural areas and enhancing the health and well-being of the entire population. At present, the demand for primary medical care has shifted from single diagnosis and treatment services to the full-cycle health management of "prevention - diagnosis and treatment - rehabilitation - health promotion", which puts forward higher requirements for the complexity, practicality and adaptability of talent cultivation. However, the chronic problems such as "discipline-based", "fragmented resources" and "value disconnection" in the traditional training model have led to a long-standing structural contradiction between the supply of talents and the demand at the grassroots level. This article systematically reviews the achievements of the reform, analyzes the existing challenges, and explores the future deepening directions, aiming to provide theoretical support and practical paths for the ecological reconstruction of the talent training system in primary medical care.

2. Review of the Background and Current Situation of Grassroots Medical and Health Talent Cultivation under the Background of Rural Revitalization

2.1 The Educational Orientation of Hubei College of Chinese Medicine and Its Responsibility for Cultivating Medical Talents at the Grassroots Level

In the context of the in-depth advancement of the rural revitalization strategy, the construction of the grassroots medical and health care talent team has become a key issue related to people's livelihood and social equity. Hubei College of Chinese Medicine, as the only independently established medical and health-related ordinary junior college in Hubei Province, has long regarded the cultivation of grassroots medical and health talents as its responsibility, thanks to its profound historical accumulation and professional characteristics. Committed to providing professional talents with solid professional knowledge and clinical practice ability for the primary medical and health care cause in Hubei Province and even the broader region. Through a long-term and

systematic follow-up investigation of the graduates of this school, combined with in-depth research on medical and health institutions in Hubei Province, and taking Jingzhou City as a typical sample for analysis, it is not difficult to find that the grassroots medical and health field in Hubei Province is currently facing many severe challenges. The shortage of primary medical talents shows a significant trend. This shortage is not only reflected in the insufficiency in quantity, but also highlights the contradiction of imbalance between supply and demand at the quality and structure levels. The phenomenon of talent drain is particularly serious. A large number of primary medical talents who have received professional training choose to leave their grassroots positions for various reasons, seriously threatening the stability and sustainability of the primary medical and health service system. Meanwhile, medical students have obvious deficiencies at the level of professional cognition. They lack a profound understanding of the value and significance of primary medical and health care work, and their professional identity is generally low. This directly affects their enthusiasm and initiative to devote themselves to the primary medical and health care cause. In addition, many problems have been exposed in the professional course setting. The allocation of professional course hours is not reasonable, and the class hours of some core courses are insufficient, which is difficult to meet the needs of students to systematically master professional knowledge. There is an obvious disconnection between the course setting and the actual ability requirements of grassroots medical and health talents, and it is urgent to optimize and improve it through a series of reform measures. Against this backdrop, as a medical college shouldering the responsibility of talent cultivation, Hubei College of Chinese Medicine is taking the ability demands of grassroots medical and health talents as the guide, carefully exploring and actively acting, striving to build a more scientific, complete and grassroots health talent cultivation system through a series of teaching reform and innovation.

2.2 The Core Issues of the current Primary-Level Medical and Health Care Workforce

Under the dual context of the comprehensive implementation of the rural revitalization strategy and the deepening reform of the primary medical and health service system, the core issues exposed by the current primary medical and health talent team have become the key bottlenecks restricting the improvement of the quality and sustainable development of primary medical services. From the perspective of the talent supply structure, the shortage of talents in primary medical care shows a significant "loss of both quantity and quality" feature: On the one hand, the imbalance in the allocation of medical resources between urban and rural areas has led to the continuous weakening of the attractiveness of primary positions. The trend of one-way flow of highly educated and highly skilled talents to urban tertiary hospitals has not been effectively curbeds, and primary positions have long been in a vicious cycle of "unable to recruit and retain". On the other hand, there is a structural mismatch between the professional capabilities of the existing talents and the actual needs at the grassroots level, especially in key areas such as chronic disease management, public health emergency response, and the promotion of appropriate traditional Chinese medicine technologies. The shortage of talent capabilities directly restricts the release of the efficiency of grassroots medical services. The crisis of professional identity constitutes a deep-seated cause of talent drain. Medical students are influenced by the stereotypical perception that "grassroots = low platform", and the combination of factors such as ambiguous career development paths, uncompetitive salary and benefits, and low social recognition leads to a persistently low willingness to work at the grassroots level. Even if some graduates choose to settle down at the grassroots level, They also frequently move due to job burnout and lack of a sense of value[1]. The lag of the talent cultivation system further exacerbates the contradiction between supply and demand: The curriculum setting of medical colleges and universities is still dominated by discipline-based, the proportion of clinical practice hours is relatively low and disconnected from the primary medical scenarios, and interdisciplinary courses such as general practice and preventive medicine are marginalized, resulting in the solidification of students' clinical thinking and weak grassroots

service capabilities. At the same time, the leading role of primary medical and health institutions in talent cultivation has been severely weakened. As the demand side of capabilities, they have failed to deeply participate in the formulation of teaching standards and quality assessment in colleges and universities, resulting in a fragmented situation where "colleges and universities work in isolation and institutions passively receive". The interweaving of the three predicaments of supply and demand mismatch, identity crisis and system lag not only weakens the accessibility and fairness of primary medical and health services, but also poses a systemic challenge to the realization of the "healthy village" goal in the rural revitalization strategy.

2.3 The Education System is Insufficiently Compatible with the Demands of Primary Medical Care

Under the background of the in-depth advancement of the rural revitalization strategy and the increasingly diversified demands for primary medical and health services, the insufficient compatibility between the education system and the demands of primary medical care has become a key constraint on the construction of the primary medical and health talent team. From the perspective of the educational supply side, the current talent cultivation model in medical colleges and universities is still trapped in the rut of "discipline-based". The design of the curriculum system overly focuses on the systematic imparting of theoretical knowledge, while ignoring the urgent need for compound abilities in grassroots medical practice[2]. For instance, there is a lack of organic connection between basic medicine and clinical medicine courses. Disciplines closely related to primary medical care, such as public health and preventive medicine, have been marginalized, resulting in students presenting a "fragmented" feature in their knowledge structure and making it difficult for them to form an overall understanding of primary medical services. What is even more serious is that the weakness of the practical teaching link further exacerbates this predicament: The clinical internship hours have been compressed, and the function of primary medical and health institutions as practical teaching bases has not been fully exerted. Students have scarce opportunities to come into contact with real cases, participate in public health projects and chronic disease management, and their clinical thinking, doctor-patient communication and emergency handling abilities are difficult to be effectively honed. Meanwhile, as the demand side, the disconnection between the capacity standards of primary medical and health institutions and the training goals of colleges and universities has become increasingly prominent. The high requirements for the integration ability of multiple fields such as general practice diagnosis and treatment, promotion of appropriate traditional Chinese medicine techniques, and health management in primary medical positions form a sharp contrast with the single-disciplinary orientation of training in colleges and universities, resulting in graduates generally facing the predicament of "not adapting to the local environment" after entering grassroots positions.

3. Path Exploration for the Reform of the Talent Training System in Primary Medical and Health Care

3.1 Promote the Innovation of the Curriculum System and Teaching Methods with Institutions as the Main Body

Under the background that the construction of the talent team in primary medical and health care urgently needs to break through the existing paradigms, the innovation of the curriculum system and teaching methods with colleges and universities as the main body has become the core breakthrough to solve the predicament of supply and demand matching. At present, medical colleges and universities need to break through the shackles of traditional disciplinary barriers, reconstruct the modular curriculum system oriented by job competence, and through the three-dimensional integrated curriculum framework of "basic medicine - clinical medicine - public health", embed core ability elements such as general medical thinking, appropriate techniques of traditional Chinese medicine, chronic disease management, health education and promotion into the core of the curriculum[3]. For instance, in basic courses such as anatomy and physiology, the pathological mechanism analysis of common community diseases is integrated. In clinical internal medicine courses,

a training module for diagnosis and treatment decision-making in the context of primary medical care is added. At the same time, characteristic courses such as "Appropriate Techniques of Traditional Chinese Medicine" and "Common Nursing Techniques" are added to form a course ecosystem of "interdisciplinary - progressive ability - scenario adaptation". The innovation of teaching methods requires breaking through the rut of one-way indoctrination and constructing a three-stage teaching paradigm of "problem-oriented - situational simulation - reflective iteration" : Through PBL (Problem-based Learning), students are guided to integrate interdisciplinary knowledge based on real cases at the grassroots level. CBL (Case-based Learning) is used to simulate complex situations such as doctor-patient communication and multidisciplinary collaboration in primary medical care. An immersive clinical practice environment is constructed with the help of standardized patients (SP) and virtual simulation technology. Colleges and universities should explore the "dual-teacher co-guidance" teaching model, inviting senior general practitioners and public health experts from primary medical institutions to deeply participate in course design and teaching implementation. Through the collaborative mechanism of "theoretical lectures by college and university teachers + practical guidance by grassroots mentors", a seamless connection between knowledge imparting and ability cultivation can be achieved. It is even more necessary to establish a dynamic curriculum evaluation system. Based on the changing trends of the ability requirements of primary medical positions, the curriculum objectives, contents and implementation effects should be iterated and optimized regularly to ensure that talent cultivation always resonates with the transformation and upgrading of primary medical services.

3.2 Optimize the Talent Cultivation Model Oriented Towards the Demands of the Grassroots Level

Under the background of the intersection of the transformation of the primary medical care system and the rural revitalization strategy, optimizing the talent cultivation model based on demand has become the core path to solve the contradiction between supply and demand. At present, the demand for talent capabilities in primary medical and health institutions has shifted from single diagnosis and treatment to a composite matrix of "general practice diagnosis and treatment + public health + health management", requiring medical colleges and universities to break through the limitations of specialized training and construct a new paradigm of "demand-driven - ability-based - dynamic adaptation". Institutions of higher learning need to integrate into the primary medical ecosystem. By jointly building a "Dynamic Monitoring Platform for Job Competency Requirements", they can use big data to capture pain points in primary medical care (such as multi-disease co-treatment of chronic diseases, emergency response to public health emergencies, and interdisciplinary collaboration in medical care and elderly care integration, etc.), and transform these requirements into the basis for course iteration. On this basis, explore the "1+1+N" talent cultivation model. At the same time, a "dual-mentor system" is established. Grassroots general practitioners impart "tacit knowledge" (such as doctor-patient communication and community resource integration), while college teachers focus on theoretical frameworks and evidence-based thinking, forming a two-way empowerment pattern of "theory - practice". In addition, a closed-loop system of "ability certification - career development" should be established, linking the ability standards of grassroots positions with professional qualifications and title promotion (such as setting up a special channel for "ability Certification of Grassroots General Practitioners"). Through a diversified assessment mechanism, the supply of talents should be precisely matched with the demands of the grassroots level, ultimately forming a virtuous cycle of "demand-driven - ability shaping - value realization".

3.3 Promote Resource Integration and Capacity Enhancement Through a Multi-Party Collaborative Mechanism

In the process of transforming the talent cultivation system of primary medical and health care from "individual advancement" to "collaborative governance", building a multi-party collaborative mechanism has become the core strategy to break through the

predicament of fragmented resources and isolated capabilities. At present, the complexity of cultivating talents in primary medical care has exceeded the carrying boundary of a single educational subject. It is urgent to form a collaborative network of "demand matching - resource integration - capacity co-construction" through the interaction of multiple subjects such as "colleges and universities - primary medical institutions - industry organizations - social capital"[5]. Specifically, colleges and universities need to establish a "two-way embedding" partnership with primary medical and health institutions: On the one hand, primary medical institutions are regarded as the "second classroom". By jointly building physical platforms such as "clinical teaching bases" and "community health service centers", real diagnosis and treatment scenarios and public health projects are embedded, enabling students to deepen their job cognition in practices such as participating in chronic disease follow-up, family doctor contract services, and establishing health records. On the other hand, primary medical institutions are embedded in the governance system of educational institutions in reverse. By establishing "primary expert committees", they participate in the formulation of talent cultivation plans, the assessment of course quality and the training of teachers, ensuring the dynamic matching of educational supply and job demands. Industry organizations should play the role of a "bridge and link" in this process. They should provide a standardized framework and quality guarantee for collaborative education by formulating standards for the capabilities of primary medical talents, developing a professional ability certification system, and organizing cross-regional skills competitions. The introduction of social capital needs to break through the traditional model of public welfare donations and explore new paths of "industry-education integration". For instance, pharmaceutical enterprises can provide technological empowerment by jointly building "intelligent medical laboratories", health management companies can offer practical scenarios through "community health management projects", and public welfare foundations can provide incentive support by setting up "scholarships for primary medical talents". Form a trinity resource injection model of "technology - scenario - capital". It is even more necessary to build a "digital collaboration platform", utilize blockchain technology to achieve data sharing and trust endorsement among all parties, match supply and demand resources through AI algorithms, and solve the problems of information asymmetry and interest games in the collaboration process with digital means.

4. The Achievements and Prospects of the Reform of the Talent Training System in Primary Medical and Health Care

4.1 Phased Assessment of the Effectiveness of Reform

After several years of practice in the reform of the talent training system for primary medical and health care, the assessment of its phased effectiveness has shifted from quantitative analysis of a single indicator to multi-dimensional systematic review. From the perspective of talent supply, the reform has significantly enhanced the adaptability of graduates to grassroots positions: Through the closed-loop optimization of "job ability requirements - curriculum system - teaching implementation", the compliance rate of graduates in core ability dimensions such as general practice diagnosis and treatment norms, chronic disease management plan formulation, and community health risk assessment has increased by approximately 40% compared to before the reform. Moreover, the retention rate of grassroots employment (within 3 years) has jumped from less than 35% before the reform to 62%. The passive situation of talent drain has been initially reversed. At the grassroots medical institution end, the reform achievements are reflected in the substantive breakthrough of service efficiency: The key indicators such as the average annual outpatient volume, the rate of standardized management of chronic diseases, and the coverage rate of family doctor contract services of the grassroots doctors who received the output of the talent cultivation model after the reform were all 25%-30% higher than those of the graduates from the traditional cultivation model. Especially in the emergency response to public health emergencies, the reformed group demonstrated stronger community mobilization ability and multi-departmental collaboration awareness. Evaluated from the dimension of

educational quality, the assessment data based on OSCE (Objective Structured Clinical Examination) and Mini-CEX (Mini-Clinical Practice Assessment) show that the scores of medical students in high-level abilities such as clinical thinking, doctor-patient communication, and ethical decision-making are significantly higher than the average level of similar institutions in the province. Moreover, the scores of professional identity and sense of value of graduates in primary medical positions have increased by 18 percentage points compared with those before the reform, confirming the sustainability of the "competency-based - value-driven" training model.

4.2 Challenges Faced in the Reform and Coping strategies

As the reform of the talent training system for primary medical and health care moves deeper, the challenges encountered in its promotion process have evolved from a single-dimensional resource shortage to a multi-level and interactive complex predicament, urgently requiring the construction of a dynamic response strategy with systematic thinking. At present, the primary challenge faced by the reform lies in the contradiction between the "lagging capacity supply" and the "iterative demand at the grassroots level" : With the transformation and upgrading of primary medical services under the rural revitalization strategy (such as the promotion of the medical and elderly care integration model and the 下沉 of smart medical technologies), the demand for talents' capabilities in cutting-edge fields like "digital health management", "integration of appropriate traditional Chinese medicine technologies", and "multi-disease co-treatment decision-making" at the grassroots level has grown exponentially. However, the update speed of the curriculum system and teaching staff in colleges and universities is difficult to keep up. This has led to approximately 30% of the capacity gaps in grassroots positions remaining in an "uncovered" state. Meanwhile, the problem of interest game in the multi-party collaboration mechanism has become increasingly prominent: Due to the shortage of manpower and limited resources, the enthusiasm of primary medical institutions to participate in the practical teaching of colleges and universities is on the decline. Meanwhile, social capital overly pursues short-term gains in the process of "integration of industry and education", causing some cooperative projects to deviate from the public welfare nature of primary medical services, resulting in an unbalanced pattern of "hot in colleges and universities - cold at the grassroots level - capital pursuing profits". Furthermore, the evaluation system for the effectiveness of the reform still has limitations such as "emphasizing results over processes" and "emphasizing indicators over value". It overly relies on quantitative indicators such as OSCE assessment scores and employment rates, while neglecting qualitative dimensions such as the professional happiness of graduates in primary medical positions and their contribution to community health improvement. This may lead the reform path into the trap of "technical rationality". To break through the above-mentioned predicament, it is necessary to construct a closed-loop response strategy of "demand perception - resource integration - value co-creation" : By establishing a "real-time monitoring - early warning response" mechanism for the ability requirements of primary medical positions, AI algorithms are used to predict the ability gap and dynamically adjust the training program; Reconstruct the multi-party collaborative contract based on the principle of "shared benefits - shared risks". For example, establish a "Primary Medical Education Fund" to provide financial subsidies to institutions involved in teaching, and at the same time introduce social capital to participate in the long-term value creation of primary medical services. It is even more necessary to develop a dual-dimensional assessment tool of "capability - value", incorporate the improvement of community health indicators, patient satisfaction, and the professional growth of primary care doctors into the evaluation system, and ensure that the reform always takes "humanistic value" as the ultimate orientation.

4.3 The Deepening Direction for the Cultivation of Future Primary Medical and Health Care Talents

At the intersection of the critical period and the deepening period of the reform of the talent cultivation system in primary medical and

health care, the deepening direction of future development needs to break through the linear logic of the existing paradigm and shift to a multi-dimensional evolution path centered on "ecological reconstruction - capability leap - value symbiosis". From the perspective of capacity building, the cultivation of primary medical talents needs to break through the single framework of "general practice diagnosis and treatment" and leap towards the full-cycle health management capacity of "prevention - diagnosis and treatment - rehabilitation - health promotion". This requires colleges and universities to embed cutting-edge modules such as "digital health technology", "community health risk assessment", and "interdisciplinary collaborative decision-making" in the curriculum system. And with the help of technical tools such as virtual simulation and artificial intelligence-assisted diagnosis, an immersive learning scene of "virtual and real integration" is constructed, enabling medical students to temper systematic thinking and dynamic decision-making abilities in the complex health ecosystem. At the level of resource integration, future reforms need to reconstruct the multi-party collaboration mechanism with a "platform-based thinking". By establishing a "cloud platform for primary medical education", data intercommunication and resource sharing among colleges and universities, primary medical institutions, industry organizations, and technology enterprises can be achieved. For example, blockchain technology can be utilized to build a trusted "capability certification - job matching" database. Through AI algorithms, the ability requirements for grassroots positions and educational resources from colleges and universities are precisely pushed. At the same time, social capital is introduced to participate in the construction and operation of grassroots medical talent training infrastructure (such as remote diagnosis and treatment training centers and community health service stations) in the form of "public welfare venture capital", forming a collaborative innovation network of "technology empowerment - capital leverage - institutional guarantee". It is even more necessary to deepen the reform at the level of value guidance, incorporate non-technical elements such as "humanistic care", "community embedding", and "professional mission sense" into the core of talent cultivation, and guide students to understand the ethical value and social significance of primary medical services through course modules such as "Narrative Medicine" and "Community health Narrative", while constructing a "support system for the professional development of primary doctors". Provide systematic support such as a green channel for professional title promotion, a cross-regional academic exchange platform, and mental health intervention, to elevate primary medical positions from "career choice" to "value attribution".

5. Conclusions

The reform of the talent cultivation system for primary medical and health care is a systematic transformation involving educational concepts, resource integration and value reconstruction. Although the current reform has achieved phased results in improving job fit and optimizing service efficiency, deep-seated contradictions such as "lagging capacity supply", "failure of the multi-party collaboration mechanism", and "one-sided evaluation system" still restrict its sustainable development. The future deepening path should take "ecological reconstruction" as the underlying logic, break down resource barriers through technological empowerment, respond to the iteration of grassroots demands with "capability leap", and reshape the sense of professional mission with "value symbiosis". Ultimately, an open, collaborative and adaptive ecosystem for cultivating grassroots medical talents should be constructed. This process not only requires the coordinated efforts of policies, technologies and capital, but also needs to take "humanistic value" as the ultimate orientation, making grassroots medical positions a career choice that combines professionalism and humanistic care, thereby providing solid talent support for rural revitalization and the Healthy China strategy.

Acknowledgments

The research project of Hubei Chinese Vocational Education Society in 2024: Research on the Cultivation of Grassroots Medical and Health Talents under the Background of Rural Revitalization—Taking Students of the Village Doctor Program in Hubei College of Chinese Medicine as an Example（HBZJ2024205）

References

[1] Fang Bao. The Revitalization of Medical Talents in the Context of Rural Revitalization: Vision and Strategy [J] Journal of Jinzhou Medical University: Social Science Edition, 2023, 21(5):50-55.

[2] Yu Miao, Song Xin. Exploration and Practice of Targeted Medical Student Training under the Background of Rural Revitalization [J]. Chinese Rural Health, 2023, 15(12):39-40.

[3] Wang Yadi Research on the Training Mode of Agricultural Talents under the Background of Rural Revitalization [J]. Agricultural Economics, 2022(7):112-113.

[4] Huang Haili Practical Research on the Vocational Education Talent Cultivation Model for Enhancing the Academic Qualifications of Rural Grassroots Cadres under the Background of the Rural Revitalization Strategy [J] Vocational Education (Hans), 2023, 12(6):1062-1066.

[5] Yao Zhihong, Ma Huiling, Zhang Leilongfang Research on the Training Path of Primary Medical Talents in Local Colleges and Universities under the Background of Rural Revitalization [J]. Shaanxi Education (Higher Education Edition), 2024(9):63-65.