Study on the Influence Mechanism of AI-Empowered Primary Healthcare Service Performance: Postprint

Authors: Kong Zihe, Bian Qingyang, Dexing Kong, Kong Jiangming, Kong Dexing, Kong Jiangming

Date: 2025-10-21T00:00:00+00:00

Abstract

Background: China is leveraging artificial intelligence technology to enhance the standardization and homogenization of primary healthcare services, thereby driving universal health coverage and demonstrating global leadership in digital health.

Objective: To empirically reveal the influence mechanism of AI-enabled primary healthcare service performance and propose corresponding optimization pathways.

Methods: This study selected the large-scale, multi-center policy pilot case of the "Ultrasound AI-Assisted Diagnostic System" deployed across 109 public medical institutions throughout Puyang City, Henan Province from July 2022 to May 2024 as the research subject. The organizational change dynamics model served as the primary theoretical framework, questionnaire survey as the main data collection method, and descriptive statistical analysis, exploratory factor analysis, confirmatory factor analysis, variance analysis, and structural equation modeling as the principal data analysis methods.

Results: A total of 429 valid questionnaires were obtained. The AI-enabled primary healthcare service performance evaluation indicator system designed in this study comprises two dimensions: internal optimization performance and social adaptation performance. The social adaptation performance of system application was higher than its internal optimization performance. The application not only generated direct performance outcomes such as improved medical quality and enhanced operational efficiency, but also led to more prominent improvements in social adaptation performance including sustainable development and satisfaction. The main contextual trigger factors for performance improvement were "policy environment," "industrial support," and "achievement transformation,” while the primary enabling factors were “medical insurance support,” “technical level,” and “purchasing power.” The three key optimization pathways for enhancing AI-enabled primary healthcare service performance were: “policy environment/industrial support → technical level → social adaptation performance/internal optimization performance,” “policy environment/industrial support → purchasing power → social adaptation performance,” and “policy environment/achievement transformation → medical insurance support → social adaptation performance/internal optimization performance.”

Conclusion: Based on a comprehensive understanding that deploying medical AI equipment possesses dual values of profitability and public welfare, public sectors should adopt multiple policy instruments. Starting with creating leading and encouraging policy environments, strengthening the completeness of industrial support, and accelerating the cultivation of achievement transformation mechanisms, they should continuously exert efforts in enhancing the technical level of medical AI equipment, strengthening the equipment purchasing power of primary healthcare institutions, and accelerating the inclusion of AI diagnostic applications into medical insurance reimbursement, thereby further improving the performance of AI-enabled primary healthcare services.

Full Text

Analysis of the Influence Mechanism of Artificial Intelligence Empowering the Performance of Primary Health Services

KONG Zihe[1], BIAN Qingyang[1], KONG Dexing[2], *KONG Jiangming*[3]

[1]School of Public Affairs, Zhejiang University, Hangzhou 310058, China
[2]College of Mathematical Sciences, Zhejiang University, Hangzhou 310058, China
[3]Jinhua Hospital of Traditional Chinese Medicine, Zhejiang Chinese Medical University, Jinhua 321017, China

Corresponding authors: KONG Dexing, Professor/Doctoral supervisor; E-mail: dkong@zju.edu.cn
KONG Jiangming, Chief physician; E-mail: kjm3099@126.com

Abstract

Background: China is leveraging artificial intelligence technology to enhance the standardization and homogeneity of primary health services, driving universal health coverage and demonstrating global leadership in digital health. **Objective:** To empirically reveal the influence mechanism of artificial intelligence (AI) empowering the performance of primary health services and propose corresponding optimization paths. **Methods:** This study examined a large-scale, multi-center policy pilot case of the "ultrasound AI-assisted diagnostic system" deployed across 109 public medical institutions in Puyang City, Henan Province, from July 2022 to May 2024. The Organizational Change Dynamics Model served as the primary theoretical framework, with questionnaire surveys as the main data collection method. Descriptive statistical analysis, exploratory factor analysis, confirmatory factor analysis, variance analysis, and structural equation modeling were employed as the primary data analysis methods. **Results:** A total of 429 valid questionnaires were obtained. The performance evaluation index system for AI-empowered primary health services designed in this study comprised two dimensions: internal optimization performance and social adaptation performance. The social adaptation performance of system applications was higher than internal optimization performance. Applications not only yielded direct performance outcomes such as improvements in medical quality and operational efficiency but also generated more prominent enhancements in social adaptation performance, including sustainable development and satisfaction. The main situational triggers for performance improvement were "policy environment," "industrial support," and "technology transfer," while the primary enabling factors were "medical insurance support," "technological level," and "purchasing power." Three key optimization paths for enhancing AI-empowered primary health service performance were identified: (1) "policy environment/industrial support → technological level → social adaptation performance/internal optimization performance," (2) "policy environment/industrial support → purchasing power → social adaptation performance," and (3) "policy environment/technology transfer → medical insurance support → social adaptation performance/internal optimization performance." **Conclusion:** Based on a full understanding that deploying medical AI equipment carries dual values of profitability and public benefit, public sector agencies should adopt diverse policy tools. Starting from creating a leading and encouraging policy environment, strengthening the integrity of industrial support, and accelerating the cultivation of technology transfer mechanisms, sustained efforts should be made to improve the technical level of medical AI equipment, enhance primary health institutions' equipment purchasing capacity, and accelerate the inclusion of AI diagnostic applications in medical insurance payments, thereby further improving the performance of AI-empowered primary health services.

Keywords: artificial intelligence; primary health services; empowerment; performance; influence mechanism; policy pilot; structural equation model

1. Introduction

China is actively seeking to leverage next-generation artificial intelligence technology to enhance the standardization and homogeneity of primary health services, drive universal health coverage, and demonstrate global leadership in digital health. As President Xi Jinping emphasized, the concept of "comprehensive health and wellness" should be established to promote the 下沉 of health resources, advance county-level medical community construction, improve grassroots infrastructure conditions, enhance medical service quality and efficiency, and facilitate the effective operation of the hierarchical diagnosis and treatment system. In recent years, revolutionary breakthroughs in artificial intelligence technology have enabled its effective application in broad health domains, including disease screening and prediction, health management, assisted diagnosis, chronic disease management, and rehabilitation therapy, thereby expanding the development space for health services and creating conditions for improving the performance of China' s primary health services.

Theoretically, AI's empowerment of primary health services encompasses at least three aspects: first, improving disease diagnostic accuracy to enhance healthcare system operational efficiency and reduce overall medical expenditures; second, using diagnostic standardization and intelligence as a foundation to enhance the feasibility of mutual recognition of test results, avoid duplicate examinations, and promote rebalancing of high-quality medical resources across regions; and third, improving the technical capabilities of general practitioners at primary health institutions to enhance the equity and accessibility of medical services. However, due to practical limitations, few studies have empirically revealed how public sector agencies can enhance the effectiveness of AI empowerment in primary health services. This study addresses this gap by examining the policy pilot case of the "ultrasound AI-assisted diagnostic system" deployed across 109 public medical institutions in Puyang City, Henan Province, using the Organizational Change Dynamics Model as the theoretical framework and questionnaire surveys as the primary data collection method to empirically reveal the influence mechanism of AI empowerment on primary health service performance and propose corresponding optimization paths.

---

2. Methods

2.1 Study Object This study selected the large-scale, multi-center policy pilot case of the "ultrasound AI-assisted diagnostic system" deployed across all 109 public medical institutions in Puyang City, Henan Province, from July 2022 to May 2024. On July 11, 2022, the General Office of Puyang Municipal People' s Government issued the "Notice on Promoting the Application of AI-Assisted Diagnosis and Treatment Systems and Palm Vein Intelligent Recognition Systems," deploying medical AI equipment across all medical institutions in the jurisdiction. As an important component of this initiative, the AI-SONIC™ ultrasound AI-assisted diagnostic system, built upon China' s independently developed "DE-Light" deep learning technology platform, integrates core cutting-edge technologies in artificial intelligence, medical imaging, and information security to establish an intelligent diagnosis and treatment framework that combines image recognition, feature extraction, diagnostic judgment, and report generation. The system possesses multiple core functions, including ultrasound image standardization, real-time analysis, and high-precision recognition, supporting automatic detection, benign/malignant determination, and quantitative analysis for thyroid, breast, carotid artery, pelvic floor, and other areas, while automatically generating high-precision examination reports suitable for diagnostic support, training, teaching, and research data collection.

By May 31, 2024, the AI-SONIC™ ultrasound AI-assisted diagnostic system had been deployed across 109 public medical institutions (Level 1 and above) in Puyang City, with 291 modules installed (30 in tertiary institutions, 66 in secondary institutions, and 195 in institutions below secondary level), screening a total of 281,663 individuals and detecting 3,129 thyroid nodule patients. System deployment effectively improved diagnostic capabilities and service efficiency at primary health institutions: the time for issuing ultrasound examination reports was reduced from approximately 15 minutes to 0.2 seconds, physicians' daily patient capacity increased from 20-25 to approximately 40 patients (a 37.5%-50.0% efficiency gain), and the detection accuracy for nodules and plaques reached 97%, with benign/malignant judgment accuracy exceeding 95%—significantly higher than the national average for attending physicians in ultrasound departments of top-tier hospitals (approximately 75%). Moreover, examination data became more detailed; for instance, when carotid intima thickening was detected, the system provided precise values to two decimal places (e.g., 1.38, 1.69), far more precise than conventional hospital reports that typically provided ranges (e.g., 1-2, 2-3), and could automatically calculate stenosis ratios. Additionally, nearly 75% of ultrasound patients returned from county-level hospitals to township and community health institutions, strengthening primary diagnosis capacity and reducing duplicate examinations. In terms of medical insurance economics, if reimbursed at 5-10 yuan per person-time, the new payment expenditure would be only 1/14 to 1/7 of duplicate examination costs, achieving cost savings of 85.7%-92.9%. These data fully demonstrate the system' s significant role in expanding screening coverage and improving ultrasound diagnostic efficiency and accuracy, marking a demonstrative step forward in Puyang City' s construction of an AI medical service system.

2.2 Theoretical Framework Performance Evaluation System: "Performance" can accurately characterize the behavior and outcomes of AI empowerment in primary health services. Perceived performance can depict the public' s overall perception of service quality, offering more comprehensive explanatory power than input-output efficiency evaluation and better reflecting public value. Based on the "task performance-contextual performance"model, this study developed a comprehensive performance evaluation framework encompassing internal optimization performance (medical quality and operational efficiency) and social adaptation performance (sustainable development and social satisfaction).

Organizational Change Dynamics Model: This study introduced the Organizational Change Dynamics Model as the theoretical framework for analyzing influence mechanisms, effectively explaining how the dynamic transmission mechanism of equipping primary health institutions with medical AI devices improves performance. The model emphasizes that organizational performance improvement results from the interaction between external driving forces and internal organizational capacity responses. Following this logic, this study defined technology transfer, policy environment, and industrial configuration as externally-driven independent variables, representing the mature foundation of AI technology entering medical practice, the degree of institutional support and protection, and the industrial ecosystem support for technology application implementation—key external situational triggers for AI medical system deployment at the grassroots level. Simultaneously, drawing on the theoretical perspective of "capacity adaptation and internalization transformation" in organizational change, the study further introduced technological level, purchasing power, and medical insurance support as mediating variables, reflecting primary health institutions' absorption and response capabilities to technological change as core internal enabling factors. Among these, "technological level" reflects the advancement of the AI system itself, representing the technical prerequisite affecting primary health institutions' adoption willingness and usage effectiveness; "purchasing power" reflects primary health institutions' financial capacity for equipment procurement and maintenance; and "medical insurance support" is a key factor measuring whether AI system applications possess institutionalized, sustainable conditions. This variable setting logic aligns with the "external drive-internal response-performance outcome" theoretical chain in the Organizational Change Dynamics Model, providing clear theoretical justification and structural support for subsequent empirical analysis.

2.3 Statistical Methods This study used SPSS 27.0 software for descriptive statistical analysis, exploratory factor analysis, confirmatory factor analysis, and variance analysis of questionnaire data. Quantitative data were expressed as ($\bar{x}\pm s$). Independent samples t-tests were used for comparisons between two groups, and one-way ANOVA for comparisons among three or more groups. LSD post-hoc test results were referenced if homogeneity of variance assumptions were met; otherwise, Tamhane' s T2 test results were consulted. AMOS software was used for structural equation model path testing, with the application performance of the deployed ultrasound AI-assisted diagnostic system as the dependent variable, and technology transfer, policy environment, industrial configuration, technological level, purchasing power, and medical insurance support as independent and mediating variables. Reliability testing used Cronbach' s α coefficient >0.8 as the standard, and validity testing used KMO value >0.8 and Bartlett' s sphericity test significance level <0.05 as standards. System application performance was calculated using equal weighting of indicators; performance >5 indicated high perceived system performance. $P<0.05$ was considered statistically significant.

3. Results

3.1 Sample Characteristics Among the 429 valid samples, 61 (14.2%) were male and 368 (85.5%) were female. Age distribution was highest in the 21-30 years group (40.3%). Educational background was concentrated in junior college (51.0%) and bachelor' s degree (46.6%). Work experience was most commonly 1-5 years (29.4%). Detailed demographic characteristics are presented in Table 1 .

3.2 Performance Evaluation System The AI-empowered primary health service performance evaluation index system designed in this study included two dimensions (internal optimization performance and social adaptation performance), four domains (medical quality, operational efficiency, sustainable development, and satisfaction), and 17 specific indicators (Table 2). Empirical measurement yielded a Cronbach' s α coefficient of 0.987 for the performance evaluation index system, indicating high reliability. The KMO test value was 0.967 (>0.9 and close to 1), and Bartlett' s sphericity test significance level was 0<0.05, indicating good theoretical indicator validity and suitability for factor analysis. Using principal component analysis to extract two fixed factors and varimax rotation, the cumulative explained variance of the two factors was 86.229%. All indicator factor loadings were >0.5, and except for indicators 4 and 5, all other indicators aligned with the original conceptualization. Indicators 4, 5, 8, and 11 showed cross-loadings; however, since these indicators measured important content without alternative items measuring the same content, they were retained.

To further ensure the appropriateness of the performance system structure, confirmatory factor analysis was conducted. Initial results showed that all measurement indicators' standardized loading coefficients were >0.8 and <0.95, and reliability coefficients were >0.7 and <0.9, meeting standard requirements, though model fit parameters had not yet reached reasonable standards. After modification based on AMOS modification indices, the chi-square to degrees of freedom ratio was 2.482 (<3), Goodness of Fit Index (GFI) was 0.961 (>0.9), Adjusted Goodness of Fit Index (AGFI) was 0.924 (>0.9), and Root Mean Square Error of Approximation (RMSEA) was 0.059 (<0.08), reaching ideal status. The composite reliability (CR) of the two performance system factors was 0.973 and 0.968 (both >0.7), and the average variance extracted (AVE) was 0.879 and 0.793 (both >0.5), meeting standard requirements and indicating acceptable reliability and convergent validity for both factors.

3.3 System Application Performance Analysis The surveyed group' s perceived performance of the AI-assisted diagnostic system after deployment at the grassroots level (hereinafter "system application") ranged from 5.00 to 5.34 across indicators, with small differences between means and relatively small standard deviations, indicating overall high performance evaluation. Across the two dimensions, the system' s social adaptation performance was higher than its internal optimization performance. Applications not only produced direct performance outcomes such as improved medical quality and operational efficiency but also generated more prominent enhancements in social adaptation performance, including sustainable development and satisfaction. The indicator "increased direct revenue of medical institutions" showed the lowest performance (5.00$±$1.76), suggesting that, considering short-term economic benefits and without inclusion in medical insurance fund payments, some concerns remain regarding the procurement of medical AI equipment (Table 3).

3.4 Demographic Differences in Performance Comparisons of internal optimization performance, social adaptation performance, and total performance across different genders and educational levels showed no statistically significant differences (P>0.05). However, comparisons across different age groups and work experience durations revealed statistically significant differences in all performance dimensions (P<0.05) (Table 4).

3.5 Influencing Factors Design and Analysis Guided by Greenwood and Hinings' Organizational Change Dynamics Model, this study identified six factors influencing AI empowerment of primary health services: three situational triggers (technology transfer, industrial support, policy environment) and three enabling factors (technological level, purchasing power, medical insurance support) (Table 5). Performance influencing factor analysis showed all indicators scored >5 (on a 7-point scale), indicating that all stakeholders involved in the application project considered these factors to significantly impact system application performance.

3.6 Structural Equation Model Analysis Based on the theoretical foundations of organizational change dynamics, situational triggers, enabling factors, and their mechanisms, and considering the specific context of AI-empowered primary health services, a structural model of variable relationships was constructed (Figure 1 [Figure 1: see original paper]). Results showed that both situational triggers and enabling factors affected overall performance, with situational triggers primarily influencing social adaptation performance and enabling factors influencing both internal and external performance. Situational triggers also affected performance by empowering enabling factors.

Structural equation model path testing using AMOS software, with grassroots ultrasound AI-assisted diagnostic system application performance as the dependent variable and technology transfer, policy environment, industrial configuration, technological level, purchasing power, and medical insurance support as independent and mediating variables, yielded initial model fit results below ideal values. After modification based on software-generated modification indices, the corrected model achieved a chi-square to degrees of freedom ratio of 2.947 (<3), GFI=0.929 (>0.9), AGFI=0.879 (<0.9), RMSEA=0.067 (<0.08), TLI=0.974 (>0.9), and CFI=0.983 (>0.9). Except for AGFI, all important fit indices reached ideal values, indicating satisfactory model fit.

Path analysis results showed that except for three paths ("technology transfer → technological level," "technology transfer → purchasing power," and "industrial support → social adaptation performance"), all other paths demonstrated positive effects on system application performance ($P<0.05$) (Table 6). Overall, the effects and pathways of situational triggers and enabling factors on performance were validated. Specifically, three key optimization paths for enhancing AI-empowered primary health service performance were identified: (1) "policy environment/industrial support → technological level → social adaptation performance/internal optimization performance,"(2) "policy environment/industrial support → purchasing power → social adaptation performance," and (3) "policy environment/technology transfer → medical insurance support → social adaptation performance/internal optimization performance."

---

4. Discussion

The deployment of ultrasound AI-assisted diagnostic systems at the grassroots level in Puyang City, Henan Province, represents a public health service innovation project closely integrated with cutting-edge technology. Faced with current shortages in total primary health resources and imbalanced allocation of high-quality health resources, deploying ultrasound AI-assisted diagnostic systems at the grassroots level is of great significance for enhancing the capacity of primary health institutions to provide quality services, promoting hierarchical diagnosis and treatment, enabling examination result mutual recognition, and reducing government medical insurance expenditures. This initiative provides excellent global experience in "AI technology empowering primary health services" and serves as a practical exemplar for building a "new era rural barefoot doctor" model. Based on empirical analysis of the influence mechanism of AI empowerment on primary health service performance in Puyang City, three key recommendations are proposed.

4.1 Public Sector Should Fully Understand the Dual Value of Medical AI Deployment Regardless of which situational trigger is considered, AI empowerment of primary health services effectively enhances both social adaptation performance and internal optimization performance through the mediation of enabling factors such as technological level, purchasing power, and medical insurance support. Policy environment and technology transfer as situational triggers directly contribute to social adaptation performance improvement. Therefore, despite some health institutions' concerns about short-term returns from procuring medical AI equipment, AI empowerment of primary health services generates positive externalities, with the public value created by system applications being even more pronounced than the direct operational value created for primary health institutions.

4.2 Medical AI Industrial Support Should Be Highlighted and Valued
Research results indicate that optimizing industrial support is a crucial lever for enhancing the technological competitiveness of medical AI products and strengthening primary health institutions' willingness and capacity to purchase. The importance of technology transfer cannot be overlooked.

4.2.1 Actively Develop the Medical AI Industry: First, medical AI products such as assisted diagnostic systems should be included in rural revitalization and health poverty alleviation projects and promoted to national and global markets. Second, standardization of medical AI industries and products should be emphasized to form replicable and scalable advanced experiences. Third, industry-academia-research collaboration projects should be promoted through policy guidance and financial support to facilitate deep cooperation among medical institutions, universities, research institutes, and AI enterprises, accelerating the clinical application and transformation of medical AI achievements.

4.2.2 Establish Specialized Research Funds: Research funds should be established with different amounts and cycles of support plans set according to different R&D stages (basic theoretical research, technology application development, product clinical validation, etc.) to precisely support innovation exploration at each stage. R&D innovation platforms should be built by investing in specialized medical AI research centers, laboratories, and industrial parks to provide advanced hardware facilities, massive medical data resources, and convenient technical exchange and cooperation spaces for research teams. Talent cultivation and recruitment should be strengthened by adding medical AI-related majors and courses in universities and vocational colleges, establishing specialized scholarships to encourage students to engage in learning and research in this field, and supporting universities and enterprises to jointly cultivate targeted talents. Highly attractive talent introduction policies should be formulated, including generous compensation packages, research start-up funds, and housing security, to recruit top AI scientists, medical experts, and interdisciplinary talents globally.

4.3 Policy Environment Is the Critical Starting Point for Enhancing AI-Empowered Primary Health Service Performance The policy environment is an unavoidable key starting point for enhancing AI-empowered primary health service performance. Only with policy support can AI system technological level, primary health institutions' purchasing power, and medical insurance support be more effectively improved. Therefore, strengthened macro health policy support should be advanced within the framework of deepening medical reform.

4.3.1 Government Should Serve as a "Guide": Financial security and institutional supply should be further strengthened to fulfill government responsibilities in organizing medical services and increase investment in intelligent infrastructure for primary health institutions. The successful experience of Puyang City in deploying AI-assisted diagnostic systems should be referenced by establishing special working groups, clarifying work priorities and task divisions, creating work assignment tracking systems, and implementing safeguard measures to promote rapid and widespread application of AI-assisted diagnostic systems and accelerate the promotion and application of high-tech AI products in primary health institutions, enabling scientific and technological achievements to benefit the people more quickly, better, and in greater numbers.

4.3.2 Establish Financial Subsidy Mechanisms Adapted to Local Economic Levels: To enhance primary institutions' capacity to introduce and operate AI systems and improve their purchasing willingness, specialized financial subsidy funds should be established for primary health institutions purchasing medical AI equipment and software to reduce procurement costs and enhance their ability to introduce advanced technologies, particularly in areas with scarce medical resources. First, a medical service-oriented charging mechanism should be constructed to timely include clinically effective and professionally recognized new technologies and projects in the medical insurance payment and pricing system. Second, salary structures should be optimized by implementing the "two allowances" policy to mobilize the enthusiasm of primary medical staff in participating in intelligent transformation. Finally, integrated health system construction should be promoted by strengthening coordination between primary institutions and public health, wellness, and other resources to build a "health-centered" service system that promotes deep integration and collaborative application of AI systems across disease prevention, diagnosis, and rehabilitation.

4.3.3 Strengthen Medical Insurance Support: Although AI-assisted diagnostic systems have been applied in primary health institutions in Puyang City, they have not yet been included in medical insurance fund payment scope nor have medical service fee standards been established. Appropriate AI-assisted diagnostic medical service fee standards should be formulated and included in medical insurance fund payment scope, as the increased medical insurance expenditure would be far lower than the "waste" of medical insurance funds caused by duplicate examinations, with estimated cost reductions of 85.7%-92.9%. Taking thyroid ultrasound AI as an example, five provinces nationwide (Hebei, Shandong, Shanxi, Jiangsu, and Guizhou) have already included it in provincial medical service pricing projects. Accelerating the inclusion of AI-related diagnostic services as medical insurance fund payment items is recommended.

In summary, the sustainable development of AI-empowered primary health services depends not only on the advancement of technology itself but also on coordinated support from multiple policy areas, including finance, medical insurance, personnel, and service systems, to truly achieve the medical reform goals of "improving efficiency, reducing costs, and increasing equity." Due to the rarity of "large-scale multi-center" pilot cases, data scarcity, and low availability, this study primarily used subjective perception data supplemented by objective data to analyze the influence mechanism of AI empowerment on primary health service performance. Future research can further introduce indicators such as usage frequency and depth to achieve higher precision and more dimensional validation of AI-empowered primary health service performance as medical AI equipment is deployed more extensively and intensively across more domains.

Author Contributions

KONG Zihe: Conceptualized the research, designed the study, proposed research questions, collected and analyzed data, drafted and revised the manuscript. BIAN Qingyang: Collected data, performed statistical analysis, drafted and revised the manuscript. KONG Dexing and KONG Jiangming: Proposed research ideas, designed the study, supervised implementation, and revised the manuscript.

Conflict of Interest Statement

The authors declare no conflict of interest.

KONG Zihe https://orcid.org/0009-0003-9736-1725
KONG Jiangming https://orcid.org/0009-0004-5470-1440

References

[1] Health News. China demonstrates global leadership in digital health [N/OL]. (2025-05-21) [2025-05-31]. https://mp.weixin.qq.com/s/8PL8tNuQNBYOJRAORGkBdA.

[2] XI Jinping. Xi Jinping: The Governance of China (Volume II) [M]. Beijing: Foreign Languages Press, 2015.

[3] YOU Xilu, DU Shilin. Research on the current status of service capacity in primary health institutions [J]. Medicine and Society, 2018, 31(10): 22-24. DOI: 10.13723/j.yxysh.2018.10.007.

[4] LI Xiaoli, ZHANG Bo, WANG Kang, et al. Development and application of artificial intelligence [J]. Journal of Beijing University of Technology, 2020, 46(6): 583-590.

[5] YUAN Bo, DAI Hua, WU Jia, et al. Application of artificial intelligence in general practice [J]. Chinese Journal of General Practice, 2021, 19(9): 1433-1436, 1572. DOI: 10.16766/j.cnki.issn.1674-4152.002079.

[6] REN Fuji. Can artificial intelligence gallop across the vast fields of education and health? [J]. CAAI Transactions on Intelligent Systems, 2020, 15(2): 405-408.

[7] ZHAO Jiaying, GAO Peng, ZHU Yongjun, et al. AI application will improve the effectiveness of primary health services in China [J]. Chinese General Practice, 2017, 20(34): 3893-3900.

[8] WALLIS C. How artificial intelligence will change medicine [J]. Nature, 2019, 576(7787): S48. DOI: 10.1038/d41586-019-03641-x.

[9] SONG Xuanke, ZHANG Wenqiang, ZHANG Dan, et al. Application and effectiveness of scenario simulation teaching in standardized thoracic surgery residency training [J]. Henan Journal of Surgery, 2020, 26(5): 177-178. DOI: 10.16193/j.cnki.hnwk.2020.05.081.

[10] MINTZ Y, BRODIE R. Introduction to artificial intelligence in medicine [J]. Minimally Invasive Therapy & Allied Technologies, 2019, 28(2): 73-81. DOI: 10.1080/13645706.2019.1575882.

[11] HU Zhibo. Current status and prospects of artificial intelligence application in medicine [J]. Electronic Components and Information Technology, 2020, 4(12): 61-62. DOI: 10.19772/j.cnki.2096-4455.2020.12.030.

[12] TANG S L, MENG Q Y, CHEN L, et al. Tackling the challenges to health equity in China [J]. Lancet, 2008, 372(9648): 1493-1501. DOI: 10.1016/S0140-6736(08)61364-1.

[13] XU Guoping, WANG Jiaji. Primary Health Care should be correctly understood and fully implemented in China' s new medical reform [J]. Chinese General Practice, 2018, 18(32): 3893-3900.

[14] ZHOU Lingli, WANG Heping, XIE Long, et al. Current status and equity analysis of general practitioner resource allocation in China [J]. Chinese General Practice, 2017, 20(19): 2311-2315.

[15] YU Xiaosong. Development and prospects of general practice in China since the founding of the People' s Republic of China [J]. Chinese Journal of General Practice, 2019, 17(11): 1797-1799. DOI: 10.16766/j.cnki.issn.1674-4152.001058.

[16] CAMPBELL J P, MCCLOY R A, OPPLERS H, et al. A theory of performance [A]//SCHMITT M J, BORMAN W C. Personnel selection in organizations. San Francisco: Jossey-Bass, 1992.

[17] YUCHTMAN E, SEASHORE S E. A system resource approach to organizational effectiveness [J]. American Sociological Review, 1967, 32(6): 891. DOI: 10.2307/2092843.

[18] FAN Bonai, JIN Jie. Influence mechanism of public service supply on public service perceived performance: mediating role of government image and moderating effect of public participation [J]. Management World, 2016, 32(10): 50-61, 187-188. DOI: 10.19744/j.cnki.11-1235/f.2016.10.004.

[19] ZHANG Diandian, ZHANG Hongfeng, FAN Bonai. Performance of local government function transformation: concept definition, dimension design, and empirical evaluation [J]. Chinese Public Administration, 2018(5): 33-39.

[20] BORMAN W C, MOTOWIDLO S J. Expanding the criterion domain to include elements of contextual performance [A]//SCHMITT M J, BORMAN

W C. Personnel selection in organizations. San Francisco: Jossey-Bass, 1993: 71-98.

[21] GREENWOOD R, HININGS C R. Understanding radical organizational change: bringing together the old and the new institutionalism [J]. Academy of Management Review, 1996, 21(4): 1022. DOI: 10.2307/259163.

[22] KONG Zihe, KONG Dexing. What kind of artificial intelligence is needed at the grassroots level [N]. Health News, 2025-06-09(05).

(Received: June 2, 2025; Revised: September 30, 2025)
(This article was edited by KANG Yanhui)

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