

## A Survey of Current Perceptions of the General Practice Profession Among Graduates of Non-Order-Directed Standardized Residency Training (Post-print)

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### Abstract

**Background** The long-term and stable development of the general practitioner workforce is crucial for implementing the family doctor contract service policy, continuously promoting the construction of a tiered diagnosis and treatment system, and achieving the national “Healthy China” strategic goal. Whether general practitioners continue to engage in general practice mainly depends on their confidence in the general practitioner career. Exploring the career perception of general practice among graduated standardized residency training trainees in general practice can provide references for improving future training content and formulating relevant policies, but current research on this topic is limited.

**Objective** To investigate the career perception of general practice among graduated non-targeted general practice residency training trainees, thereby providing references for better retaining general practice talents.

**Methods** In August 2021, a stratified random cluster sampling method was used to select non-targeted general practice residency training trainees who enrolled between 2014 and 2017 and graduated from 10 general practice residency training bases in Henan Province for a questionnaire survey. The questionnaire was designed by the research team. The main content involved in this study included: basic information of trainees, residency training status, current employment status, and career perception of general practice. The questionnaire was distributed through Wenjuanxing and self-administered by trainees.

**Results** A total of 326 questionnaires were distributed, and 271 valid questionnaires were collected (83.1%). Seventy-seven cases (28.4%) were engaged in general practice after graduation. The scores of trainees engaged in general

practice-related work on the academic status of general practice and social status of general practitioners were higher than those of trainees not engaged in general practice-related work ( $P < 0.05$ ). Among trainees engaged in general practice-related work after graduation, 80.6% (62/77) were willing to take general practitioner as a lifelong career, which was significantly higher than that of trainees not engaged in general practice-related work ( $P < 0.05$ ). There were statistically significant differences in the scores on the academic status of general practice among trainees of different ages and only-child status ( $P < 0.05$ ). There were statistically significant differences in the scores on the social status of general practitioners among trainees whose mothers had different education levels ( $P < 0.05$ ). There were statistically significant differences in the scores on career prospects of general practitioners among trainees of different ages ( $P < 0.05$ ). There were statistically significant differences in the willingness scores to take general practitioner as a lifelong career among trainees of different ages, education levels, marital status, mothers' occupations, and current workplaces ( $P < 0.05$ ). Trainees considered the top three factors limiting the development of general practice to be: imperfect supporting policies (150 cases, 55.4%), low salary and benefits (146 cases, 53.9%), and backward primary medical equipment (137 cases, 50.6%). There was no statistically significant difference in the selection rates of various limiting factors between trainees engaged and not engaged in general practice-related work after graduation ( $P > 0.05$ ). Trainees considered the top three advantages of primary medical and health institutions to be: better health guidance for residents (213 cases, 78.6%); optimizing allocation of medical resources, relieving pressure on large hospitals, and avoiding resource waste (165 cases, 60.9%); and effectively solving residents' problems of "difficulty and high cost in accessing medical care" (162 cases, 59.8%). There was no statistically significant difference in the selection rates of various advantages of primary medical and health institutions between trainees engaged and not engaged in general practice-related work after graduation ( $P > 0.05$ ). The top three disadvantages of primary medical and health institutions considered by 271 trainees were: low salary and benefits (212 cases, 78.2%), backward hardware equipment (181 cases, 66.8%), and imperfect social security mechanism (111 cases, 41.0%). There were statistically significant differences in the selection rates of "imperfect social security mechanism" and "underdeveloped remote rural areas, raising concerns about children's future education" among the disadvantages of primary medical and health institutions between trainees engaged and not engaged in general practice-related work after graduation ( $P < 0.05$ ); there were no statistically significant differences in the selection rates of other options ( $P > 0.05$ ).

**Conclusion** Age, education level, marital status, mother's education level and occupation, only-child status, and current workplace are factors influencing the career perception of general practice among non-targeted general practice residency training trainees. Supporting policies and salary system are the main factors affecting the development of general practice and primary medical and health institutions. Primary-level hardware equipment and children's education

security for general practitioners also need attention.

## Full Text

### Perceptions Toward General Practice Career among Non-targeted Admission General Medical Graduates Completing the Standardized General Residency Training Program

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## Abstract

**Background:** The long-term and stable development of the general practitioner workforce is crucial to implementing policies related to contracted family doctor services, continuously promoting the construction of a hierarchical diagnosis and treatment system, and realizing national strategic goals for achieving “big health.” Whether general practitioners continue working in general practice depends primarily on their confidence in the profession. Exploring the perceptions toward general practice as a career among general medical graduates completing the standardized general residency training program (SGRTP) can provide a reference for improving training content and formulating relevant policies, yet few such studies exist.

**Objective:** To investigate the career perceptions toward general practice among non-targeted admission general medical graduates who have completed the SGRTP, thereby offering insights into how to better retain general practice talent.

**Methods:** In August 2021, stratified cluster random sampling was used to select non-targeted admission general medical graduates who had been admitted to 10 standardized general residency training bases in Henan Province between 2014 and 2017 and had completed the SGRTP by the survey date. Participants completed a self-administered questionnaire through the online platform “Wenjuanxing” (<http://www.wjx.cn>). The questionnaire, developed by our research team, covered: (1) basic participant information, (2) SGRTP training status,

(3) current employment situation, and (4) perceptions toward a general practice career.

**Results:** A total of 326 questionnaires were distributed, with 271 valid responses returned (83.1% response rate). Of these, 77 participants (28.4%) were working in general practice after completing their training. Compared with those not working in general practice, these participants rated the disciplinary status of general medicine and the social status of general practitioners significantly higher ( $P < 0.05$ ). Moreover, 80.6% (62/77) of those working in general practice expressed willingness to make it their lifelong career, a proportion significantly higher than among those not working in general practice ( $P < 0.05$ ). Ratings of general medicine's disciplinary status differed significantly by age and whether the participant was an only child ( $P < 0.05$ ). Ratings of general practitioners' social status differed significantly by maternal education level ( $P < 0.05$ ). Ratings of general practitioners' career prospects differed significantly by age ( $P < 0.05$ ). Willingness to pursue general practice as a lifelong career differed significantly by age, education level, marital status, maternal occupation, and current workplace ( $P < 0.05$ ).

The top three factors limiting general medicine development were: inadequate supporting policies (150 cases, 55.4%), low salary (146 cases, 53.9%), and poor equipment in primary care (137 cases, 50.6%). No significant differences were found between the two groups in their selection of these limiting factors ( $P > 0.05$ ). The top three advantages of primary care institutions were: better health guidance for residents (213 cases, 78.6%), optimal allocation of medical resources to relieve pressure on major hospitals and avoid waste (165 cases, 60.9%), and effectively solving the problem of "difficult and expensive access to healthcare" (162 cases, 59.8%). No significant differences were found between the two groups in their selection of these advantages ( $P > 0.05$ ).

The top three disadvantages of primary care institutions were: low salary (212 cases, 78.2%), poor hardware and equipment (181 cases, 66.8%), and inadequate social security mechanisms (111 cases, 41.0%). Significant differences between the two groups were found in their selection of "inadequate social security mechanisms" and "concerns about children's education in remote rural areas" ( $P < 0.05$ ), but not for other disadvantages ( $P > 0.05$ ).

**Conclusion:** Age, education level, marital status, maternal education level and occupation, only-child status, and current workplace are factors influencing career perceptions toward general practice among non-targeted admission SGRTP graduates. Supporting policies and salary systems are the main factors affecting the development of general medicine and primary care institutions, while hardware equipment and education security for general practitioners' children also require attention.

**Keywords:** General practice; Standardized residency training program; Professional cognition; Education, medical; Health workforce

## Introduction

Developing general practice and training general practitioners are key elements for establishing a sound hierarchical diagnosis and treatment system and maintaining and promoting public health [1]. However, China's general practitioner workforce currently faces problems including low education levels, aging personnel, serious brain drain, service quality needing improvement, and low public trust [1]. The State Council's "Guiding Opinions on Establishing a General Practitioner System" (Guofa [2011] No. 23) clearly states that the "5+3" training model can cultivate homogeneous, high-quality general practitioners. The General Office of the State Council's "Opinions on Reforming and Improving the Training and Incentive Mechanisms for General Practitioners" (Guobanfa [2018] No. 3) further clarified preferential policies for general practitioners at the institutional level to attract outstanding medical talent. However, the proportion of trained general practitioners who actually register and work in general practice is not high. By 2019, Henan Province had trained over 50,000 general practitioners, but only about 10,000 had registered, with even fewer actually practicing [2]. Studies show that only about 30% of general practice residents trained through the "5+3" model choose to continue in general practice, with high turnover rates afterward, possibly related to negative perceptions of general medicine [2-4].

Professional cognition refers to understanding one's career personality, preferences, and employment information [5]. Previous research on professional cognition has mainly focused on medical students or current general practice residents [5-10], but these groups have not yet entered the workforce, and their perceptions may be biased or unstable. Therefore, investigating career perceptions among graduates who have completed training and are working provides more practical and valuable insights. This study aims to survey non-targeted admission general practice residents who have completed training in Henan Province, analyzing their perceptions of general medicine, general practitioners, the general practice career, and primary care institutions, to provide references for policy formulation and increase the likelihood of retaining trained residents at the primary care level as "gatekeepers" of residents' health.

## 1. Methods

**1.1 Study Participants** In August 2021, stratified random sampling was used to select 10 standardized general residency training bases in Henan Province. Cluster sampling was then used to include all non-targeted admission general practice residents admitted between 2014 and 2017 who had completed their training. The specific sampling method is described in our previous report [2]. This study was approved by the Ethics Committee of Henan Provincial People's Hospital.

**1.2 Research Methods** The questionnaire was created, distributed, and collected through "Wenjuanxing" (<http://www.wjx.cn>). Developed by our research

team based on literature review and expert consultation, the questionnaire covered five main areas: (1) basic participant information (gender, age, birthplace, marital status, education level, parental education and occupation, only-child status); (2) SGRTP training status (student source type, cohort year, base location, type of primary practice base); (3) current employment situation (workplace, location, average monthly income); (4) perceptions of general medicine's disciplinary status, general practitioners' social status, and career prospects, as well as willingness to pursue general practice as a lifelong career (all measured on a 5-point Likert scale from "very unimportant/very bad/very unwilling" to "very important/very good/very willing"); and (5) factors limiting general medicine development and advantages/disadvantages of primary care institutions (multiple-choice questions with maximum of 3 options per respondent). A total of 326 questionnaires were distributed, with 271 valid responses returned (83.1% valid response rate).

**1.3 Statistical Analysis** Data were processed and analyzed using SPSS 22.0 software. Categorical data were expressed as percentages and compared using chi-square tests. Normally distributed continuous data were expressed as ( $\bar{x}\pm s$ ), while non-normally distributed data were expressed as median (interquartile range) [M(QR)] and compared using Wilcoxon rank-sum tests. Statistical significance was set at  $P<0.05$ .

## 2. Results

**2.1 Participants' Basic Information, Training Status, and Current Employment** Among the 271 participants, 104 (38.4%) were male and 167 (61.6%) were female, with an average age of ( $31.1\pm 2.7$ ) years. Most were from rural areas (222 cases, 81.9%), married (157 cases, 57.9%), and had education levels of associate-to-bachelor degree (109 cases, 40.2%) or full-time bachelor's degree (138 cases, 50.9%). Student source types were employer-sponsored (67 cases, 24.7%) and self-funded (204 cases, 75.3%). Distribution by cohort year was: 2014 (37 cases, 13.7%), 2015 (61 cases, 22.5%), 2016 (43 cases, 15.9%), and 2017 (130 cases, 48.0%). Current workplaces were community health service centers/township health centers (50 cases, 18.5%) and county-level or above medical institutions (188 cases, 69.4%). After completing training, 77 participants (28.4%) were working in general practice, while 194 (71.6%) were not.

Significant differences were found between those working and not working in general practice regarding age, marital status, education level, student source type, base location, and current workplace ( $P<0.05$ ), but not for other characteristics.

## 2.2 Career Perceptions and Willingness to Pursue General Practice as a Lifelong Career

**2.2.1 Perceptions of Disciplinary Status, Social Status, and Career Prospects** Among all 271 participants, median scores were: general medicine disciplinary status 5(1), general practitioners' social status 4(2), career prospects 4(2), and willingness to pursue general practice as a lifelong career 4(2). Those working in general practice rated disciplinary status and social status significantly higher than those not working in general practice ( $P < 0.05$ ), but no significant difference was found in career prospects ratings ( $P > 0.05$ ). Willingness to pursue general practice as a lifelong career also differed significantly between the two groups ( $P < 0.05$ ).

Subgroup analyses revealed: participants aged  $>31$  years rated disciplinary status higher than those  $\leq 31$  years; non-only-child participants rated disciplinary status higher than only-child participants; participants whose mothers had high school education or above rated social status higher than those whose mothers had less than high school education; participants aged  $>31$  years rated career prospects higher than those  $\leq 31$  years; and participants aged  $>31$  years, with associate-to-bachelor degrees, married status, mothers who were farmers, and working in community health service centers/township health centers showed higher willingness to pursue general practice as a lifelong career compared to their counterparts ( $P < 0.05$ ).

### 2.2.2 Perceptions of Factors Limiting General Medicine Development

The top factors limiting general medicine development were: inadequate supporting policies (150 cases, 55.4%), low salary (146 cases, 53.9%), poor equipment in primary care (137 cases, 50.6%), low social recognition (130 cases, 48.0%), unclear career development (78 cases, 28.8%), insufficient essential medicines (72 cases, 26.6%), and low health literacy among residents (56 cases, 20.7%). No significant differences were found between the two groups in their selection of these limiting factors ( $P > 0.05$ ).

### 2.2.3 Perceptions of Advantages and Disadvantages of Primary Care Institutions

The top advantages of primary care institutions were: better health guidance for residents (213 cases, 78.6%), optimal allocation of medical resources to relieve pressure on major hospitals and avoid waste (165 cases, 60.9%), and effectively solving the problem of "difficult and expensive access to healthcare" (162 cases, 59.8%). Other advantages included better implementation of disease prevention and family planning (91 cases, 33.6%), national policy support (59 cases, 21.8%), and more stable doctor-patient relationships (43 cases, 15.9%). No significant differences were found between the two groups in their selection of these advantages ( $P > 0.05$ ).

The top disadvantages were: low salary (212 cases, 78.2%), poor hardware and equipment (181 cases, 66.8%), inadequate social security mechanisms (111 cases, 41.0%), few learning opportunities and lack of guidance/training (104 cases, 38.4%), unpromising development prospects (84 cases, 31.0%), concerns about children's education in remote rural areas (51 cases, 18.8%), and being looked

down upon by classmates and relatives for working in township/community health institutions (17 cases, 6.3%). Significant differences between the two groups were found in selecting “inadequate social security mechanisms” and “concerns about children’s education in remote rural areas” ( $P < 0.05$ ), but not for other disadvantages ( $P > 0.05$ ).

### 3. Discussion

In 2010, China launched its general practitioner education system, transforming general medicine from a public health field into a clinical medicine specialty, providing a good opportunity for building a general practice education system [5]. Over the past decade, extensive general practice residency training has cultivated numerous general practitioners, yet fewer than half have registered and engaged in general practice after graduation, representing a prominent challenge [11]. Previous research on workforce stability has focused mainly on human resource planning, neglecting practitioners’ own preferences and behavioral responses, which constitute professional cognition [12]. Studies show that professional cognition guides future employment choices among college students and affects workforce stability and development [13]. Research on medical students’ perceptions of general medicine indicates that inadequate understanding leads to weak intention to practice [8-9,14]. Australian studies also show that only 24%-34% of medical students enter general practice after graduation [15]. Non-targeted admission general practice residents face no mandatory employment restrictions, making their post-graduation career directions highly volatile and fluid. Our previous study found that only 28.4% of non-targeted admission general practice residents work in general practice after completing training, with only 18.4% practicing in primary care institutions [2].

Graduates working in general practice rated general medicine’s disciplinary status and general practitioners’ social status significantly higher and showed greater willingness to make it a lifelong career (80.6% vs. 59.1%) than those not working in general practice. However, no difference was found in career prospects ratings. Career perception scores varied significantly by age, education level, marital status, maternal education and occupation, only-child status, and current workplace. Previous studies show that family factors influence medical students’ career perceptions [15]. In this study, marital status, only-child status, and maternal education and occupation were associated with perceptions of general medicine. Married participants and non-only-child participants were more likely to choose general practice, consistent with previous literature [2,16]. However, the influence of maternal occupation and education on career perceptions has been rarely reported, possibly related to Chinese cultural traditions and requiring further investigation. While some studies indicate gender and salary level correlate with career choice and perceptions [18-19], our study did not find such associations.

Research on career perceptions among graduated general practice residents is scarce. Liu’s survey of non-general practice undergraduates found that 94.3%

had limited understanding of general medicine, with only 43.0% willing to work in general practice, citing salary, promotion opportunities, and housing support as main factors [7]. Wang et al. found that while undergraduates recognized general practice's importance, only 3.76% would choose it, mainly due to career growth and salary structure concerns [20]. Ge et al. found that 61.7% of general practice majors believed career prospects were good, but only 23.5% would continue in general practice after graduation [5]. Our study's proportion of participants willing to make general practice a lifelong career is substantially higher than these medical student surveys, suggesting that training and work experience deepen understanding and foster greater commitment to general practice.

The short learning curve of general medicine compared to specialties may lead older physicians to prefer general practice [17]. Our study also found that participants aged >31 years and those with associate-to-bachelor degrees had more confidence in general practice and greater willingness to pursue it as a lifelong career. Additionally, those working in primary care institutions after graduation showed more confidence in general medicine's disciplinary status and general practitioners' social status and were more willing to commit to general practice as a lifelong career.

Regarding factors limiting general medicine development, both groups identified inadequate supporting policies, low salary, poor equipment, and low social recognition as primary concerns. Those working in general practice ranked inadequate policies as the top concern, while those not working in general practice ranked low salary and poor equipment equally as top concerns. Both groups agreed that primary care institutions' advantages lie in providing better health guidance, optimizing resource allocation, and solving access and affordability issues. Regarding disadvantages, those working in general practice identified low salary, poor equipment, and inadequate social security mechanisms as top concerns, while those not working in general practice identified low salary, poor equipment, and lack of learning opportunities. Significant differences were found in selecting "inadequate social security mechanisms" and "concerns about children's education," with those working in general practice more concerned about social security and those not working more concerned about children's education. These findings highlight salary, supporting policies, and security mechanisms as common and critical concerns for general practitioners. The recognition of poor equipment as a limiting factor suggests the need to accelerate hardware upgrades in primary care institutions and strengthen training time in primary practice bases to develop proper clinical thinking and reduce dependence on advanced equipment. Children's education concerns could also be addressed through preferential policies to attract more trained residents to general practice.

Based on our findings, improving career perceptions and willingness to pursue general practice as a lifelong career requires: (1) Continuously improving and implementing supporting policies to enhance professional confidence. Institutional guarantees should ensure quality and create a long-term training and development mechanism that matches personal competencies with job require-

ments, thereby increasing identification with and pride in the profession [20]. (2) Improving salary mechanisms to enhance professional loyalty. Research on medical professionals' loyalty shows that fair salary systems, particularly perceived salary equity, are more influential than absolute income levels [21]. (3) Expanding career development opportunities to stimulate intrinsic motivation. Full utilization of talents and reasonable career planning are “soft” factors that maintain professional loyalty. Compared with specialists, general practitioners face poorer working environments, especially in remote areas, with unclear career paths and limited opportunities [22]. Therefore, encouraging career planning, smoothing talent development channels, and providing comprehensive development opportunities—including clinical skills, humanistic qualities, and research capabilities—are essential for improving overall professional quality.

Our research team will continue to focus on salary system reform for general practitioners. Salary systems are sensitive but crucial for sustainable development. Reasonable salary systems should provide stability and security while remaining externally competitive to attract outstanding talent. Exploring value-based payment reforms (including capitation, performance-based payment, regional subsidies, and temporary allowances) and evaluating their feasibility and effectiveness in China could enhance the profession's attractiveness, implement family doctor contract services, and build a rational hierarchical diagnosis and treatment system.

**Author Contributions:** LI Bing conceived and designed the study, collected and organized data, and wrote the manuscript; YANG Shan and WANG Cong organized data and revised the manuscript; CHEN Jinjing revised the English version; XU Zhiwei and LIU Xiaoyu verified data; WANG Liuyi provided quality control.

**Conflict of Interest Statement:** The authors declare no conflict of interest.

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