Factors Influencing Retention Intention Among Primary Healthcare Workers in China: A Post-print Based on Urban-Rural Comparison

Authors: Chu Yijing, Yan Yuge, Gu Jie, Xi Biao, Zhu Shanzhu, Huang Jiaoling, Huang Jiaoling

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Abstract

Background: The global demand for healthcare professionals continues to grow; however, the turnover rate among medical staff is rising, making their retention intention a pressing public health concern.

Objective: To investigate the retention intention and its influencing factors among primary healthcare workers in urban and rural China.

Methods: This cross-sectional study conducted an online questionnaire survey from May 2022 to October 2022 in 44 community health service centers and 18 township health clinics selected from 27 provinces and 4 municipalities across China. The questionnaire covered general information, work-related factors, COVID-19 pandemic factors, psychological responses, and retention intention of medical staff. Data were collected and multiple linear regression analysis was employed to explore the influencing factors of retention intention among primary healthcare workers.

Results: A total of 3,769 questionnaires were collected. The survey revealed that Jiangxi Province had the lowest retention intention score $(19.82\$\pm3.7), while the Tibet Autonomous Region had the highest (23.89\pm\$3.8)$. Specifically, older age, female gender, married status, higher monthly income, less than 20 years of primary healthcare service, higher self-rated organizational support function, urban practice location, higher job satisfaction scores, and higher personal accomplishment scores were significant positive predictors of retention intention (all $P<0.001$). Conversely, being a manager, higher Patient Health Questionnaire scores, higher emotional exhaustion scores, and higher depersonalization scores were significant negative predictors of retention intention (all $P<0.001$). Urban-rural comparisons indicated that urban healthcare workers placed greater emphasis on career development pathways and job

benefits, whereas rural workers had more prominent needs for job security and establishment stability (all P<0.001).

Conclusion: The overall retention intention of urban and rural primary healthcare workers was at a moderate level. The factors influencing retention intention differed between urban and rural primary healthcare workers, suggesting that targeted measures could be implemented to improve retention intention based on these specific differences.

Full Text

Analysis of Factors Influencing the Retention Intention of Primary Healthcare Workers in China: A Comparison Based on Urban-Rural Differences

CHU Yijing[1], YAN Yuge[1], GU Jie[2,3], XI Biao[4], ZHU Shanzhu[2], HUANG Jiaoling[1]*

[1]School of Public Health, Shanghai Jiao Tong University School of Medicine, Shanghai 200025, China
[2]Department of General Practice, Zhongshan Hospital, Fudan University, Shanghai 200032, China
[3]International Medical Center, Zhongshan Hospital, Fudan University, Shanghai 200032, China
[4]School of Public Health, Hebei Medical University, Shijiazhuang 050017, China

Corresponding author: HUANG Jiaoling, Research associate; E-mail: jiaoling_{huang}@sina.com

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Abstract

Background: Globally, the demand for healthcare professionals continues to grow while attrition rates among medical personnel keep rising, making staff retention a pressing public health challenge. Primary healthcare constitutes the foundation of China' s public health system, yet substantial turnover—particularly of high-level medical staff—threatens both healthcare quality and human capital accumulation. Previous research indicates that rural doctors in China experience a 10.7% attrition rate, with 60.3% of current rural doctors expressing intention to leave their positions. Due to unique workplace conditions, primary healthcare workers face challenges in career advancement, training, and research, making them a high-risk group for occupational instability.

Objective: To investigate the retention intention of primary healthcare workers in urban and rural China and identify its influencing factors.

Methods: This cross-sectional study collected online questionnaire data from May to October 2022 across all provinces in mainland China (excluding Hong Kong, Macau, Taiwan, and South China Sea islands). The sampling strategy involved randomly selecting one community health center and its affiliated stations in each provincial capital city as urban samples, and one township hospital in a non-capital city as rural samples. For the four municipalities (Beijing, Shanghai, Tianjin, and Chongqing), both urban and rural community health centers were randomly selected. Due to urbanization, some township hospitals in non-capital cities had been converted to community health centers, which were included in the urban sample. Ultimately, 44 community health centers and 18 township hospitals from 27 provinces and 4 municipalities participated. All medical staff at these facilities were invited to participate. Inclusion criteria were: (1) currently employed medical personnel, and (2) voluntary informed consent. Exclusion criteria were: (1) probationary employees, (2) medical logistics staff, and (3) individuals with severe psychiatric conditions such as schizophrenia. The study was approved by the Ethics Committee of Zhongshan Hospital, Fudan University (Approval No. B2021-605).

The questionnaire was developed based on a review of domestic and international literature on healthcare worker retention and finalized after group discussion. It comprised three main sections: (1) Demographics including age, gender, marital status, education level, and monthly income; (2) Work-related factors, COVID-19 impacts, and psychological responses; and (3) Retention intention assessment. Work factors included occupational category, professional title, years of primary care service, self-rated institutional support, and job satisfaction (Minnesota Satisfaction Questionnaire-Short Form, MSQ-SF). COVID-19 related factors included direct participation in epidemic prevention, satisfaction with personal protective equipment (PPE) provided by the institution, and self-rated workload during the pandemic. Psychological measures included anxiety (Generalized Anxiety Disorder 7-item scale, GAD-7), depression (Patient Health Questionnaire 9-item scale, PHQ-9), and burnout (Maslach Burnout Inventory-Human Services Survey, MBI-HSS). The GAD-7 consists of 7 items assessing tension and worry over the past two weeks, scored 0-3 with total scores ranging 0-21 (Cronbach' s $\alpha = 0.898$, Kappa = 0.825). The PHQ-9 comprises 9 items evaluating depressive symptoms over the past two weeks, scored 0-3 with total scores ranging 0-27 (Cronbach' s $\alpha = 0.857$, Kappa = 0.884). The MBI-HSS contains 22 items across three dimensions: Personal Accomplishment (PA, 8 reverse-scored items), Emotional Exhaustion (EE, 9 forward-scored items), and Depersonalization (DP, 5 forward-scored items), using a 5-point Likert scale (Cronbach' s $\alpha = 0.881$, KMO = 0.937). The retention intention questionnaire included 6 items using a 5-point Likert scale (1-5 points), with items 2, 3, and 6 reverse-scored. Total scores represent the sum of all items, with higher scores indicating stronger retention intention. All six items showed moderate-to-strong correlation with the total score ($r > 0.50$, $P < 0.01$) and good internal consistency (Cronbach' s $\alpha = 0.766$).

Data collection employed an online survey platform with built-in logic validation.

Before implementation, participants received detailed online training about the study purpose, data confidentiality (anonymous coding), voluntary participation, and questionnaire instructions. Quality control specialists monitored completion progress in real-time, providing standardized responses to queries within 15 minutes via instant messaging. Upon submission, an automatic validation program checked for: (1) completeness of demographic variables, (2) extreme response patterns (e.g., selecting the same option for all items), (3) consistency of reverse-scored items, and (4) completion time (< 8 minutes flagged as suspicious). Questionnaires with $\geq 20\%$ missing key variables, patterned responses, or failure to correctly answer reverse-scored items were excluded. Ultimately, 5.2% of returned questionnaires were deemed invalid, with inter-rater reliability Kappa = 0.89.

Statistical analysis was performed using SPSS 22.0. Continuous variables with normal distribution were expressed as mean ± standard deviation ($\bar{x} \pm s$) and compared between groups using independent samples t-tests. Categorical variables were expressed as frequencies and percentages, with inter-group comparisons using ^{2} tests. Multiple linear regression analysis was used to explore factors influencing retention intention, with $P < 0.05$ considered statistically significant. Spatial distribution of retention intention scores across provinces was visualized using ArcMap 10.8 with graduated color mapping.

Results: A total of 3,769 valid questionnaires were collected (2,780 urban, 989 rural), representing a 93.7% response rate (3,769/4,021). The majority of respondents were female (78.8%, 2,971/3,769), with a mean age of 37.4 ± 9.2 years, and most were married (77.6%, 2,926/3,769). Monthly income distribution showed 43.0% (1,620/3,769) earned 3,000-5,000 CNY, 32.7% (1,233/3,769) earned > 5,000 CNY, and 24.3% (916/3,769) earned < 3,000 CNY. Significant urban-rural differences were found in occupational category, professional title, years of service, satisfaction with PPE, PHQ-9 scores, self-rated pandemic workload, and MBI-HSS EE and DP dimensions ($P < 0.05$). No significant differences were observed in age, marital status, self-rated institutional support, MSQ-SF scores, direct participation in epidemic prevention, GAD-7 scores, or PA dimension scores ($P > 0.05$). Overall retention intention score was 21.7 ± 4.1, with urban workers scoring 21.7 ± 4.1 and rural workers 21.8 ± 4.2 .

Provincial analysis revealed the lowest retention intention in Jiangxi (19.82 ± 3.7), Guangdong (20.15 ± 4.3), and Qinghai (20.19 ± 4.0), and the highest in Tibet (23.89 ± 3.8), Shandong (23.33 ± 4.3), and Beijing (23.10 ± 4.0) [Figure 1: see original paper]. Eastern and southwestern China showed higher retention intention, while northwestern regions showed the lowest.

Multiple linear regression analysis (with retention intention as the dependent variable) showed no multicollinearity (all VIF < 5). The model explained 41.7% of variance overall (adjusted $R^2 = 0.417$), 42.0% in urban areas, and 40.9% in rural areas. Durbin-Watson statistics (0.939, 0.918, and 1.012) indicated acceptable data independence, and F-tests confirmed model significance ($F = 100.800$, 78.515, and 27.343, all $P < 0.001$).

Significant positive predictors of retention intention included: older age (β = 0.072, P = 0.002), female gender (β = 0.044, P = 0.002), married status (β = 0.031, P = 0.023), higher monthly income (3,000-5,000 CNY: β = 0.067, P < 0.001; > 5,000 CNY: β = 0.141, P < 0.001), > 20 years of service (β = 0.053, P = 0.001), high self-rated institutional support (medium: β = 0.049, P < 0.001; high: β = 0.107, P < 0.001), urban practice location (β = 0.212, P < 0.001), high job satisfaction (β = 0.264, P < 0.001), and high personal accomplishment (β = 0.099, P < 0.001). Significant negative predictors included: managerial role (β = -0.038, P = 0.004), higher depression scores (β = -0.068, P = 0.006), emotional exhaustion (β = -0.176, P < 0.001), and depersonalization (β = -0.071, P < 0.001) .

Subgroup analysis revealed that female gender, income > 5,000 CNY, > 20 years of service, high institutional support, high job satisfaction, and high personal accomplishment positively predicted retention intention in both urban and rural settings. Managerial roles, emotional exhaustion, and depersonalization negatively predicted retention intention in both settings. However, age significantly predicted retention only among urban workers (β = 0.084, P = 0.001), while income of 3,000-5,000 CNY (β = 0.132, P < 0.001) and 11-20 years of service (β = 0.134, P < 0.001) significantly predicted retention only among rural workers. Higher depression scores significantly reduced retention intention among rural workers (β = -0.096, P = 0.040) .

Conclusions: The overall retention intention of primary healthcare workers in China is at a moderate level, with significant differences in influencing factors between urban and rural settings. Female workers, those with higher income, longer service duration, high institutional support, and high job satisfaction demonstrate stronger retention intention. Burnout emerges as a critical factor: while emotional exhaustion paradoxically increases retention intention, depersonalization and low personal accomplishment decrease it. Urban workers prioritize career development pathways and job benefits, whereas rural workers emphasize job security and employment stability. Targeted interventions are needed: urban areas should focus on competitive compensation, housing subsidies, professional development opportunities, and safety protections; rural areas should reduce workload intensity, implement value-based payment systems, strengthen establishment security, and establish comprehensive mental health support systems. These measures can reduce burnout, enhance job satisfaction, and ultimately improve retention and service quality in primary healthcare.

Keywords: Medical Staff, Hospital; Primary healthcare workers; Retention intention; Urban-rural differences; Influencing factors analysis; China

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