

A Human Resource Development Strategy for Primary Health Care: an Exploratory Study of Mixed Methods

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Research

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Abstract

Background: The serious shortage of primary health care (PHC) providers is a common issue in the health reforms worldwide, including in China. The government of China have proposed that encouraging and guiding qualified medical personnel to work in primary medical and health care institutions (PMHCIs) is an effective way to improve the overall quality and efficiency of PHC, but it has not produced good results. The problem of insufficient human resources of PHC has not been substantially ameliorated.

Methods: Based on implicit theory and lexical approach, pre-investigation was conducted to collect the items that influence the medical personnel to seek employment at PMHCIs from the perspective of guided objects. Through a three-phase investigation of 1,160 doctors in 29 public hospitals in 9 cities, the items were categorized, and a structural equation model was established and verified to explore the interrelationship of influencing factors.

Results: A total of 5 factors were rotated, including Sense of Gain (SG), Internal Organization Development (IOD), Remuneration and Development (RD), Condition of the City Where the PMHCI Is Located (CCPL), Job Responsibilities (JR) and Family Support (FS). The results of the model showed that IOD, RD, JR and FS had a significantly positive effect on the SG, whereas CCPL had no significant direct effect. In addition, the FS, RD and JR significantly mediated the relationship between the internal and external environment of the institution and the willing of medical personnel to seek employment at PMHCIs. The values of fit index indicated an acceptable-fitting model.

Conclusion: Family, remuneration, individual development, and job responsibility are closely related with the willingness of medical personnel to seek employment at PMHCIs, and the internal and external environment of PMHCIs is also an important factor. Based on this, targeted measures can be proposed to promote the development of PHC providers.

Background

Primary health care (PHC) plays a significant role in promoting regional health equality[1], improving national health, and avoiding excessive increases in national health investment[2]. At the same time, compared with healthcare systems with fewer primary care physicians, those based on a strong primary care workforce achieve better outcomes and quality at lower costs[3, 4]. Therefore, increased attention has been focused on PHC, and many countries have implemented a series of policies to promote access to PHC, such as the construction of Family Health Units in Portugal[5], the implementation of the Affordable Care Act in the U.S.[6], and the creation of Rural Health Centers in India[7]. In China, PHC is carried out by primary medical and health care institutions (PMHCIs)[8], consisting mainly of community health service centers and township hospitals that provide general clinical care and basic public health services to residents. Considering the increasing burden caused by an aging population[9], rapid urbanization[10], and behavioral changes[11], the Healthy China 2030 initiative regards the primary health system as the solution to the double burden of increases in expenditures[12] and non-communicable

diseases[13]. In addition, to reduce the difficulty and high cost of seeking medical services, the government has implemented a hierarchical diagnosis and treatment system, and PMHCIs are the gatekeepers of residents' health. Therefore, PMHCIs play an irreplaceable role in protecting the health of residents and reducing the burden of disease. However, several studies have revealed that PMHCIs are facing enormous challenges, such as low educational levels of PHC providers, an unbalanced geographical distribution of PHC providers[14], and losses among primary care physicians[15, 16]. Therefore, the serious shortage of PHC providers is an important challenge in Chinese health reform and a common issue in the reform of PHC around the world. It has been noted that a robust and well-distributed primary healthcare workforce is the key to the success of any health reform[17], so human resource development is an important aspect of the structural optimization of the primary health care system and the facilitation of PHC.

To promote the human resource development of PMHCIs, previous studies and the government have proposed a series of measures, such as training general practitioners[2, 18], balancing work pressure[19], improving financial remuneration, and providing more training and learning opportunities[20]. At the same time, encouraging and guiding qualified medical personnel to work in PMHCIs is also an effective way to improve the overall quality and efficiency of health care[21]. In China, the government has tried to guide medical personnel toward employment in PMHCIs, but this has not produced good results, and the problem of insufficient human resources in PMHCIs has not been substantially ameliorated. After analyzing the previous studies and government measures, three reasons have been summarized to explain the failure. First, medical personnel and primary health care providers are rarely involved in decision-making, which usually involves governments and PMHCIs, resulting in measures being developed only from the perspective of governments and institutions without considering the real needs of medical personnel. Second, although previous studies have explored the influence of financial and professional incentives[22], work environment, peer group, workplace, family, and partner[23] on physicians' career decisions in the primary health care field, few studies have comprehensively explored the influencing factors and the interrelationships of these factors from the perspective of medical personnel, which is important for the government and PMHCI's formulation of guiding measures. Third, county-level public hospitals, as the leading component of the three-level rural health service system[24], play a crucial role in ensuring the health of rural residents in China. However, previous studies did not distinguish between urban and county-level public hospitals, resulting in blurred selection boundaries of guided subjects. Therefore, on the premise of ensuring the efficient operation of the existing service system, the guided subjects were positioned as medical personnel in urban public hospitals, and the influencing factors of medical personnel seeking employment at PMHCIs were explored.

Implicit theory refers to people's views on the concept, structure, and development process of certain psychological features that develop during daily life and work, which exist in individual thoughts in a certain form and can accurately and comprehensively reflect people's psychological performance[25]. Implicit theories profoundly influence individual cognition, motivation, and behaviors[26, 27] and may predict how people react to particular stimulation or behavior training. It has been widely applied in emotional and mental health[28], leadership [29, 30], self-regulation[31], and wisdom[25, 32]. The lexical

approach is an important approach to implicit theory, which is based on the hypothesis that the most important individual differences in the daily transactions between people will eventually be encoded in people's language[33, 34]. The relevant lexicographical code reflects people's daily psychological thoughts, beliefs, values, and practices[35]. Therefore, the lexical approach can be used to collect the organization descriptors of a certain population on an organizational entity and then understand the group's perception towards activities related to that organizational entity. The argument here is that, in the context of China's healthcare reform, medical personnel are definitely exposed to information about PMHCIs in their life and work, which is then encoded in their minds and language and reflects their attitudes and views towards PMHCIs.

Therefore, based on implicit theory, the lexical approach was applied in this study to explore the factors that influence the willingness of urban public hospital medical personnel to seek employment at PMHCIs from the perspective of the guided objects.

Materials And Methods

Participants and Procedures

According to the paradigm of lexical studies[36, 37], our research was composed of pre-investigation and investigation stages. The purpose of pre-investigation was to collect, classify, code, and screen out the items that were of high concern to medical personnel seeking employment at PMHCIs, which were the basis for the investigative questionnaire. The subjects were medical personnel in two public hospitals, and a data collection service from China's leading online survey website was adopted to administer the pre-investigation.

The purpose of the investigation was to explore and verify the dimensions and relationships of the items. The subjects were medical personnel in urban public hospitals, and after discussion with health service and hospital management experts and the head of the health administration department, the medical personnel were obtained through stratified random sampling. All urban public hospitals in Jilin Province were stratified according to region, institution type, and level and randomly selected at a ratio of 1/4. A total of 29 urban public hospitals were selected from 9 cities, and a total of 40 medical personnel, including doctors, nurses, and medical technicians, were selected from each hospital at a ratio of 2:1:1 as the investigation's subjects. Finally, a total of 1160 medical personnel were involved in the investigation. The investigation consisted of three phases of on-site investigation using a paper questionnaire. The purpose of the first phase was to categorize the items collected in the pre-investigation and then perform theoretical analysis to obtain a hypothetical model of driving factors. The second phase aimed to analyze the reliability and validity of the driving factors and to establish a structural equation model. The third phase verified the stability of the structural equation model. It should be noted that the requirements for the monitored hospitals and the number of medical personnel for each phase were the same, whereas the personnel who were randomly selected might not be the same person.

Our study procedures were approved by the Medical Ethics Committee of the authors institute. Following ethical standards and practices, the participants received a full explanation of the research purpose, were told that the information collected would only be used for research purposes, and were made aware that they could withdraw from the study at any time. The investigation started in December 2018, and the three phases of the on-site investigation were completed in January 2021.

Measures

The pre-investigation questionnaire consisted of two parts. The first part included the sociodemographic characteristics of the medical personnel, such as gender, age, education level, profession, etc.; the second part was an open-ended question: "If a PMHCI was recruiting medical personnel, what factors would influence you to seek employment at a PMHCI? Please write down all these factors in simple words or phrases." Several measures were adopted in the questionnaire design and data cleaning to ensure data quality and reduce social desirability bias. For example, personnel characteristics were identified, including whether the respondents were regular personnel or professional clinical medical personnel. Other screening questions were set up to ensure that the answers came from eligible respondents. In addition, answer time, empty item review, and IP confirmation (i.e., the same computer restriction and geographic restriction were used to prevent one respondent from filling out the questionnaire multiple times or people from other regions filling out the questionnaire) were applied to ensure the quality of the data.

In the investigation, the questionnaire consisted of two parts: sociodemographic characteristics and an evaluation of the importance of factors affecting medical personnel seeking employment at PMHCIs. The factors were the items from the pre-investigation; a 5-point Likert scale was adopted to evaluate the importance of the factors, with anchors ranging from 1 (very unimportant) to 5 (very important). The question in the questionnaire was "If a PMHCI was recruiting medical personnel, please evaluate the importance of the following factors and their influence on your choice to seek employment at a PMHCI based on your actual situation". The investigation was carried out in three stages, and at each stage, the items that did not meet the requirements in the data analysis of the previous stage were deleted and adjusted.

Data Analysis

The lexical data collected by the pre-investigation were cleaned up and organized using the following principles without changing the meaning of the words: (1) removal of adjectives, adverbs, and other modifiers to extract key information; (2) combination of synonymous words, for example, "High wage level" and "Well-paid", were combined into "Wage"; (3) splitting of combined concepts, for example, "how about the working hours and workload", were divided into "Workload" and "Working hours", and "Whether my wife and parents agree" was divided into "Spouse" and "Parents"; (4) deletion of words that are clearly irrelevant to the research, such as the names of people, places, and institutions.

In the first phase of the investigation, exploratory factor analysis (EFA) was performed in SPSS software (version 23.0, IBM Corporation, Armonk, NY, USA) and was applied to analyze the data to obtain concise

and representative factors. Principal component analysis (PCA) was performed to extract the factors from the items, and varimax rotation (VR) was used to improve the interpretability of the solution. In addition, based on these factors, a hypothesized structural equation model (SEM) was proposed. Then, for the second phase, we performed SEM following the two-step approach recommended by Anderson and Gerbing[38]. First, confirmatory factor analysis (CFA) was carried out for each factor to test whether these factors had a significant factor loading index and to analyze the reliability and validity of the questionnaire. Second, based on the hypothesized path model, the parameters were estimated by the maximum likelihood method. The bootstrap method was used to test the potential mediator effects, and we calculated the total, direct, and indirect effects. AMOS software (Version 24.0, IBM Corporation, Armonk, NY, USA) was used for CFA and SEM. Finally, based on the constructed structural equation model, the results of the third phase were used to evaluate the stability of the model. The significance of the model was reflected by the chi-square value. However, because the chi-square value is sensitive to large sample sizes, it is necessary to check other goodness-of-fit indices[39, 40]. The following model fitting indices were tested to evaluate the model (the values in parentheses indicating the cutoffs for acceptable fit)[41, 42]: (1) the root mean square error of approximation ($RMSEA \leq 0.08$); (2) the comparative fit index ($CFI \geq 0.90$); (3) the Tucker–Lewis index ($TLI \geq 0.90$); and (4) the normed fit index ($NFI \geq 0.90$). and (5) the incremental fit index ($IFI \geq 0.90$). All statistical tests were two-sided with the level of significance set at 0.05. However, it should be noted that the fit indices introduced are not golden rules for assessment of the model fit but guidelines[43].

Results

The results of factors collection

A total of 546 personnel participated in the pre-investigation, among whom 22 people came from the preventive medicine, finance, and administrative management fields, so they were removed. Finally, 524 complete and valid responses were obtained, with an effective response rate of 95.97%. Among them, most of the medical personnel were women (74.81%), majored in clinical medicine (86.07%), and had a bachelor's degree (67.40%); the mean age was 26.41 (± 3.07).

After lexical cleaning and organization, all lexical data were recoded into 102 items. The results showed that 55 items had a frequency of less than 4; that is, fewer than 4 (1%) of the respondents mentioned these factors, so these items were deleted due to lack of representativeness. Finally, 47 items affecting medical personnel seeking employment at PMHCIs were obtained in the pre-investigation, and these items were adjusted and normalized to explore the dimensions and structure of the items in the investigation.

Exploratory Factor Analysis and Research Hypotheses

The EFA results of the first phase of the investigation showed that the Kaiser–Meyer–Olkin (KMO) value was 0.975, higher than 0.6, and the result of Bartlett's test was significant ($\chi^2 = 46123.739$, $p < 0.001$), both of which indicated a strong correlation among the items; the data were applicable for EFA[44, 45].

The first EFA result showed that a total of 6 factors with eigenvalues greater than 1 were rotated, and the cumulative contribution rate reached 69.540%. However, there were 9 items with factor loads less than 0.4 or more than 0.4 in two or more factors simultaneously, so they were gradually deleted. In the end, 5 factors were rotated from the remaining 38 items, and the cumulative contribution rate reached 69.073%. The analysis of the items contained in each factor is shown below, and the final EFA results are shown in Table 1.

Table 1
The results of the final EFA.

Factors	Items	Component				
		1	2	3	4	5
Sense of Gain	Fulfilling Personal Value	0.675				
	Professional Pride	0.642				
	Job-Related Well-being	0.594				
Internal Organization Development	Knowledge Level	0.744				
	Department Setting	0.727				
	Software and Hardware Facilities	0.726				
	Regulatory regime	0.710				
	Specialist Construction	0.703				
	Learning Atmosphere	0.690				
	Teaching and scientific research	0.683				
	Leading and Administrative Capacity	0.680				
	Personnel Quality	0.676				
	Services Scope	0.644				
	Learning Resources	0.577				
	Human resource allocation	0.570				
Remuneration and Development	Medical Insurance	0.795				
	Working Subsidy	0.789				
	Wage	0.782				
	Social Insurance and Housing Accumulation Fund	0.722				
	Working Bonus	0.721				
	Holidays Arrangements	0.705				
	Performance Assessment	0.674				
	Professional Title Promotion	0.534				

Condition of the City Where the PMHCI Is Located	Location	0.760
	Economics	0.725
	Development	0.715
	Culture and Customs	0.700
	Environment	0.699
	Transportation	0.688
	Local reputation of the PMHCI	0.626
Job Responsibilities	Workload	0.872
	Working Intensity	0.856
	Working Stress	0.851
	Working Hours	0.786
Family Support	Spouse	0.806
	Parents	0.783
	House	0.762
	Children	0.733

Sense of Gain and Internal Organization Development

The first factor contained 15 items, but these items reflected different connotations. Specifically, 12 items, such as the regulatory regime, software and hardware facilities, and scope of services, reflected the internal construction and development of a PMHCI, while the remaining three items, including fulfilling personal value, professional pride, and job-related well-being, reflected the working feelings of medical personnel. In addition, in the first EFA, the three items and basic livelihood security constituted the sixth factor, whereas basic livelihood security was deleted because of factor loads above 0.4 on the two factors, causing the remaining three factors to be rotated to the first factor. Based on the meaning of the items, we split the first factor into two factors.

For the three items, medical personnel have a sacred responsibility to safeguard the health of and provide rehabilitation, treatment, prevention, and health-care services to the residents, and the medical personnel need considerable knowledge, training, and practice, or to obtain professional titles, which requires a great deal of time and effort[46], to be competent, so most of them have a high sense of professional pride which is closely related to the work quality, job satisfaction, and intention to leave[47–49]; they hope to show their personal value in the work. In addition, job-related well-being is an important emotional reflection of employees at work. Positive emotions could help employees overcome difficulties and

thrive[50], while negative emotions can lead to stress, depression, and anxiety. Moreover, job-related well-being is a key factor in attracting and retaining employees[51] and plays a vital role in employment choices[52]; therefore, the three items were important indicators reflecting the possibility of medical personnel seeking employment at PMHCIs, and they were collectively referred to as 'Sense of Gain'. This study took the Sense of Gain as the dependent variable to explore the relationship between various factors and the employment intention of medical personnel. The remaining 13 factors were collectively referred to as 'Internal Organization Development'. It has conclusively been shown that the organization's internal development is critical to the turnover rate, happiness, job satisfaction, and burnout of medical personnel[53–55].

Based on the above arguments, the following hypothesis has been formulated:

Hypothesis 1

(H1). *Internal Organization Development* has a positive effect on *Sense of Gain*.

Remuneration and Development

This factor included 9 items, reflecting a focus on remuneration and individual development by seeking employment at PMHCIs. Remuneration and Development were undoubtedly affected by the internal organizational arrangements and systems of PMHCIs. In addition, previous studies[56–58] have pointed out that because of low remuneration and poor individual development prospects, community health workers have low job satisfaction and enthusiasm and intend to leave their posts. At the same time, according to the growth of medical personnel[46], long-term pre-training and time investment make them hopeful about receiving good economic returns and achieving individual development in their work. Therefore, we propose that appropriate remuneration and individual development are important drivers of medical personnel seeking employment at PMHCIs.

Based on the above arguments, the following hypothesis has been formulated:

Hypothesis 2

(H2). *Internal Organization Development* has a positive effect on *Remuneration and Development*.

Hypothesis 3

(H3). *Remuneration and Development* has a positive effect on *Sense of Gain*.

Condition of the City Where the PMHCI Is Located

There were 7 items in this factor, which reflected that medical personnel were concerned not only with internal organization development but also with the external environment of PMHCIs. Studies have pointed out that people tend to work in places with a high level of economic development, a good

environment, and convenient transportation[59, 60], because these areas have higher living and income standards and more opportunities for individual development, so this is one of the important reasons for people from remote areas to move to larger cities.

Based on the above arguments, the following hypothesis has been formulated:

Hypothesis 4

(H4). Condition of the City Where the PMHCI Is Located has a positive effect on Remuneration and Development.

Hypothesis 5

(H5). Condition of the City Where the PMHCI Is Located has a positive effect on Sense of Gain.

Job Responsibilities

This factor included five items, which reflected the concern of medical personnel about their specific work content and job responsibilities. Several studies[61, 62] have documented a strong correlation between job characteristics, such as job content, stress, and job-related happiness. At the same time, the workload and length of time depend on the internal management system of the organization. Therefore, we recommend that Internal Organizational Development influences Job Responsibility and that Job Responsibility influences Sense of Gain.

Based on the above arguments, the following hypotheses have been formulated:

Hypothesis 6

(H6). Internal Organization Development has a positive effect on Job Responsibilities.

Hypothesis 7

(H7). Job Responsibilities has a positive effect on Sense of Gain.

Family Support

This factor included 4 items, which represent the family factors considered when medical personnel seek employment at a PMHCI. Studies[63, 64] have pointed out that family support can relieve job stress and prevent negative job-related outcomes, such as job burnout. In addition, family members have also been shown to provide both instrumental and affective support and a positive impact on the working life of employees[65]. A meta-analysis[66] showed that the conflict between work and family has a strong impact on the high turnover rate of medical personnel and that reducing this conflict can improve their happiness. In addition, communication research[67] has shown that the family as a socialization agent conveys both extrinsic and intrinsic work values for developing a professional identity. Therefore, we

proposed that family support would have a positive impact on the professional identity and work enthusiasm of medical personnel and would inevitably be affected by the Condition of the City Where the PMHCI Is Located via the economy, culture, etc.

Based on the above arguments, the following hypotheses have been formulated:

Hypothesis 8

(H8). *Condition of the City Where the PMHCI Is Located* has a positive effect on *Family Support*.

Hypothesis 9

(H9). *Family Support* has a positive effect on *Sense of Gain*.

Based on the above hypothesis, we formulate our proposed relationships in a hypothesis structural model, which is shown in Fig. 1.

Confirmatory Factor Analysis

CFA is the measurement part of SEM, which reflects the relationship between potential variables and their indicators. The reliability analysis, internal consistency reliability, convergent validity, and discriminant validity were assessed in the measurement model, and the results of CFA are shown in Table 2. In the process, position development and learning resources were removed because the standardized factor loadings were lower than 0.7[68].

Table 2
Reliability and validity test

Factors	Items	Standardized factor loading	SMC	CR	AVE	Cronbach alpha
Condition of the City Where the PMHCI Is Located	Development	0.861	0.741	0.933	0.665	0.932
	economics	0.830	0.689			
	Environment	0.815	0.664			
	Transportation	0.815	0.664			
	Location	0.813	0.661			
	Culture and Customs	0.805	0.648			
	Local reputation of the PMHCI	0.767	0.588			
Remuneration and Development	Working Subsidy	0.899	0.808	0.942	0.699	0.941
	Medical Insurance	0.887	0.787			
	Working Bonus	0.861	0.741			
	Wage	0.856	0.733			
	Performance Assessment	0.824	0.679			
	Social Insurance and Housing Accumulation Fund	0.763	0.582			
	Holidays Arrangements	0.751	0.564			
Internal Organization Development	Specialist Construction	0.823	0.677	0.945	0.609	0.944
	Department Setting	0.817	0.668			
	regulatory regime	0.817	0.668			
	Human resource allocation	0.813	0.661			
	Knowledge Level	0.807	0.651			
	Software and Hardware Facilities	0.783	0.613			
	Personnel Quality	0.782	0.612			

Factors	Items	Standardized factor loading	SMC	CR	AVE	Cronbach alpha
	Learning Atmosphere	0.769	0.591			
	Teaching and scientific research	0.742	0.551			
	Services Scope	0.709	0.503			
	Leading and Administrative Capacity	0.709	0.503			
Job Responsibilities	Workload	0.920	0.846	0.910	0.717	0.907
	Working Intensity	0.887	0.787			
	Working Stress	0.830	0.689			
	Working Hours	0.740	0.548			
Family Support	House	0.813	0.661	0.865	0.615	0.864
	Parents	0.808	0.653			
	Spouse	0.787	0.619			
	Children	0.727	0.529			
Sense of Gain	Fulfilling Personal Value	0.865	0.748	0.855	0.664	0.851
	Job-Related Well-being	0.807	0.651			
	Professional Pride	0.769	0.591			

Cronbach's alpha values were calculated for each factor to perform reliability analysis, and all the values were greater than 0.8, indicating high reliability. In addition, the composite reliability (CR) reflects the internal consistency reliability of the measurement model. The results showed that the CR values ranged from 0.855 to 0.945, indicating a high internal consistency among the constructs. The average variance extracted (AVE) and standardized factor loading reflects the extent to which a measure correlates positively with alternative measures of the same construct, named convergent validity[69]. The results showed that the AVE values were above 0.5[70], and all the standardized factor loadings were greater than 0.7[42], indicating good convergent validity. Discriminant validity[71] means the extent to which a construct is distinct from other constructs by empirical standards, and the criterion was that the square roots of the AVEs of each construct should be higher than its correlation with any other construct. As shown in Table 3, the square roots of the AVEs of each construct were highest, indicating that all constructs had adequate discriminant validity[72].

Table 3
Discriminant validity of constructs

Factors	SG	FS	JR	IOD	RD	CCPL
SG	0.815					
FS	0.514	0.785				
JR	0.467	0.503	0.847			
IOD	0.745	0.470	0.431	0.780		
RD	0.612	0.574	0.405	0.694	0.836	
CCPL	0.605	0.528	0.407	0.721	0.643	0.816

Notes: The bold diagonal data is the square root of the AVE and the others are latent variable correlations. SG = Sense of Gain, FS = Family Support, JR = Job Responsibilities, IOD = Internal Organization Development, RD = Remuneration and Development, CCPL = Condition of the City Where the PMHCI Is Located.

Therefore, we concluded that the measurement model has good reliability and validity to test the structural model of our proposed hypotheses.

Common method variance (CMV) refers to the amount of spurious covariance shared among variables because of the common method used in collecting data[73], so we tested the possibility of CMV through the three criteria. First, as shown in Table 3, the correlation coefficients between the structures were less than 0.9, indicating that there were no pairs with strong correlations[42]. Second, the Harman single-factor test was conducted by PCA, and the results showed that the first extracted factor in the unrotated solution accounted for 45.691% of the variance, which was less than 50%[74]. Finally, the marker variable technique[75, 76] was applied to test the variance, and health condition, which was not relevant for our research, was set as a marker variable. The correlation coefficients between health condition and other variables ranged from - 0.147 to 0.052, so common method variance was ruled out in our research.

Structural Model Analysis

The t-values and p-values of each path were computed in AMOS to test the hypothesized relationships. The results showed that Internal Organization Development ($\beta = 0.562$; $P < 0.001$), Remuneration and Development ($\beta = 0.087$; $P = 0.019$), Job Responsibilities ($\beta = 0.113$; $P < 0.001$) and Family Support ($\beta = 0.127$; $P < 0.001$) had a significantly positive effect on the Sense of Gain of medical personnel seeking employment at PMHCIs, so H1, H3, H7, and H9 were supported. However, the hypothesized relationship between the Condition of the City Where the PMHCI Is Located and Sense of Gain ($\beta = 0.038$; $P = 0.350$) was not significant, so H4 was not supported. In addition, both Internal Organization Development ($\beta = 0.460$; $P < 0.001$) and the Condition of the City Where the PMHCI Is Located ($\beta = 0.336$; $P < 0.001$) had significantly positive effects on Remuneration and Development, so H2 and H4 were supported. Internal Organization Development had a significantly positive effect on Job Responsibilities ($\beta = 0.446$; $P < 0.001$), and the Condition of the City Where the PMHCI Is Located had a significantly positive effect on

Family Support ($\beta = 0.553$; $P < 0.001$), indicating that H6 and H8 were supported. After the insignificant path was removed, the modified model was refitted. The results of the modified structural equation model are demonstrated in Fig. 2, and the coefficients of the supported hypothesis paths changed slightly.

The fit of the modified model is shown in Model 1 in Table 4, and the values indicated an acceptable-fitting model. The validation results for model stability in the third stage are shown in Model 2 of Table 4, and the results show that the model is acceptable.

Table 4
The fit of the structural equation model

Model	SRMR	RMSEA	CFI	TLI	IFI	NFI
Reference	< 0.1	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9
Model 1	0.066	0.061	0.926	0.919	0.926	0.911
Model 2	0.081	0.062	0.943	0.938	0.943	0.940

Notes: Model 1 = The modified model established in the second phase, Model 2 = The model established in the third phase.

Table 5
Results of direct, indirect and total effects of each factor.

Path	Effect	Model 1		Model 2	
		Coefficient	<i>P</i>	Coefficient	<i>P</i>
IOD → JR	Direct	0.446	< 0.001	0.499	< 0.001
IOD → RD	Direct	0.460	< 0.001	0.436	< 0.001
IOD → SG	Direct	0.581	< 0.001	0.393	< 0.001
	Indirect 1	0.050	< 0.001	0.051	< 0.001
	Indirect 2	0.044	0.041	0.033	0.003
	Total	0.625	< 0.001	0.477	< 0.001
CCPL → FS	Direct	0.553	< 0.001	0.572	< 0.001
CCPL → RD	Direct	0.336	< 0.001	0.433	< 0.001
CCPL → SG	Indirect 3	0.032	0.036	0.033	0.003
	Indirect 4	0.075	< 0.001	0.186	< 0.001
	Total	0.107	< 0.001	0.219	< 0.001
RD → SG	Direct	0.095	0.009	0.076	< 0.001
JR → SG	Direct	0.113	< 0.001	0.102	< 0.001
FS → SG	Direct	0.136	< 0.001	0.325	< 0.001
Notes: Indirect 1 = IOD → JR → SG, Indirect 2 = IOD → RD → SG, Indirect 3 = CCPL → RD → SG, Indirect 4 = CCPL → FS → SG. SG = Sense of Gain, FS = Family Support, JR = Job Responsibilities, IOD = Internal Organization Development, RD = Remuneration and Development, CCPL = Condition of the City Where the PMHCI Is Located. Model 1 = The model established in the second phase, Model 2 = The established in the third phase.					

In addition, in the second and third phases, the bootstrapping technique in AMOS was applied to explore the mediating role of Family Support, Job Responsibilities, and Remuneration and Development. The 95% confidence interval of the indirect effects was obtained with 5000 bootstrap resamples. The results showed that Job Responsibilities, and Remuneration and Development significantly mediated the relationship between Internal Organization Development and Sense of Gain, while Family Support and Remuneration and Development also played a significant mediating role from the Condition of the City Where the PMHCI Is Located to Sense of Gain. Table 6 shows the direct and indirect effects of each factor in the two phases. Internal Organization Development had the greatest effect on the Sense of Gain (0.625 and 0.447, respectively), followed by Family Support (0.136 and 0.325, respectively). While the direct effect of the Condition of the City Where the PMHCI Is Located was not significant, there was a

significant indirect effect on the Sense of Gain through Remuneration and Development and Family Support (0.107 and 0.219, respectively).

Discussion

This study explored the factors that influence medical personnel in urban public hospitals seeking employment at PMHCIs from the perspective of the target group based on implicit theory and the lexical approach. Through pre-investigation and a three-phase investigation, the influences of six factors, including Sense of Gain, Internal Organization Development, Remuneration and Development, Job Responsibility, Condition of the City Where the PMHCI Is Located, and Family Support, on the willingness of medical personnel to seek employment at PMHCIs and the corresponding action path were clarified. Based on the fit and verification of the model, we propose that the model is acceptable and credible. Therefore, this study provides a theoretical perspective for guiding medical personnel to seek employment at PMHCIs, improving human resource development in PMHCIs, and promoting the utilization of primary health care services.

Remuneration and development positively affected the willingness of medical personnel to seek employment at PMHCIs, which was related not only to the common needs of job-choosing groups but also to the current situation of PMHCIs. At present, because of the low technical level and backward environmental facilities of PMHCIs, patients have a low level of acceptance and willingness to seek medical treatment at PMHCIs[77–79]. As a result, PMHCIs only provide basic public health services and a small number of medical services, and the income of medical personnel mainly comes from government financial subsidies. Therefore, remuneration and personal development are limited, which results in low enthusiasm and a serious loss of medical personnel. In turn, the medical service of PMHCIs could not be improved, and patients' willingness to seek medical treatment would decrease again. Therefore, from the perspective of medical personnel, it is necessary to improve remuneration to a certain extent and then to improve enthusiasm about working in PMHCIs. In addition, differentiated medical insurance policies and hierarchical diagnosis and treatment systems should be formulated to encourage patients to seek medical treatment in PMHCIs. Only through the joint change of the two sides can remuneration and development be improved, and the willingness of medical personnel to seek employment at PMHCIs will be increased.

Family support had a positive effect on the willingness of medical personnel to seek employment at PMHCIs, indicating that employees considered the changes in the work and life of their family members when choosing a job. In China, family is the core component of a person's life and affects people's work and development. Therefore, we propose that providing suitable living and working conditions for family members of medical personnel will facilitate the willingness of medical personnel to seek employment at PMHCIs.

The degree of medical personnel's attention to job responsibility had a positive effect on the willingness of medical personnel to seek employment at PMHCIs. Against the background of the implementation of

the hierarchical diagnosis and treatment system in China's new medical reform, PMHCIs are responsible for the diagnosis and treatment of common and frequently occurring diseases, management of chronic diseases, and rehabilitation treatment in the congruency period. Therefore, medical personnel in PMHCIs are the people who have the earliest and closest contact with patients, and they are the gatekeepers of residents' health. At the same time, the role of medical personnel in PMHCIs has expanded in the context of the integration of public health services and clinical services [80, 81], so they are under considerable work pressure. In addition, prior studies have noted that workload, work intensity, and work pressure are important factors influencing the satisfaction and turnover intention of medical personnel in PMHCIs [53, 82, 83]. Therefore, we propose that the willingness of medical personnel to seek employment at PMHCIs can be improved by matching the responsibilities with their interests, such as providing appropriate remuneration according to the work content and balancing the pressure from the job.

The Internal Organization Development had a significant and important direct and indirect effect on the willingness of medical personnel to seek employment at PMHCIs. On the one hand, as a member of a PMHCI, the work of medical personnel is directly affected by the organization's construction and management, which is an important part of the medical personnel's work experience. On the other hand, the internal construction of the organization affects remuneration and development, as well as job responsibility, which are the factors that affect work enthusiasm and job-related well-being. In addition, we propose that the internal construction of the organization affects patients' attitudes towards PMHCIs and their willingness to seek medical services in PMHCIs, thus affecting the work of medical personnel and the development of PMHCIs. Therefore, scientific and reasonable management systems, good working facilities, and environments will increase the sense of well-being and belonging and improve the enthusiasm of medical personnel. Regarding human resource development in PMHCs, the improvement of internal organization construction will increase the willingness of medical personnel to seek employment at PMHCIs.

The Condition of the City Where the PMHCI Is Located has no significant direct effect on the willingness of medical personnel to seek employment at PMHCIs. The reason may be that medical personnel are more concerned with proximal factors such as individuals, family, and internal development than with the external environment. However, the results showed that the Condition of the City Where the PMHCI Is Located had a significant effect on the family members and remuneration and development of medical personnel. In addition, the results of the mediation effects showed that the external environment, through Remuneration and Development and Family Support, has a significant effect on Sense of Gain. Therefore, we conclude that the Condition of the City Where the PMHCI Is Located has an indirect and important effect on the willingness of medical personnel to seek employment at PMHCIs.

Strengths and Limitations of This Study

The major strengths of this research include the following aspects. First, the analysis explored the factors from the perspective of the guided objects rather than the government and PMHCIs, making up for the lack of understanding of the actual needs of medical personnel. Second, this research analyzed the

effects of the internal and external environment of PMHCIs, family, job responsibility, remuneration, and development on the willingness of medical personnel to seek employment at PMHCIs, and the factors discussed were comprehensive and representative. Third, this research established the influence model of medical personnel seeking employment at PMHCIs through pre-investigation and three-phase investigation. The process was complete and rigorous, and the resulting model was representative and stable. However, two limitations of the research also need to be acknowledged.

First, because of the large differences in different regions of China, this research cannot fully reflect the situation in all regions, so further analysis based on local conditions is needed. Second, the sampling methods and the changing subjects in the investigation may affect the accuracy of the results, whereas we communicated with experts and local administration leaders to ensure that the samples accurately reflected the overall situation.

Conclusions

This research contributes to the theoretical support for human resource development in PHC by investigating the willingness of medical personnel to seek employment at PMHCIs. We conclude that medical personnel's attention to family, remuneration, individual development, and job responsibility are closely related to their willingness to seek employment at PMHCIs. In addition, internal organizational development directly and indirectly affects their willingness through job responsibility, remuneration, and individual development, whereas the external environment of PMHCIs mainly has indirect effects on willingness through remuneration, individual development, and family support. Theoretical and practical implications for improving the human resource development of PMHCIs to promote the use of PHC services are provided.

Abbreviations

PHC: Primary health care; PMHCIs: Primary medical and health care institutions; SG: Sense of Gain; RD: Remuneration and Development; IOD: Internal Organization Development; CCPL: Condition of the City Where the PMHCI Is Located; JR: Job Responsibilities; FS: Family Support; AVE: average variance extracted; EFA: exploratory factor analysis; CFA: confirmatory factor analysis; SEM: structural equation modeling; VR: varimax rotation; PCA: principal component analysis; RMSEA: the root mean square error of approximation; CFI: the comparative fit index; TLI: the Tucker-Lewis index; IFI: the incremental fit index.

Declarations

Ethics approval and consent to participate

Our study procedures were approved by the Medical Ethics Committee of the School of Public Health Jilin University (No. 20181102). At the same time, in accordance with ethical standards and practices, participants received a complete explanation of the research purpose and guarantees of confidentiality.

Consent for publication

Not applicable.

Availability of data and materials

The datasets generated and/or analysed during the current study are not publicly available due to the privacy of individuals that participated in the study but are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

X. Y. conceived and designed the study, and revised and approves the final version of the manuscript. H. J. (Huanhuan Jia) and H. J. (Hairui Jiang) designed the questionnaire and the survey, analyzed the data and drafted the manuscript. J. Y., Z. Z. and J. Z. carried out the acquisition of data, questionnaires, and measures design, and participated in data analysis. S. G., P. S., P. C. and Q. B. carried out the planning of data collection and contributed in review and editing of the manuscript. All authors read and approved the final manuscript.

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References

1. Kreng VB, Yang CT. The equality of resource allocation in health care under the National Health Insurance System in Taiwan. *Health Policy*. 2011;100:203–10.
2. Huang MF, Wei DH, Rubino L, Wang LS, Li DZ, Ding BF, Li G. "Three essential elements" of the primary health care system: A comparison between California in the US and Guangdong in China. *Family Medicine Community Health*. 2015;3:23–9.
3. Starfield B, Shi LY, Macinko J. Contribution of primary care to health systems and health. *Milbank Q*. 2005;83:457–502.

4. Shi LY. Primary-Care, Specialty Care, and Life Chances. *Int J Health Serv.* 1994;24:431–58.
5. Buchan J, Twigg D, Dussault G, Duffield C, Stone PW. Policies to sustain the nursing workforce: an international perspective. *Int Nurs Rev.* 2015;62:162–70.
6. Davis K, Abrams M, Stremikis K. How the Affordable Care Act Will Strengthen the Nation's Primary Care Foundation. *J Gen Intern Med.* 2011;26:1201–3.
7. Magnussen L, Ehiri J, Jolly P. Comprehensive versus selective primary health care: Lessons for global health policy. *Health Aff.* 2004;23:167–76.
8. Qian DF, Lucas H, Chen JY, Xu L, Zhang YG. Determinants of the use of different types of health care provider in urban China: A tracer illness study of URTI. *Health Policy.* 2010;98:227–35.
9. Xu X, Huang X, Zhang X, Chen L. **Family Economic Burden of Elderly Chronic Diseases: Evidence from China.** *Healthcare (Basel)* 2019, 7.
10. Gong P, Liang S, Carlton EJ, Jiang QW, Wu JY, Wang L, Remais JV. Urbanisation and health in China. *Lancet.* 2012;379:843–52.
11. Yang GH, Kong LZ, Zhao WH, Wan X, Zhai Y, Chen LC, Koplan JP. Health System Reform in China 3 Emergence of chronic non-communicable diseases in China. *Lancet.* 2008;372:1697–705.
12. Zheng A, Fang Q, Zhu Y, Jiang C, Jin F, Wang X. **An application of ARIMA model for predicting total health expenditure in China from 1978–2022.** *Journal of Global Health* 2020, 10.
13. Yang GH, Wang Y, Zeng YX, Gao GF, Liang XF, Zhou MG, Wan X, Yu SC, Jiang YH, Naghavi M, et al. Rapid health transition in China, 1990–2010: findings from the Global Burden of Disease Study 2010. *Lancet.* 2013;381:1987–2015.
14. Zhang T, Xu YJ, Ren JP, Sun LQ, Liu CJ. **Inequality in the distribution of health resources and health services in China: hospitals versus primary care institutions.** *International Journal for Equity in Health* 2017, 16.
15. Li X, Lu JP, Hu S, Cheng KK, De Maeseneer J, Meng QY, Mossialos E, Xu DR, Yip W, Zhang HZ, et al. The primary health-care system in China. *Lancet.* 2017;390:2584–94.
16. Wen T, Zhang Y, Wang X, Tang G. **Factors influencing turnover intention among primary care doctors: a cross-sectional study in Chongqing, China.** *Human Resources for Health* 2018, 16.
17. Rosenbaum SJ, Shin P **Access Transformed: Building a Primary Care Workforce for the 21st Century.** **George Washington University: Health Sciences Research Commons (HSRC)** 2008. <https://core.ac.uk/display/230746649> [Accessed April 24,2021].
18. Shen XJ, Yang WX, Sun SR. **Analysis of the Impact of China's Hierarchical Medical System and Online Appointment Diagnosis System on the Sustainable Development of Public Health: A Case Study of Shanghai.** *Sustainability* 2019, 11.
19. Ge CX, Fu JL, Chang Y, Wang L. **Factors associated with job satisfaction among Chinese community health workers: a cross-sectional study.** *Bmc Public Health* 2011, 11.
20. Chin-Quee D, Mugeni C, Nkunda D, Uwizeye MR, Stockton LL, Wesson J. **Balancing workload, motivation and job satisfaction in Rwanda: assessing the effect of adding family planning service**

- provision to community health worker duties.** *Reproductive Health* 2016, 13.
21. Liu GG, Vortherms SA, Hong X: **China's Health Reform Update.** In *Annual Review of Public Health, Vol 38. Volume 38.* Edited by Fielding JE; 2017: 431–448: *Annual Review of Public Health*].
 22. Hung LM, Rane S, Tsai J, Shi LY. **Advancing primary care to promote equitable health: implications for China.** *International Journal for Equity in Health* 2012, 11.
 23. Cuesta-Briand B, Coleman M, Ledingham R, Moore S, Wright H, Oldham D, Playford D. **Understanding the Factors Influencing Junior Doctors' Career Decision-Making to Address Rural Workforce Issues: Testing a Conceptual Framework.** *International Journal of Environmental Research and Public Health* 2020, 17.
 24. Jiang S, Min R, Fang PQ. **The impact of healthcare reform on the efficiency of public county hospitals in China.** *Bmc Health Services Research* 2017, 17.
 25. Sternberg RJ. Implicit Theories of Intelligence, Creativity, and Wisdom. *J Pers Soc Psychol.* 1985;49:607–27.
 26. Cabello R, Fernandez-Berrocal P. **Implicit theories and ability emotional intelligence.** *Frontiers in Psychology* 2015, 6.
 27. Rydell RJ, Hugenberg K, Ray D, Mackie DM. Implicit theories about groups and stereotyping: The role of group entitativity. *Pers Soc Psychol Bull.* 2007;33:549–58.
 28. De France K, Hollenstein T. **Implicit theories of emotion and mental health during adolescence: the mediating role of emotion regulation.** *Cogn Emot* 2020:1–8.
 29. Swanson S, Billsberry J, Kent A, Skinner J, Mueller J. Leader prototypicality in sport: The implicit leadership theories of women and men entering sport management careers. *Sport Management Review.* 2020;23:640–56.
 30. Schyns B, Kiefer T, Foti RJ. **Does thinking of myself as leader make me want to lead? The role of congruence in self-theories and implicit leadership theories in motivation to lead.** *Journal of Vocational Behavior* 2020, 122.
 31. Burnette JL, O'Boyle EH, VanEpps EM, Pollack JM, Finkel EJ. Mind-Sets Matter: A Meta-Analytic Review of Implicit Theories and Self-Regulation. *Psychol Bull.* 2013;139:655–701.
 32. Hu CS, Ferrari M, Liu RD, Gao Q, Weare E. Mainland Chinese Implicit Theory of Wisdom: Generational and Cultural Differences. *Journals of Gerontology Series B-Psychological Sciences Social Sciences.* 2018;73:1416–24.
 33. Ashton MC, Lee K. A defence of the lexical approach to the study of personality structure. *Eur J Pers.* 2005;19:5–24.
 34. Saucier G, Goldberg LR. Lexical studies of indigenous personality factors: Premises, products, and prospects. *J Pers.* 2001;69:847–79.
 35. Block J. The Five-Factor Framing of Personality and Beyond: Some Ruminations. *Psychol Inq.* 2010;21:2–25.

36. Thalmayer AG, Saucier G, Ole-Kotikash L, Payne D. Personality Structure in East and West Africa: Lexical Studies of Personality in Maa and Supyire-Senufo. *J Pers Soc Psychol.* 2020;119:1132–52.
37. De Vries RE. **The Main Dimensions of Sport Personality Traits: A Lexical Approach.** *Frontiers in Psychology* 2020, 11.
38. Anderson JC, Gerbing DW. STRUCTURAL EQUATION MODELING IN PRACTICE - A REVIEW AND RECOMMENDED 2-STEP APPROACH. *Psychol Bull.* 1988;103:411–23.
39. Bufquin D, Park JY, Back RM, Meira JVD, Hight SK. **Employee work status, mental health, substance use, and career turnover intentions: An examination of restaurant employees during COVID-19.** *International Journal of Hospitality Management* 2021, 93.
40. Hair JF, Babin WCB, Babin BJ, R.E. *Anderson Multivariate Data Analysis(7th ed.)*. Pearson Education; 2010.
41. Fan N. **Strategy Use in Second Language Vocabulary Learning and Its Relationships With the Breadth and Depth of Vocabulary Knowledge: A Structural Equation Modeling Study.** *Frontiers in Psychology* 2020, 11.
42. Golini N, Egidi V. The Latent Dimensions of Poor Self-Rated Health: How Chronic Diseases, Functional and Emotional Dimensions Interact Influencing Self-Rated Health in Italian Elderly. *Soc Indic Res.* 2016;128:321–39.
43. Lee SJ, An EM, Chung IJ. Assessing Satisfaction of Children in out-of-Home Care: Development of Korean out-of-Home Care Satisfaction Scale. *Child Indic Res.* 2020;13:1217–33.
44. Harerimana A, Mtshali NG. **Using Exploratory and Confirmatory Factor Analysis to understand the role of technology in nursing education.** *Nurse Education Today* 2020, 92.
45. Nikolaou P, Basbas S, Politis I, Borg G. **Trip and Personal Characteristics towards the Intention to Cycle in Larnaca, Cyprus: An EFA-SEM Approach.** *Sustainability* 2020, 12.
46. Yang J, Guo AM, Wang YD, Zhao YL, Yang XH, Li H, Duckitt R, Liang WN. Human Resource Staffing and Service Functions of Community Health Services Organizations in China. *Annals of Family Medicine.* 2008;6:421–7.
47. Head B, Middleton A, Zeigler C. Work Satisfaction Among Hospice and Palliative Nurses. *Journal of Hospice Palliative Nursing.* 2019;21:E1–11.
48. Vikstrom S, Johansson K. Professional pride: A qualitative descriptive study of nursing home staff's experiences of how a quality development project influenced their work. *J Clin Nurs.* 2019;28:2760–8.
49. Valizadeh L, Zamanzadeh V, Habibzadeh H, Alilu L, Gillespie M, Shakibi A. Threats to nurses' dignity and intent to leave the profession. *Nursing Ethics.* 2018;25:520–31.
50. Morrissy L, Boman P, Mergler A. Nursing a Case of the Blues: An Examination of the Role of Depression in Predicting Job-Related Affective Well-Being in Nurses. *Issues in Mental Health Nursing.* 2013;34:158–68.
51. Willemse BM, De Jonge J, Smit D, Visser Q, Depla MFIA, Pot AM. Staff's person-centredness in dementia care in relation to job characteristics and job-related well-being: a cross-sectional survey in

- nursing homes. *J Adv Nurs*. 2015;71:404–16.
52. Pizarro JP, Martin ME, Di Giusto C. Adolescents Work Values. *Revista De Psicodidactica*. 2011;16:381–99.
 53. Wang H, Jin Y, Wang D, Zhao S, Sang X, Yuan B. **Job satisfaction, burnout, and turnover intention among primary care providers in rural China: results from structural equation modeling.** *Bmc Family Practice* 2020, 21.
 54. Lu Y, Hu X-M, Huang X-L, Zhuang X-D, Guo P, Feng L-F, Hu W, Chen L, Zou H, Hao Y-T. **The relationship between job satisfaction, work stress, work-family conflict, and turnover intention among physicians in Guangdong, China: a cross-sectional study.** *Bmj Open* 2017, 7.
 55. Espasandín-Bustelo F, Ganaza-Vargas J, Diaz-Carrion R: **Employee happiness and corporate social responsibility: the role of organizational culture.** *Employee Relations: The International Journal* 2020, ahead-of-print.
 56. Zhang MJ, Yang RR, Wang W, Gillespie J, Clarke S, Yan F. Job satisfaction of urban community health workers after the 2009 healthcare reform in China: a systematic review. *Int J Qual Health Care*. 2016;28:14–21.
 57. He R, Liu J, Zhang W-H, Zhu B, Zhang N, Mao Y. **Turnover intention among primary health workers in China: a systematic review and meta-analysis.** *Bmj Open* 2020, 10.
 58. Liu JA, Wang Q, Lu ZX. **Job satisfaction and its modeling among township health center employees: a quantitative study in poor rural China.** *Bmc Health Services Research* 2010, 10.
 59. Sheng YN, Zhao MH. **Regulations in the era of new-type urbanisation and migrant workers' settlement intentions: The case of Beijing.** *Population Space and Place* 2021, 27.
 60. Huang Y, Liu WL, Zhuo Y, Sun XY. **Social insurance participation and urban settlement intentions of China's floating population.** *Population Space and Place* 2020, 26.
 61. Van der Doef M, Maes S. The Job Demand-Control(-Support) model and psychological well-being: a review of 20 years of empirical research. *Work Stress*. 1999;13:87–114.
 62. Haeusser JA, Mojzisch A, Niesel M, Schulz-Hardt S. Ten years on: A review of recent research on the Job Demand-Control (-Support) model and psychological well-being. *Work Stress*. 2010;24:1–35.
 63. Kwok SYCL, Cheng L, Wong DFK. Family Emotional Support, Positive Psychological Capital and Job Satisfaction Among Chinese White-Collar Workers. *J Happiness Stud*. 2015;16:561–82.
 64. King LA, Mattimore LK, King DW, Adams GA. Family Support Inventory for Workers - a New Measure of Perceived Social Support from Family Members. *Journal of Organizational Behavior*. 1995;16:235–58.
 65. Chan XW, Kalliath P, Chan C, Kalliath T. How does family support facilitate job satisfaction? Investigating the chain mediating effects of work-family enrichment and job-related well-being. *Stress Health*. 2020;36:97–104.
 66. Nei D, Snyder LA, Litwiller BJ. Promoting retention of nurses A meta-analytic examination of causes of nurse turnover. *Health Care Manage Rev*. 2015;40:237–53.

67. Hoffner CA, Levine KJ, Toohey RA. Socialization to work in late adolescence: The role of television and family. *Journal of Broadcasting Electronic Media*. 2008;52:282–302.
68. Choi SL, Goh CF, Adam MBH, Tan OK. **Transformational leadership, empowerment, and job satisfaction: the mediating role of employee empowerment**. *Human Resources for Health* 2016, 14.
69. Hair JF, Hult GTM, Ringle C, Sarstedt M. 2016a. **A primer on partial least squares.**
70. **structural equation modeling (PLS-SEM)**. *Sage publications* (Hair et al., 2016a, p.121).
71. Chen Y, Zahedi FM. Individuals' Internet Security Perceptions and Behaviors: Polycontextual Contrasts Between the United States and China. *Mis Quarterly*. 2016;40:205-+.
72. Hair JF, Hult GTM, Ringle C, Sarstedt M. 2016a. **A primer on partial least squares.**
73. **structural equation modeling (PLS-SEM)**. *Sage publications* (Hair et al., 2016a, p.104).
74. Fornell C, Larcker DF. EVALUATING STRUCTURAL EQUATION MODELS WITH UNOBSERVABLE VARIABLES AND MEASUREMENT ERROR. *J Mark Res*. 1981;18:39–50.
75. Buckley MR, Cote JA, Comstock SM. Measurement Errors in the Behavioral-Sciences - the Case of Personality Attitude Research. *Educ Psychol Measur*. 1990;50:447–74.
76. Podsakoff PM, Organ DW. SELF-REPORTS IN ORGANIZATIONAL RESEARCH - PROBLEMS AND PROSPECTS. *J Manag*. 1986;12:531–44.
77. Lindell MK, Whitney DJ. Accounting for common method variance in cross-sectional research designs. *J Appl Psychol*. 2001;86:114–21.
78. Wu T, Deng Z, Feng Z, Gaskin DJ, Zhang D, Wang R. **The Effect of Doctor-Consumer Interaction on Social Media on Consumers' Health Behaviors: Cross-Sectional Study**. *Journal of Medical Internet Research* 2018, 20.
79. Yip WC-M, Hsiao WC, Chen W, Hu S, Ma J, Maynard A. Early appraisal of China's huge and complex health-care reforms. *Lancet*. 2012;379:833–42.
80. Sun X, Sun T, Jin YS, Wang YP. **Spatial Organization of Hierarchical Medical Services within the City Proper of Tianjin, China: Towards Efficient Medical Alliances**. *Sustainability* 2019, 11.
81. Wang HHX, Wang JJ, Wong SYS, Wong MCS, Li FJ, Wang PX, Zhou ZH, Zhu CY, Griffiths SM, Mercer SW. **Epidemiology of multimorbidity in China and implications for the healthcare system: cross-sectional survey among 162,464 community household residents in southern China**. *Bmc Medicine* 2014, 12.
82. Zhang MJ, Yan F, Wang W, Li GH. **Is the effect of person-organisation fit on turnover intention mediated by job satisfaction? A survey of community health workers in China**. *Bmj Open* 2017, 7.
83. Jin YZ, Wang HP, Wang D, Yuan BB. **Job satisfaction of the primary healthcare providers with expanded roles in the context of health service integration in rural China: a cross-sectional mixed methods study**. *Human Resources for Health* 2019, 17.
84. Chou L-P, Li C-Y, Hu SC. **Job stress and burnout in hospital employees: comparisons of different medical professions in a regional hospital in Taiwan**. *Bmj Open* 2014, 4.

Figures

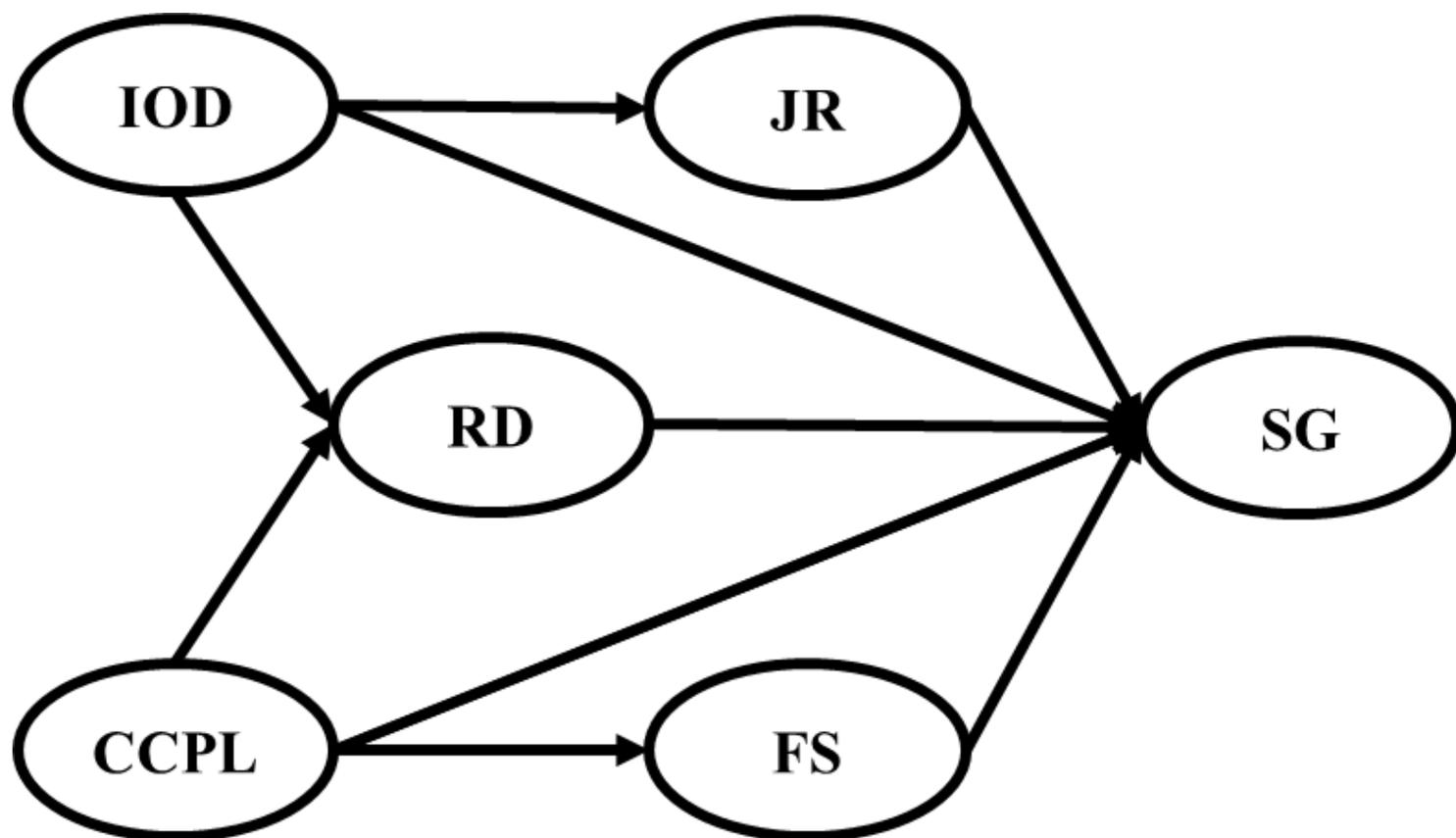


Figure 1

The hypothetical structural equation model. Note: SG, Sense of Gain; RD, Remuneration and Development; IOD, Internal Organization Development; CCPL, Condition of the City Where the PMHCI Is Located; JR, Job Responsibilities; FS, Family Support.

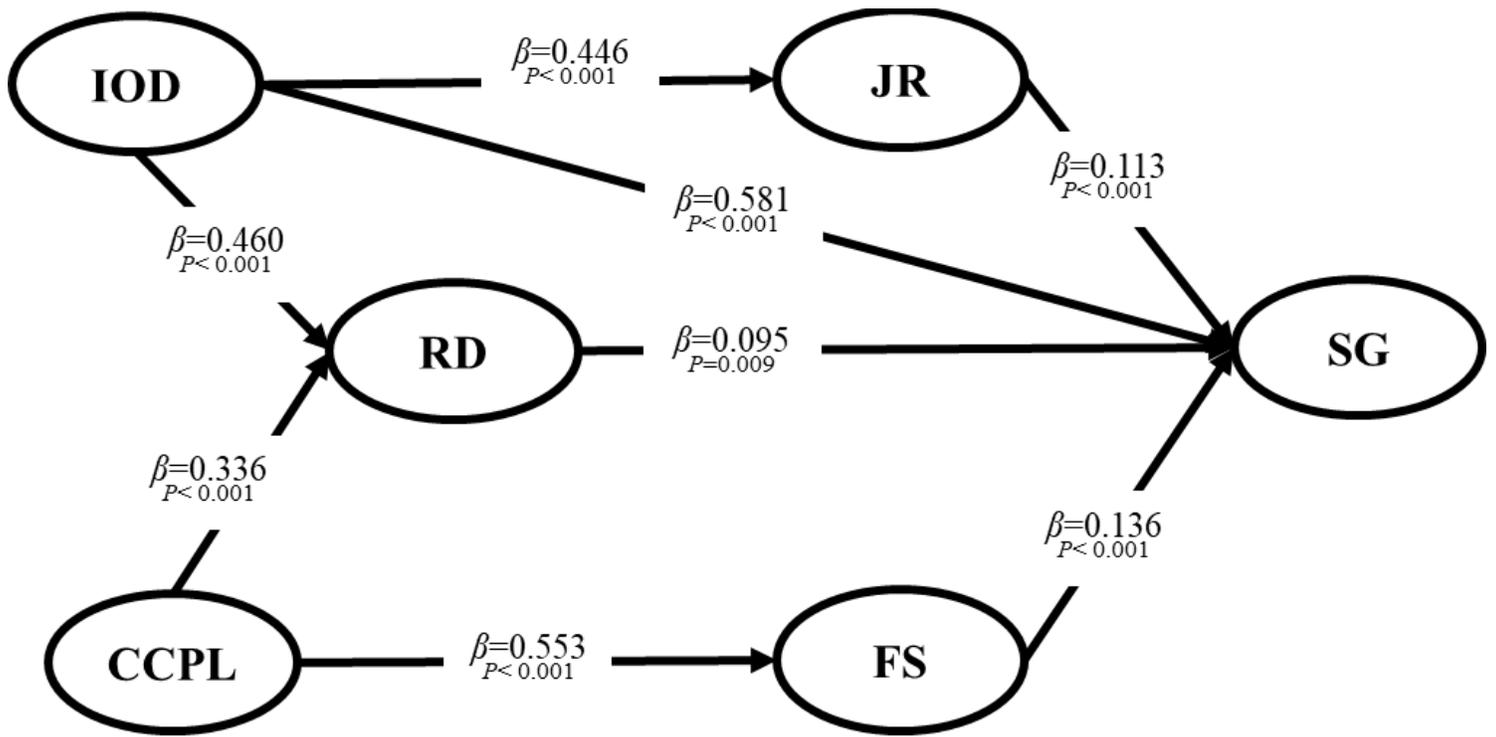


Figure 2

The results of the modified structural equation model. Note: SG, Sense of Gain; RD, Remuneration and Development; IOD, Internal Organization Development; CCPL, Condition of the City Where the PMHCI Is Located; JR, Job Responsibilities; FS, Family Support.