Analysis on the relationship between Effort- Reward imbalance and job satisfaction among family doctors in China: a cross-sectional study

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Research Article

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Abstract

Background: Family doctor contract services was launched in Sichuan province in 2016. The focus was mainly on developing primary health care services but paying less attention to the work stress and job satisfaction of in-service family doctors.

Objective: This study aims to explore the influencing factors of job satisfaction, and the relation between work stress indicators and job satisfaction among family physicians.

Methods: An analytical online cross-sectional survey was performed among 1,105 family doctors from 23 districts and counties in Chengdu. Self-administered questionnaire was completed. Sociodemographic factors, work stress measured by Effort-Reward Imbalance (ERI)scale, and job satisfaction assessed by the short Chinese version of the Minnesota Satisfaction Questionnaire (MSQ) were collected in this study. A statistical analysis and hierarchical linear regression analysis were performed to explore the influencing factors and the correlations among related variables.

Results: The overall mean MSQ score was 52.01±13.23. Analysis of doctor satisfaction indicated that age, education, job rank, type of institution, years of working and monthly income were statistically significant ($P<0.05$). There were negative correlation coefficients between general job satisfaction and effort/reward ratio (ERR) (r=-0.130, $P<0.001$) and overcommitment (r=-0.615, $P<0.001$).

Conclusion: The level of job satisfaction among family doctors was considerable low. Age, education, job rank, type of institution, years of working and monthly income were influencing factors of job satisfaction. ERI and overcommitment had a negative correlation with general job satisfaction.

Introduction

Family doctors, known as general practitioners and family physicians, are widely regarded as the “gatekeepers” of health systems and play a vital role in providing comprehensive, continuous and appropriate primary health services [1]. To date, the family doctor service policy has been implemented in over 50 countries and regions throughout the world, including the United States, the United Kingdom, Canada, Australia, etc., and has brought significant health and economic gains. China proposed family doctors and family doctor contracted services in the 1980s. In 2003, the family doctor system was carried out as a means of developing community health services [2]. In 2009, China experienced a new round of health system reform which emphasized the pressing need of establishing a sound basic medical and health service system and adopting measures to develop and strengthen community health service centres. In 2011, the Chinese government proposed the Guiding Opinions of the State Council on the Establishment of the General Practitioner System as a national indicator of family doctor services [3]. Family doctor contract services have been available in Sichuan Province since 2016, aiming to provide a full-life primary healthcare service. However, due to the short-term development of family doctor primary care systems in China, primary care is a relatively new discipline in the medical field and a sequence of prominent defects and problems come to manifest, including an increased workload at community health

service centres, an inadequate contract service rate, family doctor shortages, and the absence of supporting policies [4-6], unnecessary and tortuous paperwork, skimpy wages and salaries.

Occupational stress refers to a kind of psychological state, which refers to the response employees who experienced in response to several adverse conditions related to the working environment may have when one's working resources, abilities and needs are not sufficient to cope with work demands and pressure [7]. It is reported that work stress prevalence rates among general working population are from 19% to 30% [8]. However, there is a high work stress prevalence among health workers at community health service centres. A survey carried out in Shanghai demonstrates that 190 (61.7%) family doctors experienced excessive occupational stress [9]. Similarly, an investigation conducted in in southwestern China showed that 78.39% primary health workers had occupational stress [10]. Occupational stress also significant impact on staff mental and psychological well-being.

The effort-reward imbalance (ERI) questionnaire is a theoretical and validated psychosocial scale widely used in exploring associations between perceived occupational stress and health state through identifying failed reciprocity between the effort spent at work and the rewards received in turn [11]. There are three dimensions: efforts, rewards and overcommitment. Work efforts refer to the demands and obligation in exposed employees. Perceived rewards represent work resources and benefits provided to the employee including money, promotion prospects, job security, respect and prestige in the workplace. [12]. While Overcommitment is assessed by personal combined responses to a high effort and low reward at work.[13]. The ERI model is built on an imbalance between effort and reward caused a state of emotional distress from emotional and psycho-physiological stress reactions, which leads to a decrease in job satisfaction and an increase in turnover, and subsequently results an enormous variety of adverse health outcomes.

Job satisfaction is a vital influencing indicator of one's feeling about work, it reflects the extent to which people like their jobs [14]. To date, Job satisfaction has been assessed in diverse occupational settings, e.g., education, business firms, the military and medical care. With the prominent medical reforms and the society development, health problems and health workers' s working condition have received more and more attention. A wide variety of studies have revealed mediating effect of job satisfaction on health state among nurse [15], a correlation between job satisfaction and job burnout among emergency department health professionals [16-17], the relationship between job satisfaction and turnover intention among physicians from urban state-owned medical institutions [18], the common reasons for dissatisfaction and job satisfaction and its related factors among psychiatry residents in China [19]. Referring to family doctors, researches focus on effect and challenge of family doctor contract services [20-21], chronic disease management to contract with family [22] and assessment of Chinese family physicians' service competences [23]. However, few studies explored the relationship between variables in the ERI model and job satisfaction among family doctors in China.

Methods

Sample and Setting

Chengdu is the provincial capital city of Sichuan Province and its population is about 20.9 million, which is located in southwest China. At the end of 2020, there were 2,420 family doctor teams in Chengdu, with a total of 6.9million people who signed family doctor services. Between March 4, 2021 and March 26, 2021, an analytical cross-sectional survey using questionnaires was conducted among family doctors on online in Chengdu, China, to assess participants' demographic characteristics and occupational data. 46 community health service centres /township health centres where the implementation of family doctor contract services was already in force were selected by a multistage stratified cluster sampling method in 23 districts and counties. After excluding the missing records in the questionnaire and the rejection from participants, 1,105 participants completely responded anonymously. This study was approved by the ethics committee of Chengdu first people's hospital. All subjects in this study were voluntary and expressed informed consent prior to the questionnaires.

Instruments

Sociodemographic variables

Demographic and working characteristics collected included gender, age, marital status, educational levels, technical title, work contract, type of institution, years of work and take-home monthly pay. Gender was divided as 'male' and 'female'. Age was categorized as '≤25 years old', '26-35 years old', '36-45years old', '46-55 years old' and '≥56 years old five groups. Marital status was categorized as 'single'、'married', and 'divorced or widowed'. Educational levels were divided into 'junior college or below' , 'bachelor's, and 'master's, or above'. Technical title was classified into 'primary title or below', 'middle title', and 'vice-senior title, or above'. Work contract was categorized into informal work contract and formal work contract. Type of institution were divided as 'village clinic /station', 'township health center', 'community health service centres' and 'second-class hospital'. Years of work was divided as '≤5 years', '5-9 years', '10-15 years', '16-20 years' and '>21 years'. Take-home monthly pay was categorized as '1000-3000 yuan', '3001–6000 yuan', '6001-9000 yuan', and '9001-12000 yuan and above'.

Assessment of Effort-Reward Imbalance

The 23-item effort-reward imbalance scale was applied to assess occupational stress. The questionnaire is divided into three dimensions, including extrinsic effort(6items), reward (7 items), and overcommitment (6 items). Responses to the extrinsic components of "effort" and "reward" are 5-point Likert scales (1=completely disagree, 5= strongly agree). The response scale to this questionnaire is on a 10-point Likert scale ranging between "do not agree/not applicable to me" to "fully agree/fully applicable. The intrinsic component of "overcommitment" is a 4-point Likert scale (1 =strongly disagree, 4= full agreement). The overall imbalance between effort and reward was expressed by effort/reward ratio (ERR). ERR was calculated as [(effort score/reward score) × 0.545], where 0.545 was the correction factor based on the number of effort items and the number of reward items (6/11). If an ERR value of > 1.0

indicated a high level of imbalance between extrinsic effort and reward, an ERI ratio ≤1 represented a balance of effort and reward.

Satisfaction with working conditions and work itself

We assessed job satisfaction using the short Chinese version of the Minnesota Satisfaction

Questionnaire (20-MSQ short version items) [24-25], which was developed to measure job general satisfaction along two dimensions: intrinsic satisfaction (12 items, e.g., “The chance to do different things from time to time”) and extrinsic satisfaction (6 items, e.g., “The praise I get for doing a good job”). The degree of job satisfaction was rated on a 5-point Likert scale ranging from 1 = very dissatisfied to 5 = very satisfied. The sum scores for job satisfaction were ranged from 20 to 100.Higher scores on this scale were associated with a higher level of job satisfaction.

Data Analysis

Categorical variables were presented as frequencies and percentages. Quantitative data was presented as arithmetic means and standard deviation. First, the distributions of job satisfaction by sociodemographic characteristics and ERR were tested by student t-test and one-way ANOVA. Second, Pearson’s correlation coefficients were calculated to assess the associations among all relevant study variables. Third, hierarchical linear regression analyses were performed to estimate the association of job satisfaction with demographic characteristic, ERR and overcommitment. Job satisfaction of family doctor was set as the dependent variable. The independent variables were entered in two steps. In step 1, the sociodemographic variables were put in the model; in step 2, ERR and overcommitment were added. All data analysis were conducted using SPSS 17.0 (SPSS China Corp., Shanghai, China) for Windows, and a two-tailed P-value < 0.05 was considered to be statistically significant.

Results

Participant Characteristics

The basic characteristics of the family doctors and the mean scores of job satisfaction in the demographic categories are summarized in Table 1. In this study, a total of 1,105 participants completed the survey; 46.8% of them were male and 53.2%were female. Most respondents were less than 46 years old (39.3% were36-45 years old and 34.5% were younger than 36 years old), and 87.8% respondents were married. In this sample, about half of the respondents had a bachelor degree or higher (50.4%). 46.5% of the participants had a middle title or higher job rank. 48.1% of them had a formal work contract. Moreover, in this survey, 11.2%, 48.5%, 34.2% and 6.1% of participants worked in village clinic / station township, health center community health service centres, second-class hospitals respectively. Among all the respondents, 19.1% of answered respondents worked less than 6 years, 19.5% worked 6 -10 years, 19.7% worked 11 to 15 years, 10.6% worked 16 -20 years, 31.1% worked ≥ 21years. Approximately, half of respondents reported their take-home monthly pay was among 3001-6000 RMB (50.8%). In addition, the

results of univariate analysis of job satisfaction in relation to the categorical variables were also shown in Table 1. 24.1% of the participants experienced occupational stress (ERR > 1) and these doctors had markedly lower scores than those with ERR ≤1 in job satisfaction. Consequently, significant differences were found between the groups for the following variables: age, educational level, technical title, grade of medical institutions, years of work and take-home monthly pay ($P < 0.01$).

Correlation between occupational stress and job satisfaction

The means, standard deviations (SD), and results of the Pearson correlation analyses are detailed in Table 2. Intrinsic job satisfaction showed negative correlation with ERR ($P < 0.001$), Intrinsic job satisfaction had a comparatively higher correlation coefficient with overcommitment (r=-0.615, $P<0.001$). A negative significant correlation was observed between extrinsic job satisfaction and overcommitment (r=-0.433, $P<0.001$). When the correlation between general job satisfaction and occupational stress was examined, there were negative correlation coefficients between general job satisfaction and ERR (r=-0.130, p<0.001) and overcommitment (r=-0.615, $P<0.001$).

Factors Associated with Job Satisfaction

The data were further employed for hierarchical regression analyses using job satisfaction as the

dependent variable, where the sociodemographic characteristics and occupational stress were taken as independent variables. The major factors associated with job satisfaction are presented in Table 3. In the first step, sociodemographic factors accounted for 39.0% of the variance in intrinsic job satisfaction, 72.9% of the variance in extrinsic job satisfaction, 60.9% of the variance in overall job satisfaction. In the second step, the dimensions of occupational stress explained 52.4% of the variance in intrinsic job satisfaction, 68.3% of the variance in overall job satisfaction. However, gender, age, marital status, work contract, and grade of medical institutions had no significant association with all dimensions of job satisfaction in the hierarchical linear regression analyses.

Discussion

Many studies in China have discovered the link between job satisfaction and occupational factors among many occupations, including township cadres, university teachers, physicians and so forth [18,26,27]. Recently, studies involving family doctors have garnered increasing attention. But there is still a large room for decreasing work stress, improving the working setting and reducing health risks among family doctors, especially in our regions where the family doctor contract services were launched later than in other areas in China. With the initiation of China's new medical reform and health care system, family doctors assume the role as gatekeepers of the public's health. Community health service policies, including family doctor contract services and hierarchical diagnosis and treatment, have reaped benefits in terms of reducing the difficulty of accessing medical services and its high costs and solving other health issues. Due to the huge population and rapid ageing of the population, an endless number of rules and regulations, a lack of promotion and learning opportunities, and poor wages and salaries, community

doctors are working in a high-stress environment and experiencing decreasing job satisfaction [29-31]. Studies showed that people with an effort-reward imbalance suffered from sleep problems, an elevated hazard of coronary heart disease and chronic fatigue syndrome [10,32-33]. Job satisfaction, characterized as one's sense of happiness and personal perceptions of working factors, is related to a sense of belonging and enthusiasm for work, as well as to an organization's retention rate [34-35]. So, this survey not only integrated the related sociodemographic characteristics of job satisfaction but also examined the relationships between effort-reward imbalance and job satisfaction among family doctors.

In this study, our subjects were sampled from 46 health centres in 23 districts or towns throughout Chengdu. This study aims to explore the factors that influence job satisfaction and the relationship between work stress indicators and job satisfaction among family physicians. A total of 1,105 participants completed the survey, and they displayed a low level of satisfaction (the overall mean MSQ score was 52.01±13.23), which was lower than that of Chinese university teachers (69.71), Chinese township cadres (71.21), community health workers from two cities in northern China (68.2) and Chinese specialists [25-27,29]. A possible explanation for the discrepancy is China's national conditions and its geographical and economic diversity. The requirements for basic health services at community health centres in China are increasing as the economy grows and the population ages. Notably, in the context of preventing the COVID-19 epidemic, family doctors must assume increasing responsibility and multitasking works, which caused more than half of 840 primary healthcare workers to feel stressed and depressed [36]. Research reported that challenges in carrying out the responsibility and multitasking work had a crippling effect on job satisfaction [37,38]. Our study focuses on the associations among relative variables within one structural model and highlights how effort-reward imbalance affects job satisfaction among primary healthcare providers. Furthermore, this study provides a new integrated perspective so that the health sector could improve family doctors' job satisfaction by developing relevant positive factors.

Age, education, job rank, institution type, years of working and monthly income are demographic factors of family doctors' job satisfaction. Concerning age, a study conducted among university teachers revealed a U-shaped relationship between age and job satisfaction [27], but our study did not report such kind of relationship. Job satisfaction is much greater in the 36 to 45-years-old group than in the other age groups. The explanation might be that this group had a high education level and climbed rapidly up the professional ladder, enabling them to be content with their job accomplishment. Family doctors with a master's degree and above scored higher than those with a bachelor's degree and below. Family doctors with a high education level can get access to publishing academic papers and undertaking research projects, which are the basic requirements for applying for a promotion in China. The current study showed that a worker's professional rank influenced the level of job satisfaction, which was consistent with other studies [39-40]. In addition, participants who worked in community health service centres were more likely to report a higher score of job satisfaction than those who worked in other types of health institutions. A possible explanation was that community health centres located in economically developed areas had a greater opportunity to improve healthcare access, basic health infrastructure, and high-quality health services than others. As for working years, some studies found that they affected staff

satisfaction [29,37,41], but others presented the opposite results [46]. In the present study, workers with 16-20 working years were more satisfied with their job. The effect of working years was also reflected in the regression model. The reason for this phenomenon could be that staff with a longer duration of working experience were equipped with adequate medical skills and were responsible for more work, resulting in higher salary and social status. Moreover, we reported that sufficient monthly income was a strong predictor of job satisfaction. This corroborated findings from research conducted in Peninsular Malaysia and China among Community Health Workers [37,42]. There were other points of view on salary. Studies abroad indicated that financial and non-financial factors affected job motivation and satisfaction among rural health workers [43] and that non-monetary factors had a greater impact on professional and performance satisfaction than income did among health workers [44,45]. Hence, income escalation combined with non-financial incentives could improve multidimensional satisfaction among family doctors.

This study demonstrated that effort-reward imbalance and overcommitment had a detrimental effect on general job satisfaction in correlation analysis. Moreover, overcommitment (rather than effort-reward imbalance) was a strong determinant of family doctors' job satisfaction. According to the hierarchical regression results, based on the absolute value of β, effort-reward imbalance and overcommitment were likewise negatively correlated with job satisfaction. In China, family doctors exerted greater effort toward organizational overall goals, suggesting that they might overestimate their abilities and devote more effort to tasks that were beyond their capabilities, leading to failed reciprocity between efforts and rewards. Research suggested that employees with the effort-reward imbalance and high overcommitment were at a higher risk of stress-related mental and physical distress illnesses [46,47] which resulted in decreasing job satisfaction. On the contrary, a high level of job satisfaction has been shown to improve psychological and mental well-being [48].

Furthermore, our study may provide a new perspective for the health administrators so that they could promote family doctors' job satisfaction by developing strategic changes. To mitigate the dissatisfaction of family doctors at primary healthcare centres, it is necessary to establish a better incentive system and modify working conditions. This can be done by increasing income level, ameliorating the work burden, providing more learning and training opportunities, improving education level and professional title, avoiding turnover intention and ensuring the stability of the primary health workforce.

A few strengths of this study need to be mentioned. The large sample size of family doctors covered every geographical area in Chengdu and this ensured the sample was representative and general. This survey was completed anonymously on line in a short time to ensure the data with reliability and comparability. However, the present study does have some limitations. First, due to the characteristics of a cross-sectional design in this study, it was not able to draw causal conclusions. To deepen the understanding of job satisfaction in this study, a qualitative approach or a longitudinal study is needed. The second limitation was that some other variables that have not been considered in this study might also have an impact on job satisfaction. Therefore, further research is needed to verify the relationship between these variables and job satisfaction.

This study revealed that the level of job satisfaction among family doctors was considerable low. Age, education, job rank, type of institution, years of working and monthly income were influencing factors of job satisfaction. There was negative significant association between effort-reward imbalance, overcommitment and general job satisfaction. The results have implications for interventions to improve the job satisfaction of family doctors. A balance between efforts and rewards, a better incentive system and modify working conditions should put forward to increase family doctors' job satisfaction.

Declarations

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Authors' contributions

WY designed this study and revised the manuscript. LS supervised and conducted the study. CY wrote the main manuscript text. DW, WY and XZ performed investigation, organized and analyzed the data. All authors read and approved the final manuscript.

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Availability of data and materials

The data and materials in this study are available from the corresponding author on reasonable request.

Ethics approval and consent to participate

This study was approved by the ethics committee of Chengdu first people's hospital. All subjects in this study were voluntary and expressed informed consent prior to the questionnaires. We confirm that the investigation was carried out in accordance with the relevant guidelines and regulations.

Consent for publication

Not applicable.

Competing interests

No potential conflict of interest was reported by the authors.

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Tables

Table 1. Demographic characteristics of sample and distributions of job satisfaction (N = 1105).

Variable	N (%)	Job Satisfaction Mean	*P*
Gender			
Males	517(46.8)	47.00±18.26	0.05
Females	588(53.2)	49.04±17.76	
Age (years)			
≤25	54(4.9)	35.28±17.01	0.000
26~35	327(29.6)	49.98±17.61	
36~45	434(39.3)	50.33±17.54	
46~55	246(33.3)	42.55±18.62	
≥56	44(4)	48.09±18.01	
Marital status			
single	110(10.0)	44.67±20.83	0.097
married	970(87.8)	48.51±17.59	
Divorced or widowed	25(2.3)	48.09±18.01	
Educational levels			0.000
junior college or below	548(49.6)	42.69±17.20	
bachelor	525(47.5)	52.95±17.03	
master or above	32(2.9)	60.66±18.01	
Technical title			0.000
primary title or below	702(63.5)	43.16±16.71	
middle title	325(39.4)	55.40±16.78	
vice-senior title or above	78(7.1)	57.78±20.58	
Work contract			
formal work contract	531(48.1)	52.02±16.73	0.05
informal work contract	574(51.9)	44.45±18.40	
Grade of medical institutions			
village clinic / station	124(11.2)	35.31±13.54	0.000
township health centres	536(48.5)	45.95±17.25	
community health service centres	378(34.2)	54.61±17.19	

second-class hospitals	67(6.1)	51.99±19.58	
Years of work (years)			
≤5	211(19.1)	47.02±18.40	0.000
6~10	216(19.5)	46.86±18.35	
11~15	217(19.7)	52.12±16.70	
16~20	117(10.6)	53.16±19.27	
≥21	344(31.1)	48.09±18.01	
Take-home monthly pay (RMB)			
1000~3000	300(27.1)	28.09±7.38	0.000
3001~6000	561(50.8)	50.27±10.26	
6001~9000	210(19.0)	67.04±15.65	
≥9001	34(3.1)	71.38±21.48	
ERR			
≤1	839(75.9)	51.38±17.76	0.000
1	266(24.1)	37.69±14.54	

Table 2. Correlation between occupational stress and job satisfaction.

	Mean	SD	1	2	3	4	5
1ERR	0.91	0.288	1				
2Overcommitment	17.02	2.54	0.113**	1			
3Intrinsic job satisfaction	32.08	9.01	-0.163**	-0.615**	1		
4Extrinsic job satisfaction	15.72	4.28	-0.030	-0.433**	0.563**	1	
5General job satisfaction	52.01	13.23	-0.130**	-0.615**	0.954**	0.782**	1

** $P < 0.001$, effort/reward ratio (ERR).

Table 3. Hierarchical linear regression analyses for exploring associated factors for job satisfaction.

Variables	Intrinsic Job Satisfaction		*Extrinsic Job Satisfaction*		General Job Satisfaction	
	Step 1 (β)	Step 2 (β)	Step 1 (β)	Step 2 (β)	Step 1 (β)	Step 2 (β)
Gender	0.029	0.001	-0.031	-0.032	0.015	-0.008
Age	0.034	0.034	-0.026	-0.026	0.003	0.004
Marital status 1	-0.037	-0.027	-0.019	-0.018	-0.028	-0.017
Marital status 2	0.002	0.014	-0.001	-0.001	0.000	0.007
Educational levels 1	-0.014	-0.011	0.038*	0.038*	0.006	0.007
Educational levels 2	0.038	0.002	0.002	0.001	0.029	0.002
Technical title 1	0.028	0.015	-0.019	-0.020	0.013	0.002
Technical title 2	0.089**	0.063**	-0.003	-0.004	0.067**	0.041*
Work contract	-0.030	-0.060	-0.002	-0.001	-0.022	-0.044
Grade of medical institutions 1	-0.005	-0.019	0.026	0.035	-0.003	-0.014
Grade of medical institutions 2	-0.027	0.001	0.009	0.011	-0.015	0.007
Grade of medical institutions 3	0.029	0.019	0.081	0.009	0.026	0.023
Years of work 1	-0.030	-0.029	-0.074**	-0.074**	-0.046*	-0.046**
Years of work 2	-0.052**	-1.497*	-0.041*	-0.041*	-0.054**	-0.049**
Years of work 3	0.005	-0.016	0.009	0.009	0.002	-0.014
Years of work 4	0.016	0.028	0.020	0.021	0.004	0.014
Take-home monthly pay1	0.799**	0.539**	1.395**	1.380**	1.118**	0.844**
Take-home monthly pay 2	0.363**	0.242**	0.970**	0.956**	0.636**	0.454**
Take-home monthly pay3	0.002	0.019	0.357**	0.350**	0.121**	0.041
ERR		-0.077**		0.022		-0.300**
Overcommitment		-0.400**		-0.017		-0.046**
Adjusted R^2	0.390	0.521	0.729	0.729	0.609	0.680
$\triangle R^2$	0.392	0.524	0.730	0.731	0.611	0.683

ERR: effort–reward ratio. Marital status1: married vs. Single; Marital status 2:married divorced/widowed; Educational levels 1bachelor vs. junior college or below; Educational levels 2: bachelor vs. master and

above; Technical title 1:middle title vs. primary title and below; Technical title 2: middle title vs. vice-senior title or above; Grade of medical institutions 1: community health service centres vs. village clinic/station; Grade of medical institutions 2: community health service centres vs. township health centres; Grade of medical institutions 3: community health service centres vs. second-class hospitals; Years of work 1: 11~15years vs.≤5 years; Years of work 2:11~15 years vs.6~10 years; Years of work 3: 11~15 years vs. 16~20 years; Years of work 4:11~15 years vs.≥21 year; Take-home monthly pay1: 6001~9000 yuan RMB vs.1000~3000 yuan RMB; Take-home monthly pay 2: 6001~9000 yuan RMB vs. 3001~6000 yuan RMB; Take-home monthly pay 3: 6001~9000 yuan RMB vs ≥9001 yuan RMB. * $P < 0.05$, ** $P < 0.01$.