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Sociodemographic characteristics, occupational characteristics, motivational factors, and job satisfaction among primary health service practitioners

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Abstract

Background The Chinese Basic Public Health Service has achieved certain results since its implementation. As direct providers, understanding the job satisfaction and its influencing factors among basic public health service practitioners is crucial for enhancing service quality and efficiency. This study examines levels of motivational factors and their contribution to job satisfaction among community health workers in China.

Methods A multistage sampling method was employed to measure socioeconomic and demographic status, motivational factors, and job satisfaction. Logistic regression analysis was used to assess key determinants of job satisfaction.

Results Regarding overall occupational characteristics, influencing factors of overall and external satisfaction were respondents with different job titles and different working years. Years of service in primary health institutions and different authorized types influence satisfaction across various dimensions, including working arrangement, interpersonal relationship, environment, promotion opportunities, organizational culture, system and policy, professional identity, social identity, and overall, internal, and external satisfaction. Professional title, interpersonal relationship, work arrangement, system and policy, occupational identity, and other dimensions have a positive impact on satisfaction.

Conclusion The overall job satisfaction of essential public health service practitioners is influenced by various factors. Healthcare managers should focus on improving job satisfaction among healthcare workers in low-resource settings. Establishing scientific and reasonable research on the incentive mechanism at grassroots medical institutions can help stabilize the team, enhance staff satisfaction and work performance, and optimize human resource utilization.

Keywords Occupational characteristics, Motivational factors, Job satisfaction, Primary health service practitioners

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Introduction

Following the new medical reform policy, various health service institutions have emerged, and national basic public health services have been widely implemented in China. Medical and health personnel are the foundation of such services and a priority in the "Healthy China" strategy [1]. Primary medical and health institutions play a significant role in improving the health of residents, yet these is a large gap in the total number of health personnel. High-quality resources are excessively concentrated in large hospitals, while primary medical and health institutions suffer from shortages. Geographical distribution remains unreasonable, and the quality and ability of health personnel need improvement to meet the total demand for medical and health services under the new situation [2].

Job satisfaction, a psychological management category, refers to an individual's positive and subjective evaluation of all aspects of the work environment [3]. It depends on a complex interaction of factors, such as the individual characteristics, context of work and the environment, interaction with co-workers, job promotion, salary, as well as socioeconomic factors [4, 5].

Most studies show that job satisfaction among community workers is influenced by multiple factors across different dimensions. International studies, such as those by Tomazevich, have linked job satisfaction to well-being, job stress, work schedules, work-family interactions, and working conditions [6]. Sangoni conducted a job satisfaction questionnaire on 1304 nurses in Italian public hospitals, emphasizing autonomy and salary as two important factors affecting job satisfaction [7]. Babap-Divali's surveyed 160 nurses highlighted the impact of the empowerment program (HNEP) on nurses' job satisfaction, and the significance of enhancing head nurses' management skills [8]. In China, since the 1980s, studies have gradually begun to explore factors affecting job satisfaction. A study revealed that social workers in Shenzhen reported low satisfaction, especially concerning institutional management, social recognition, and remuneration, yet were satisfied with supervisory support and colleague support [9]. Ma (2021) investigated 750 grassroots medical staff in Nantong, and showed that work intensity and low return-overloaded work is the main reasons under the job satisfaction of community health workers [10]. Yu (2024) suggested that decision-makers should focus on internal incentives, strengthen autonomy motivation, and foster a supportive working atmosphere and mode of independent support [11]. Collectively, these studies suggest that enhancing incentive factors can significantly boost job satisfaction and produce a noticeable motivational effect.

Incentive factors are crucial in understanding job satisfaction among community health workers. Incentive is an iterative process that influence individuals' intrinsic needs or motivations, guiding or altering behavior to achieve specific goals. Hertzberg's "two-factor theory" posits that incentive factors, closely related to the work itself or the content of the work, including achievement, appreciation, work meaning and challenge, responsibility, promotion, and development, are dedicated to improving employee satisfaction. Wong's survey of novice and experienced nurses identified four main themes related to job satisfaction: "supportive working environment, " "autonomy in practice, " "professional training for competence enhancement, " and "heavy workload and insufficient manpower" [12]. Abate's study among health extension workers (HEWs) and healthcare professionals in Ethiopia found associations between workload, leave, and job satisfaction with motivation [13].However, few studies have concentrated on incentive factors and their effects on job satisfaction among Chinese community health workers posts the new health system reform policy, the lack of theoretical guidance in some studies may lead to one-sided understanding of the revealed factors.

This study delves into the dimensions affecting the job satisfaction of primary medical and community health workers through the lens of social exchange theory. This theory interprets social interactions, the relationships established through these interactions, and the needs fulfilled from the perspective of interest exchange, where individual exchange behavior is tied to stimulation, aggression, approval, deprivation, satisfaction, value, and success [14]. Social exchange theory views interpersonal interaction as a cost–benefit analysis, maximizing benefits, and thus, when individuals reap benefits such as stimulation, approval, and satisfaction, their exchange behaviors become more frequent [15]. This theory has been effectively applied to the collaborative behavior between doctors and patients, between government and medical institutions, and among medical institutions [16–18], demonstrating its adaptability in analyzing health system issues. It serves as a theoretical framework for understanding the impact of motivating factors on the job satisfaction of community health workers. The purpose of this study is to explore the incentive factors of the grassroots public health personnel, and to offer insights for grassroots public health service agencies in formulating appropriate incentive policies.

Methods

Sample and procedures

The questionnaire survey was conducted in Heilongjiang Province, China, from June to August 2019. According to the GDP of prefecture-level cities in the province, as well as the provincial statistical yearbook for 2019 [19], there are 18,460 basic medical and health institutions in

Heilongjiang, including 614 county/district community health service stations, 976 township hospitals, 10,740 village clinics, and 6,130 outpatient clinics. Among them, 15,007 were community primary care providers. We selected 1,500 primary care providers from 38 community health service stations/centers across seven cities in the province through stratified sampling as our study subjects.

Prior to the survey, researchers established communication and coordination with the community health service centres, and after obtaining their consent, distributed the questionnaire. Out of the 1348 questionnaires collected, we eliminated those with obvious errors, incorrect answers to polygraph questions, and incomplete answers, resulting in 1,287 valid questionnaires, which corresponds to an effective response rate of 85.8%. Inclusion criteria: staff who have been engaged in basic medical and health institutions for one year or more; and informed consent to participate in this study. Exclusion criteria: those who have been on the job for three months or more due to accumulated study, study or sick leave within one year; and security staff at primary health centres, interns, and training staff.

Assessment tools

The assessment tools were divided into three sections:

Section 1 focused on respondents' socioeconomic and demographic status. The study adopted a self-compiled general demographic questionnaire. A total of 14 individual characteristics such as gender, age, occupation category, job title, job position, education background, marital status, job content, working years, monthly income level, working hours, establishment and working system were included.

Section 2 Assessed the importance of motivating factors. Based on grounded theory [20] which emphasizes the induction of theories from primary sources, the interaction between the researcher and the deductive object. We conducted in-depth qualitative interviews with policymakers, medical managers and community health workers (CHWs), and referenced the job description index (JDI) and the related scale to the incentive factors that Li Li designed [21, 22]. The self-designed questionnaire included nine dimensions of evaluation indicators: compensation and rewards, work arrangements, interpersonal relationships, environment, promotion opportunities, organizational culture, systems and policies, professional identity, and social identity. The questionnaire was found to be internally consistent (overall Cronbach's $\alpha = 0.94$). Cronbach's α within the individual subscales ranged from 0.87 to 0.95. Respondents were asked to rate their perception of work stress on each item based on a five-point Likert scale (1 = very unimportant, 2 = unimportant, 3 = general, 4 = important 5 = very important.

Section 3 Assessed job satisfaction. The Minnesota Satisfaction Questionnaire (MSQ) short-form scale was used [23, 24]. The MSQ short-form scale consists of 20 items measuring satisfaction associated with the task and non-task characteristics of the job and the overall job satisfaction level [25]. Job satisfaction is often considered in terms of intrinsic factors (those that promote job satisfaction, such as opportunities for advancement and growth, recognition, responsibility, and achievement) and extrinsic factors (those that prevent job satisfaction, such as supervision, pay, policies, working conditions, interpersonal relations, security) prevent job dissatisfaction [26]. Accordingly, in the MSQ, items 5, 6, 12, 13, 14, and 19 assess indicators of extrinsic satisfaction, items 1–4, 7–11, 15, 16, and 20 assess indicators of intrinsic satisfaction, while two additional items (17, 18) are used to determine general job satisfaction. The respondents are required to rate each question on a 5-point Likert scale (very dissatisfied = 1 point, dissatisfied = 2 points, average = 3 points, satisfied = 4 points, very satisfied = 5 points). The job satisfaction score is the sum of the corresponding subscale item scores. The higher the score, the higher the job satisfaction. The reliability test results indicate that the Cronbach's alpha coefficient of each dimension of the scale is 0.895–0.947.

Data analysis

Survey results were analyzed using SPSSV.26.0. Descriptive analyses included frequencies and percentages for categorical variables and means and standard deviations (SD) for continuous variables. Univariate analysis of the relationship between respondents' demographic characteristics and occupational status and job satisfaction were examined using T tests and one-way analysis of variance (ANOVA) for relevant subgroups. Pearson correlation analysis was used to determine the relationship between job satisfaction and motivation. To identify the key predictors of job satisfaction among primary health care workers, multiple linear regression analysis was performed with meaningful and relevant factors as independent variables and overall, internal, and external satisfaction as dependent variables.

Results

Socioeconomic and demographic status of respondents

The socioeconomic and demographic characteristics of the participants are detailed in Table 1. The majority of participants were female (83.6%), with nurses comprising 38.2% of the CHWs surveyed, followed by medical technicians (23.8%), and general practitioners (15%). Only 12.5% of respondents held senior professional titles, while over half(53.2%) possessed a bachelor's degree or higher. Only 30.2% had a monthly incomes exceeding 4000 CNY, and nearly 90% worked 8h or more per day. Establishment employment was reported by 37.3% of the respondents.

Importance of motivating factors according to socioeconomic and demographic factors

The results of the variance analysis and multiple comparisons are presented in Table 1. There were significant differences in the scores of the five subscales of motivation according to age ($p<0.05$). Respondents who have been engaged in primary health services for 16 to 20 years place more importance on the six dimensions of environment, interpersonal relationships, promotion opportunities, organization and culture, system and policy, and professional identity ($p<0.05$). Work placement, occupational recognition, and social recognition vary significantly by occupational category ($p<0.05$). Compared with general practitioners, nurses, and other positions, people in other positions need more reasonable. Work arrangements and professional and social identity. Scores for the remuneration and reward subscale differed significantly according to monthly income ($p< 0.05$); respondents with a monthly income of less than 2,000 CNY scored higher.

The results in Table 2 indicate that, aside from age, there is no significant correlation between sociodemographic characteristics and MSQ scores. However, there is a statistical difference between age and overall, internal, and external satisfaction ($p<0.05$). Respondents with title and working years were significantly related to overall and external satisfaction ($p<0.05$). The years of service in primary medical institutions and different types of establishment were significantly correlated with overall, internal, and external satisfaction ($p<0.05$).

From Table 3, there are stronger correlations between remuneration and compensation, working arrangement, interpersonal relationship, environment, promotion opportunities, organizational culture, system and policy, professional identity, social identity and overall, internal, and external satisfaction ($p<0.001$). Among them, system and policy incentives have the stronger correlation with overall ($r=0.58$) and external satisfaction ($r=0.53$); professional identity has the strongest correlation with internal satisfaction ($r=0.59$) (Table 3).

Only 23.6% of respondents reported being satisfied with their jobs. The results of the multiple linear regression analysis are reported in Table 4. There is a statistical difference in the impact of professional titles on overall satisfaction (B = -0.94, 95%CI: -1.77, -0.10) and external satisfaction (B = -0.35, 95%CI: -0.65, -0.04). The lower the professional title, the lower the overall and external satisfaction scores. There are statistical differences in overall, internal, and external satisfaction in work arrangement, system and policy, and occupational identity; the higher the score of the three indicators, the higher the satisfaction score. The impact of interpersonal relationships on overall satisfaction (B = 0.38, 95%CI: 0.08, 0.68) and internal satisfaction (B = 0.26, 95%CI: 0.09, 0.44) is statistically different, and the higher the score, the higher the satisfaction score (Table 4).

Discussion

Current status of factors affecting job satisfaction

Job satisfaction among CHWs is pivotal for the sustainable development of basic healthcare in China, especially as the new medical reform progresses. The job satisfaction of CHWs determines the quantity, quality, and level of health services provided to residents. However, health policymakers and managers have long overlooked this aspect [21]. Recent research on job satisfaction in primary medical institutions has revealed significant regional differences [1, 5, 8, 10].

Internal factors that affect internal satisfaction

The study identified work arrangements, interpersonal relationships, systems and policies, and professional identity are important factors influencing internal satisfaction of employees. Notably, our findings regarding interpersonal relationships contrast with those of Zhang et al., who suggested that such relationships seldom emerge as predictors of overall job satisfaction and are less critical than economic rewards [21]. Contrary to this, our results align with Adams et al. (2009), emphasizing the substantial impact of positive interpersonal dynamics on job satisfaction among CHWs. They argue that good interpersonal relationships have a significant impact on the job satisfaction of CHWs [27, 28]. Our analysis of interpersonal relationships encompassed connections among colleagues, relationships with supervisors, the cultural climate of the institution, and cooperation between departments. Given the close-knit yet complex work environment of CHWs, the cultivation of harmonious interpersonal relationships is crucial. When team members collaborate closely, it fosters a sense of

Table 1 Analysis of motivation factors by socioeconomic and demographic status for respondents ($N=1287$)

Demographic characteristics		Motivation factors								
	N	Remuner-ation and reward	Working arrangement	Interpersonal relationship	Environment	Promotion opportunities	Organization and culture	System and policy	Professional identity	Social identity
Administrative position										
Director	50	1.44	1.56	1.52	1.64	1.70	1.70	1.55	1.61	1.58
Other managers	40	1.46	1.54	1.51	1.68	1.67	1.63	1.61	1.57	1.62
Deputy director	327	1.65	1.74	1.57	1.71	1.76	1.71	1.63	1.58	1.66
Other managers	870	1.54	1.60	1.54	1.59	1.68	1.64	1.54	1.49	1.57
F		2.567	2.907*	0.214	1.742	0.592	0.665	1.009	1.435	1.031
Occupation										
General practitioner	193	1.51	1.65	1.58	1.66	1.64	1.72	1.58	1.56	1.59
Public health physician	86	1.50	1.56	1.53	1.60	1.72	1.69	1.57	1.49	1.56
Nurse	492	1.52	1.59	1.48	1.54	1.64	1.59	1.50	1.47	1.56
Chinese Medicine	76	1.65	1.52	1.59	1.69	1.69	1.71	1.58	1.40	1.42
Pharmacist	71	1.65	1.62	1.59	1.75	1.83	1.72	1.65	1.59	1.71
Medical technology	306	1.59	1.70	1.59	1.67	1.77	1.68	1.60	1.54	1.62
Other	63	1.74	1.88	1.73	1.74	1.88	1.81	1.77	1.80	1.92
F		1.472	2.219*	1.830	1.904	1.489	1.182	1.428	2.563*	2.636*
Work content										
Chronic disease management	341	1.55	1.67	1.51	1.60	1.66	1.60	1.53	1.51	1.56
Medical treatment	441	1.56	1.61	1.59	1.65	1.69	1.68	1.57	1.51	1.58
Maternal and Child Health	104	1.49	1.70	1.67	1.73	1.83	1.83	1.70	1.64	1.75
Recovery treatment	38	1.56	1.45	1.35	1.41	1.53	1.61	1.50	1.37	1.44
Health education	155	1.57	1.68	1.57	1.60	1.76	1.66	1.61	1.60	1.67
Planned immunization	197	1.58	1.59	1.50	1.60	1.69	1.63	1.54	1.47	1.59
Family planning	11	1.70	1.66	1.59	1.58	1.97	1.73	1.52	1.48	1.55
F		0.247	0.930	1.567	0.983	0.938	0.989	0.762	1.234	1.218
Sex										
Male	211	1.59	1.61	1.59	1.69	1.71	1.72	1.64	1.57	1.61
Female	1076	1.55	1.64	1.54	1.61	1.70	1.65	1.55	1.51	1.59
F		0.728	0.549	1.002	1.315	0.210	1.109	1.273	1.057	0.325
Age in years										
≤ 25	214	1.63	1.63	1.57	1.60	1.62	1.61	1357	1.53	1.59
26–34	454	1.53	1.58	1.49	1.56	1.62	1.58	1.48	1.45	1.53
35–44	338	1.53	1.67	1.59	1.67	1.75	1.71	1.63	1.58	1.65
45–54	243	1.53	1.69	1.59	1.65	1.81	1.77	1.63	1.57	1.63

Table 1 (continued)

Demographic characteristics	N	Motivation factors								
		Remuner-ation and reward	Working arrangement	Interpersonal relationship	Environment	Promotion opportunities	Organization and culture	System and policy	Professional identity	Social identity
≥ 55	38	1.88	1.65	1.54	1.94	2.07	1.83	1.66	1.60	1.64
F		2.626*	1.151	1.257	2.616*	3.918*	2.741*	2.469*	1.975	1.160
Educational background										
High school or below	173	1.53	1.61	1.55	1.62	1.71	1.68	1.60	1.50	1.56
Junior college	430	1.57	1.64	1.50	1.60	1.70	1.62	1.55	1.53	1.60
College and above	684	1.56	1.64	1.58	1.64	1.70	1.68	1.57	1.53	1.60
F		0.185	0.159	1.639	0.246	0.026	0.630	0.310	0.112	0.171
Professional Title										
Senior title	37	1.61	1.71	1.55	1.68	1.85	1.73	1.60	1.55	1.73
Vice-senior title	124	1.49	1.59	1.52	1.59	1.69	1.63	1.54	1.53	1.60
Middle title	280	1.52	1.63	1.55	1.63	1.69	1.66	1.89	1.56	1.60
Primary title	542	1.56	1.63	1.56	1.64	1.72	1.68	1.87	1.51	1.59
No title	304	1.61	1.66	1.53	1.61	1.67	1.62	1.56	1.51	1.59
F		0.802	0.255	0.159	0.141	0.413	0.349	0.124	0.248	0.251
Monthly income(CNY)										
< 2000	127	1.76	1.80	1.71	1.76	1.79	1.69	1.65	1.59	1.71
2000–3000	441	1.54	1.63	1.52	1.59	1.72	1.68	1.58	1.51	1.59
3001–4000	331	1.56	1.58	1.55	1.61	1.65	1.63	1.54	1.50	1.56
4001–5000	214	1.50	1.65	1.55	1.63	1.67	1.65	1.54	1.54	1.60
> 5000	174	1.52	1.60	1.51	1.60	1.73	1.66	1.57	1.51	1.60
F		2.888*	2.141	2.046	1.153	0.674	0.219	0.500	0.388	0.735
Working years										
≤ 5	415	1.56	1.61	1.54	1.56	1.59	1.58	1.52	1.49	1.56
6–10	289	1.60	1.60	1.51	1.60	1.70	1.64	1.53	1.48	1.57
11–15	157	1.45	1.63	1.55	1.66	1.72	1.65	1.61	1.55	1.60
16–20	98	1.56	1.67	1.58	1.72	1.72	1.73	1.61	1.59	1.67
> 20	328	1.57	1.68	1.58	1.68	1.83	1.77	1.63	1.57	1.64
F		1.084	0.583	0.387	1.75	3.251*	2.333	1.262	1.128	0.669
Years of working in primary health services										
≤ 5	655	1.58	1.63	1.54	1.58	1.63	1.62	1.54	1.51	1.59
6–10	297	1.52	1.60	1.48	1.57	1.69	1.61	1.50	1.42	1.52
11–15	121	1.48	1.66	1.60	1.78	1.83	1.75	1.69	1.55	1.62

Table 1 (continued)

Demographic characteristics		Motivation factors								
	N	Remuner-ation and reward	Working arrangement	Interpersonal relationship	Environment	Promotion opportunities	Organization and culture	System and policy	Professional identity	Social identity
16–20	55	1.58	1.79	1.78	1.87	1.84	1.85	1.75	1.77	1.82
> 20	159	1.59	1.66	1.58	1.71	1.87	1.79	1.66	1.57	1.68
F		0.693	0.907	2.383*	3.853*	3.178*	2.509*	2.688*	2.745*	1.972
Working hours (per day)										
< 8	146	1.49	1.60	1.48	1.58	1.71	1.63	1.57	1.52	1.60
≥ 8	1141	1.57	1.64	1.56	1.63	1.61	1.66	1.51	1.52	1.57
t		1.148	0.568	1.186	0.694	1.334	0.384	0.131	1.856	1.475
Working days(per week)										
≤ 5	696	1.59	1.66	1.56	1.65	1.72	1.69	1.59	1.54	1.64
> 5	591	1.52	1.61	1.53	1.59	1.68	1.62	1.54	1.50	1.55
t		1.787	1.134	0.652	1.292	0.320	1.488	1.424	1.119	1.923
Type of personnel post allocation										
Utilities staffing	481	1.52	1.62	1.55	1.67	1.74	1.69	1.59	1.54	1.61
Appointment system	484	1.54	1.62	1.49	1.57	1.64	1.62	1.52	1.48	1.56
Temporary worker	248	1.62	1.65	1.59	1.61	1.69	1.63	1.58	1.55	1.61
Equal pay for equal work	74	1.70	1.19	1.77	1.72	1.89	1.80	1.70	1.61	1.70
F		1.905	1.233	3.604*	1.681	1.992	1.138	1.359	1.094	0.817

* $p < 0.05$

Table 2 Sociodemographic characteristics and occupational characteristics in relation to MSQ scores

Characteristics	Overall		MSQ scores					
			Total	*p*	Is	*p*	Es	*p*
	n	%	Mean (SD)		Mean (SD)		Mean(SD)	
Sociodemographic characteristics								
Gender								
Female	211		37.51(14.67)	0.922	21.89(8.49)	0.764	11.87(5.06)	0.882
Male	1076		37.62(15.08)		22.08(8.80)		11.81(5.17)	
Age group (year)								
≤ 25	214		34.70(15.43)	0.006**	20.61(9.05)	0.031*	10.74(5.06)	0.002**
26–34	454		37.05(15.45)		21.77(8.99)		11.59(5.33)	
35–44	338		39.24(15.20)		22.92(8.87)		12.42(5.28)	
45–54	243		38.81(13.47)		22.60(7.84)		12.27(4.66)	
≥ 55	38		38.24(12.60)		22.21(7.85)		12.29(4.21)	
Educational status								
High school or below	173		37.05(15.25)	0.199	21.80(8.79)	0.372	11.55(5.22)	0.116
Junior college	430		36.71(14.49)		21.64(8.56)		11.48(4.91)	
College and above	684		38.30(15.25)		22.37(8.52)		12.10(5.27)	
Monthly income(CNY)								
< 2000	127		38.61(17.98)	0.507	22.61(10.56)	0.551	12.31(6.18)	0.426
2000–3000	441		36.77(14.81)		21.58(8.57)		11.51(5.08)	
3001–4000	331		37.41(15.67)		22.03(9.24)		11.74(5.36)	
4001–5000	214		38.73(13.89)		22.72(8.02)		12.15(4.85)	
> 5000	174		37.97(13.07)		22.06(7.63)		11.97(4.39)	
Occupational Characteristics								
Administrative position								
Director	50		38.98(13.68)	0.682	22.20(7.63)	0.743	12.76(5.34)	0.504
Deputy director	40		35.38(16.66)		20.62(9.62)		11.22(5.78)	
Other managers	327		37.94(15.59)		22.24(9.10)		11.89(5.27)	
Not in administrative positions	870		37.50(14.79)		22.03(8.64)		11.77(5.06)	
Occupation								
General practitioner	193		40.08(13.27)	0.098	23.30(7.72)	0.101	12.69(4.64)	0.174
Public health physician	86		37.95(14.86)		22.20(8.74)		11.93(4.97)	
Nurse	492		36.48(15.15)		21.37(8.82)		11.47(5.23)	
Chinese Medicine	76		35.96(13.39)		20.90(7.57)		11.49(4.98)	
Pharmacist	71		37.57(16.71)		22.15(9.69)		11.78(5.62)	
Medical technology	306		37.67(15.39)		22.24(9.02)		11.78(5.24)	
Other	63		40.08(16.40)		23.70(9.76)		12.36(5.23)	
Work content								
Chronic disease management	341		37.46(15.37)	0.055	21.90(8.90)	0.033*	11.77(5.30)	0.080
Medical treatment	441		38.30(14.68)		22.46(8.52)		12.06(5.09)	
Maternal and Child Health	104		40.15(14.75)		23.62(9.01)		12.70(4.96)	
Recovery treatment	38		33.41(13.34)		19.21(7.33)		10.85(5.43)	
Health education	155		38.12(16.29)		22.50(9.53)		11.90(5.41)	
Planned immunization	197		35.24(14.28)		20.72(8.32)		10.97(4.78)	
Family planning	11		39.82(14.06)		23.36(8.55)		12.82(4.64)	
Title								
Senior title	37		37.24(11.07)	0.021*	21.51(6.52)	0.117	11.65(3.85)	0.003**
Vice-senior title	124		39.15(15.24)		22.62(8.85)		12.49(5.20)	
Middle title	280		39.76(15.06)		23.15(8.62)		12.64(5.40)	
Primary title	542		37.09(15.12)		21.76(8.92)		11.67(5.15)	

Table 2 (continued)

Characteristics	Overall		MSQ scores					
			Total	*p*	Is	*p*	Es	*p*
	n	%	Mean (SD)		Mean (SD)		Mean(SD)	
No title	304		35.94(14.87)		21.40(8.72)		11.09(4.92)	
Working years								
≤ 5	415		35.81(15.33)	0.032*	21.31(9.00)	0.222	11.02(5.03)	0.002**
6–10	289		37.53(15.13)		21.96(8.87)		11.85(5.32)	
11–15	157		38.62(15.25)		22.38(8.77)		12.44(5.41)	
16–20	98		38.76(16.90)		22.63(9.80)		12.14(5.81)	
> 20	328		39.10(13.57)		22.74(7.92)		12.41(4.69)	
Years of working in primary health services								
≤ 5	655		36.78(15.35)	0.010*	21.71(8.94)	0.018*	11.45(5.18)	0.012*
6–10	297		36.87(14.51)		21.58(8.52)		11.63(5.17)	
11–15	121		38.62(14.59)		22.18(8.41)		12.39(5.20)	
16–20	55		42.73(17.41)		25.29(10.35)		13.07(5.81)	
> 20	159		39.84(13.37)		23.13(7.80)		12.72(4.53)	
Working hours (per day)								
< 8	146		36.42(14.86)	0.310	21.68(8.71)	0.585	11.22(4.90)	0.132
≥ 8	1141		37.76(15.03)		22.10(8.76)		11.90(5.18)	
Working days (per week)								
≤ 5	696		37.86(14.69)	0.503	22.30(8.58)	0.284	11.80(4.98)	0.880
> 5	591		37.30(15.39)		21.77(8.95)		11.84(5.35)	
Type of personnel post allocation								
Utilities staffing	481		38.73(14.44)	0.003**	22.47(8.34)	0.008**	12.33(5.09)	0.002**
Appointment system	484		35.85(14.60)		21.17(8.63)		11.17(4.88)	
Temporary worker	248		37.73(15.71)		22.26(9.08)		11.80(5.48)	
Equal pay for equal work	74		41.32(17.55)		24.46(10.37)		12.81(5.60)	

MSQ minnesota satisfaction questionnaire, *IS* internal satisfaction, *ES* external satisfaction

* $p < 0.05$

** $p < 0.01$

Table 3 The correlation matrix displaying the relationship between motivating factors and job satisfaction

Motivating factors	Mean (SD)	MSQ scores		
	Total	Total	Is	Es
Remuneration and reward[a]	10.91 (5.26)	0.39**	0.41**	0.33**
Working arrangement[a]	11.44 (5.26)	0.53**	0.55**	0.46**
Interpersonal relationship[a]	9.29 (4.34)	0.54**	0.55**	0.47**
Environment[a]	8.16 (4.04)	0.48**	0.49**	0.43**
Promotion opportunities[a]	10.91 (5.26)	0.50**	0.50**	0.46**
Organization and culture[a]	4.98 (2.64)	0.55**	0.55**	0.51**
System and policy[a]	10.96 (5.66)	0.58**	0.58**	0.53**
Professional identity[a]	6.08 (2.97)	0.57**	0.59**	0.50**
Social identity[a]	6.38 (3.37)	0.53**	0.54**	0.47**

MSQ minnesota satisfaction questionnaire, *IS* internal satisfaction, *ES* external satisfaction

** $p < 0.001$

[a] The score for each motivator subscale was then calculated for each respondent by adding the values for each item of the motivator subscale

camaraderie that enhances overall job satisfaction within the community health setting.

Occupational identity, a key psychological concept, denotes an individual's positive self-assessment of their profession. Our findings align with existing literature suggesting that occupational recognition is closely tied to employees' subjective well-being and job stability, with a higher job satisfaction score indicating greater job stability [29]. Occupational recognition has statistical effects on overall, internal, and external satisfaction; the higher the job satisfaction score, the more stable the job. Professional identity is an intrinsic motivating factor for professional development [30]. Once professional identity falls into crisis, it will seriously affect the internal work motivation of employees, which will easily lead to the emergence of professional burnout phenomena such as a lack of professional ethics and passive sabotage [31, 32]. A survey in China revealed that the willingness of nurses to leave is at a high level [33], which may be related to the

Table 4 Multiple linear regression analysis of predictors of job satisfaction

Independent	MSQ scores								
	Total	SE	*p*	Is	SE	*p*	Es	SE	*p*
	B (95% CI)			B (95% CI)			B (95% CI)		
(Constant)	19.18(13.82-24.54)	2.73	<0.001**	10.21(7.49-12.93)	1.39	<0.001**	6.68(4.96-8.40)	0.88	<0.001**
Age group (year)	0.03(-0.10-0.16)	0.02	0.444	0.38(-0.25-1.02)	0.32	0.234	0.14(-0.26-0.54)	0.20	0.505
Title	-0.94(-1.77- -0.10)	0.43	0.028*	-0.40(-0.88-0.08)	0.24	0.107	-0.35(-0.65- -0.04)	0.16	0.025*
Working years	-0.26(-1.17-0.66)	0.47	0.581	-0.31(-0.81-0.19)	0.26	0.226	-0.06(-0.37-0.26)	0.16	0.729
Years of working in primary health services	0.39(-0.30-1.08)	0.35	0.271	0.25(-0.15-0.65)	0.20	0.224	0.09(-0.17-0.34)	0.13	0.507
Type of personnel post allocation	0.37(-0.44-1.18)	0.41	0.364	0.29(-0.18-0.75)	0.24	0.229	0.06(-0.23-0.36)	0.15	0.684
Remuneration and reward	-0.38(-0.57- -0.18)	0.10	<0.001**	-0.20(-0.31- -0.08)	0.06	<0.001**	-0.14(-0.21- -0.07)	0.04	<0.001**
Working arrangement	0.61(0.38-0.83)	0.11	<0.001**	0.39(0.27-0.52)	0.07	<0.001**	0.17(0.09-0.25)	0.04	<0.001**
Interpersonal relationship	0.38(0.08-0.68)	0.15	0.014*	0.26(0.09-0.44)	0.09	0.003*	0.08(-0.03-0.19)	0.06	0.154
Environment	-0.24(-0.56-0.07)	0.16	0.129	-0.16(-0.34-0.03)	0.09	0.092	-0.09(-0.20-0.03)	0.06	0.146
Promotion opportunities	-0.09(-0.35-0.17)	0.13	0.508	-0.90(-0.24-0.06)	0.08	0.239	0.02(-0.07-0.12)	0.05	0.661
Organization and culture	0.55(-0.09-1.19)	0.33	0.091	0.26(-0.10-0.63)	0.19	0.159	0.23(0.00-0.46)	0.12	0.051
System and policy	0.65(0.33-0.96)	0.16	<0.001**	0.34(0.16-0.52)	0.09	<0.001**	0.23(0.12-0.35)	0.06	<0.001**
Professional identity	1.17(-0.49-0.39)	0.26	<0.001**	0.76(0.47-1.05)	0.15	<0.001**	0.30(0.12-0.49)	0.09	<0.001**
Social identity	-0.05(0.66-1.67)	0.22	0.834	-0.02(-0.27-0.24)	0.13	0.894	-0.04(-0.20-0.12)	0.08	0.635

MSQ minnesota satisfaction questionnaire, *IS* internal satisfaction, *ES* external satisfaction

* $p < 0.05$

** $p < 0.001$

low professional identity of nurses [34]. When medical workers feel the sense of value and superiority brought by their profession, they are more likely to devote themselves to the work [35]; otherwise, they are likely to have negative emotions, such as complaints and dissatisfaction with their work, resulting in low turnover intention. Therefore, enhancing the professional identity and sense of belonging of CHWs can not only motivate them to improve their overall quality but also stabilize the team of community health workers, improving community health workers' satisfaction, and promoting the development of community health workers.

Medical and health service personnel possess not only economic motivations but also complex social and emotional needs. They are characterized by a high level of knowledge and a broad spectrum of needs, ranging from basic survival and safety requirements to higher-level emotional fulfillment. Our study's findings underscore the importance of addressing these higher-level needs to bolster the work enthusiasm of CHWs. Satisfying their sense of work pride, identity, and belonging to the hospital is crucial for enhancing job satisfaction. The study's work arrangement component, which encompasses job value, a sense of achievement, and the fit between job and personal values, directly correlates with higher job satisfaction scores. This correlation suggests that when these aspects of work arrangement are positively perceived, they significantly contribute to the overall job satisfaction of CHWs.

The work at community health service centers is inherently complex and often accompanied by significant pressure. Personnel in different positions have many responsibilities that are not clearly defined, and the work content is overlapped. Coupled with the lack of community equipment and limited personnel, if the work arrangement cannot be matched with the personnel, community health workers will be forced to bear relatively high risk pressure [36], which will reduce the sense of work achievement and satisfaction. On the other hand, training can improve community health workers' work skills and proficiency, improve work efficiency, enhance competitiveness, and enable primary medical institutions to give full play to their human resource advantages [37]. A study demonstrated that there are few training opportunities for personnel in primary medical institutions, and only a few people have received training [37, 38]. Furthermore, there is a notable discrepancy between the training provided and the actual needs of the staff, often focusing on theoretical aspects with limited practical application. This mismatch results in low satisfaction with the training received, which in turn impacts overall job satisfaction [39].

External factors that affect job satisfaction

Our study identified professional title, work arrangements, systems and policies, and professional identity as critical factors influencing the external job satisfaction of CHWs. The absence of an effective professional promotion system is a prevalent source of dissatisfaction among urban CHWs in China. Our findings echo Zhang's research, which highlighted variations in job satisfaction based on professional titles, with those holding junior titles reporting the lowest satisfaction levels [40, 41]. Under the current talent evaluation system, community health workers with advanced titles tend to enjoy higher salaries and greater access to organizational resources, information, and power, leading to increased job satisfaction. Conversely, those with lower titles often face limited access to resources, resulting in lower pay, higher stress, a sense of organizational injustice, and consequently, lower job satisfaction.

While the new medical reform has indeed led to an increase in funding and policy support for primary medical institutions, the job satisfaction of CHWs remains largely at the level of safety needs, which is considered a basic tier of satisfaction [42]. This stagnation is attributed to the local government's control over CHWs' salaries and the strict limitations on performance pay distribution, leaving little room for salary increases [43]. The heavy workload and stagnant income lead to CHWs imbalance between work pay and return, resulting in negative work emotions, reducing professional identity and work input, thus showing a tendency to be dissatisfied with the work [44]. On the other hand, there is a "halo effect" when employees think the reward is balanced. Employees believe that their interests are guaranteed, thus enhancing the harmonious organizational atmosphere, enhancing the trust and cohesion between employees, and is conducive to improving the satisfaction of the job [45].

Overall factors that affect job satisfaction

Overall job satisfaction among CHWs is a complex construct influenced by a multitude of factors. Our study delved into motivational factors associated with demographic characteristics and job satisfaction levels, employing logistic regression analysis to pinpoint key predictors of job satisfaction. The research revealed that CHWs consider job title, work arrangements, occupational identity, interpersonal relationships, and institutional policies as significant positive determinants of their overall job satisfaction.

While over 90% of CHWs expressed satisfaction with their working environment and conditions, and a high level of satisfaction with the foundational aspects of their work, less than 20% were satisfied with opportunities for professional title promotion and skill training. This discrepancy highlights a growing emphasis among medical staff, particularly young doctors, on personal development, professional training, and career advancement opportunities. It suggests that, along with economic incentives, enhancing these non-economic aspects is crucial for boosting the enthusiasm and job satisfaction of medical staff [46].

Moreover, reducing the workload, bolstering professional identity, fostering positive interpersonal relationships, and reforming institutional policies are identified as essential non-economic strategies to improve the enthusiasm and job satisfaction of CHWs [47]. It is therefore imperative for healthcare managers, especially in low-resource settings, to focus on these areas to enhance the overall job satisfaction of community health workers.

Limitations

The current study has some limitations. First, the MSQ scale mainly relies on the subjective evaluation of the subjects to assess job satisfaction. This may lead to the assessment results being affected by factors such as the personal emotions and attitudes of the participants, thus reducing the objectivity and accuracy of the assessment results. This study combined the MSQ scale with other assessment methods (e. g., interview, observation, etc.) to obtain a more comprehensive and objective assessment results. This helps to remedy the limitations of a single assessment method and improve the accuracy and validity of the assessment results. Secondly, due to the time and economic costs, this study used a cross-sectional study and did not conduct a follow-up investigation of community health workers, which should be the focus of future studies. Third, due to limited resources, we conducted a stratified sampling survey in Heilongjiang Province, China, which should be further expanded in future studies.

Conclusion

Research shows that community health workers identified job title, work arrangement, occupational identity, interpersonal relationships, and overall institutional policies as positive determinants of overall job satisfaction. Health managers should pay attention to the job satisfaction status of community health workers. First of all, appropriately reduce the intensity of community health workers work, actively promote the information integration of primary medical and health services, so that community health workers from the complex document work, second, improve the status of community health workers, strengthen professional identity. Strengthen the public recognition of

community health workers, maintain its legitimate rights and interests, protect its good reputation from public opinion, guarantee its welfare treatment from policy, and stimulate community health workers professional identity; As community health workers, we should continue to improve the internal construction of our professional role, strengthen the basic medical feelings, temper skills, enhance ability, and constantly deepen our professional identity. Third, provide more training and development opportunities for community health workers to help them improve their professional skills and knowledge and improve their job satisfaction. Fourth, establish a harmonious interpersonal relationship, reduce the contradictions caused by poor communication, improve their professional identity and sense of belonging, so as to improve job satisfaction and promote the development of primary health service center. Finally, accelerate the reform of relevant policies, and improve the fair distribution and incentive system. The government should formulate personnel promotion policies in line with the characteristics of primary health institutions, establish a fair and transparent promotion mechanism, ensure that community health workers have sufficient opportunities and conditions to improve their professional status, give full play to the incentive role, mobilize community health workers work enthusiasm, and improve their job satisfaction.

Abbreviations

CHCs	Community health centers
HRs	Human resources
HNEP	Empowerment program
CHWs	Community health workers
JDI	Job description index
MSQ	Minnesota Satisfaction Questionnaire
SD	Standard deviations
ANOVA	Analysis of Variance

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Authors' contributions
Y.X., M.Z., D.L., M.F., B.H., and L.S. designed the study and participated in implementation, data collection, data analysis, and writing of the manuscript. D.L., H.W., W.Z., P.C., Y.L., M.F., B.H., and L.S. contributed to the study design and critically reviewed the manuscript. All authors reviewed the manuscript.

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Data availability
The data used to support the findings of this study are available from the corresponding author upon request.

Declarations

Ethics approval and consent to participate
All study procedures were approved by the Ethics Committee of the Southern Medical University (approval number 202132) in accordance with the Declaration of Helsinki. All participants were informed of the purpose of this study and provided signed informed consent.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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