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Implicit Competency And Its Relationship With Post Competency And Job Burnout Among General Practitioners In Primary Healthcare In Chongqing: Analysis Using Structural Equation Modelling

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Abstract

The National Health Commission emphasises the pivotal role of general practitioners in primary medical care and importance of training their competencies to enhance the quality of primary medical services and alleviate job burnout. Most current research focuses on post competency, whereas implicit competency and the correlations between implicit competency, post competency, and job burnout have not received sufficient attention. This study investigated implicit competency among grassroots general practitioners in Chongqing, China, and explored the relationship between implicit competency, post competency, and job burnout. This study aimed to provide a reference for the competency training of general practitioners. A questionnaire survey was conducted with 473 general practitioners in primary medical and healthcare institutions in Chongqing from January 2024 to February 2024, with participants selected using convenience sampling. Implicit competency, post competency, and job burnout scales were used. A structural equation model was used to analyse the relationships between implicit competency, job competency, and job burnout. The results indicated that only overall implicit competency was barely good (mean score = 4.08). Significant differences were observed in implicit competency scores by age, years of work, education, title, marital status, and workplace ($P < 0.05$). Significant correlations were found among the dimensions of implicit competency, post competency, and job burnout. Implicit competency and post competency were positively correlated ($P < 0.05$). Implicit competency had a significant negative effect on the emotional exhaustion and depersonalisation dimensions of job burnout ($P < 0.05$). Post competency had a significant positive effect on the personal achievement dimension of job burnout ($P < 0.05$). The implicit competency of grassroots general practitioners in Chongqing is inadequate. Implicit competency and post competency were positively correlated and had a negative impact on job burnout. It is crucial to enhance the implicit and post competence of general practitioners, as well as to reduce job burnout at the levels of general practitioners, medical institutions, and national policies for the construction of a general practitioner team and the implementation of a hierarchical diagnosis and treatment system.

Keywords: China, grassroots general practitioners, implicit competency, job burnout, personal achievement, post competency

1. Background

The National Health Commission of China recently proposed creating primary medical and healthcare teams, focusing on general practitioners, to utilise family physicians as health gatekeepers [1]. Furthermore, the government continues to promote the establishment of a hierarchical diagnosis and treatment system. As general practitioners' comprehensive service ability directly affects the level of primary medical and healthcare services, their training and competencies must be enhanced.

The concept of competency was introduced by McClellan [2], referring to the amalgamation of superficial and deep-level comprehensive abilities linked to job performance and including post and implicit competencies. Post competency encompasses knowledge, skills, and behaviour, whereas implicit competency extends to deeper factors, such as traits, values, self-concept, and motivation.

Post competency focuses on an individual's current practice ability, whereas implicit competency has a more far-reaching and lasting impact on long-term behavioural orientation [3]. Implicit competency is particularly important for general practitioners, as they interact with the community, establish close ties with residents, and provide continuing long-term care. Therefore, cultivating and improving the implicit competency of general practitioners is crucial to ensure the continuity and quality of primary medical services.

Many developed countries have rigorously researched the post competency of general practitioners and constructed mature post competency models suitable for their countries. However, most research on general practitioners' competency emphasises the improvement of external medical knowledge and skills and overlooks the importance of the implicit quality [4]. China's general medicine was brought into mainstream practice later than that in developed countries, and a complete and unified competency evaluation system has not yet been developed. In addition, previous studies have focused on the post competency of general practitioners, and research on implicit competency is limited [5]. The existing research also indicates a negative correlation between competency and job burnout [6, 7]. Improving general practitioners' competency could reduce job burnout, which is crucial for maintaining the stability of primary medical teams and improving the quality of primary medical services. This is particularly important, considering the widespread and severe job burnout among primary general practitioners in China. Studies have demonstrated that the rate of job burnout among grassroots general practitioners in China is 43.22–96.47%, and the proportion of moderate and severe burnout is relatively high [8]. Job burnout not only affects the service quality of general practitioners but may also lead to serious adverse consequences, such as absenteeism, turnover, and even physical and mental illness [9]. Job burnout also hinders health productivity, with damage to health productivity among those with high job burnout being 12.61 times higher than that among people without job burnout [10]. Therefore, improving the competency of general practitioners, particularly implicit competency, could help reduce the burnout of grassroots medical and healthcare personnel.

Therefore, this study investigated the implicit competency among grassroots general practitioners in Chongqing, China, and explored its relationship with post competency and job burnout. This study aimed to provide a reference for the competency training of general practitioners.

2. Methods

2.1 Study Objective

A cross-sectional survey was conducted at primary medical and healthcare centres in Chongqing from January to February 2024. The participants were selected using convenience sampling. The inclusion criteria were being a general practitioner with over one year of experience working in a primary medical and healthcare institution in Chongqing. The exclusion criteria were clinicians, nursing, laboratory, and other technical personnel who were not general practitioners in Chongqing medical and health institutions. After obtaining informed consent, a link to the questionnaire was provided to the participants in a WeChat group. A total of 538 questionnaires were received, with 473 valid questionnaires obtained after eliminating data with significant missing information or logical errors.

2.2 Ethical Considerations

This study was approved by the Institutional Ethical Review Board of the First Affiliated Hospital of Chongqing Medical University (approval number K2024-012-01). Informed consent was obtained online through the survey platform. Only participants who provided consent were allowed to proceed to the questionnaire.

2.3 Measures

We conducted a questionnaire survey to examine implicit competency, post competency, job burnout, and general demographics, such as gender, age, education, years of work, job title, marital status, and workplace, of the participants.

Implicit competency was assessed based on the scale developed by Ma and Wang [11]. This scale comprises 14 items in four dimensions: work motivation, self-efficacy, medical humanistic care, and medical professionalism. Responses are rated on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree). Scores of items are averaged to obtain dimension scores, and the total score is obtained by averaging the dimension scores. Higher scores indicate higher implicit competency (> 4.50 = excellent, 4.00–4.50 = good, 3.50–4.00 = average, 3.00–3.50 = acceptable, and < 3.00 = poor). The Cronbach's α value of this scale was 0.851 in the original study [11], indicating strong internal reliability.

Post competency was assessed using the scale developed by Ma and Zhang [12]. The scale comprises 19 questions in four dimensions: general service, humanistic practice, team cooperation, and learning and development abilities. Responses are rated on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree). Scores of items are

averaged to obtain dimension scores, and the total score is obtained by averaging the dimension scores. Higher scores indicate higher post competency. This scale was designed for primary healthcare practitioners practicing as family physicians. The Cronbach's α value of this scale was 0.929 in the original study [12], indicating strong internal reliability.

Job burnout was assessed using the Markov Job Burnout Scale-Human Service Survey (MBI-HSS), which was translated and revised by Li [13]. This scale comprises 22 items in three dimensions: emotional exhaustion (nine items), depersonalisation (five items), and personal achievement (eight items). Responses are rated on a five-point Likert scale (0 = strongly disagree; 4 = strongly agree). Scores for emotional exhaustion range from 0 to 36, for depersonalisation from 0 to 20, and for personal achievement from 0 to 32. Higher scores on emotional exhaustion and depersonalisation indicate more severe job burnout; conversely, higher scores on personal accomplishment indicate weaker job burnout and stronger resilience. The Cronbach's α value for this scale was 0.865 in the original study [14], indicating strong internal reliability. Based on a linear transformation of existing studies and Likert scales of different magnitudes [15], emotional exhaustion < 12.6 was defined as low burnout, 12.6–17.3 as moderate burnout, and > 17.3 as high burnout; depersonalisation < 4.0 was defined as low burnout, 4.0–6.0 as moderate burnout, and > 6.0 as high burnout; and personal achievement > 26.0 was defined as low burnout, 22.6–26.0 as moderate burnout, and < 22.6 as high burnout.

2.4 Statistical Analysis

Statistical analyses were conducted using SPSS 27.0. Qualitative data was presented as percentages, whereas quantitative data was expressed as mean ± standard deviation (X±S). Independent sample t-tests and one-way analysis of variance were used to compare implicit competency scores based on demographic characteristics. Pearson correlation was used to examine the relationships between implicit competency, post competency, and job burnout. Structural equation models for implicit competency, post competency, and job burnout were constructed using AMOS 28.0, with fitting effects and path analyses performed accordingly. All tests were two-tailed, with the significance level set at $P < 0.05$.

3. Results

3.1 Demographic Information of the Respondents

As shown in Table 1, more than half of the participants were women (56.7%), most were aged 30–49 years (68.7%), 86.3% were married, most had a bachelor's degree or above (86.7%), and few had senior professional titles (22.9%). Significant differences were observed in the scores of implicit competency by age, years of work, education, title, marital status, and workplace ($P < 0.05$). As shown in Figure 1, the overall level of implicit competency was good (average score = 4.08). A significant gap was present between the excellent level and scores recorded for work motivation (3.68) and self-efficacy (3.82), both of which were average. As shown in Figure 2, the overall post competency (average score = 4.25) and its dimensions (average scores > 4.0) were good; however, they did not reach the excellent level. As shown in Figure 3, the average total scores of emotional exhaustion, depersonalisation, and personal sense of accomplishment were 16.90, 5.46, and 23.01, respectively, indicating a medium-high level of burnout.

Table 1. Implicit competency scores based on demographic characteristics.

Variables	n	n%	Implicit competency score	F/t	P
sex				1.385	0.167
man	205	43.3	4.13±0.67		
woman	268	56.7	4.05±0.61		
Age(years)				17.272	0.001
≤29	90	19.0	3.90±0.54		
30~	175	37.0	3.91±0.71		
40~	150	31.7	4.27±0.52		
≥50	58	12.3	4.40±0.56		
Work tenure (years)				20.556	0.001
≤5	84	17.8	3.90±0.63		
6~	125	26.4	3.83±0.63		
11~	73	15.4	4.09±0.68		
≥16	191	40.4	4.33±0.54		
Professional title				12.264	0.001
Elementary or below	116	24.5	4.18±0.57		

Intermediate	249	52.6	3.94±0.68		
Sub-senior	93	19.7	4.27±0.49		
Senior	15	3.2	4.65±0.41		
Educational level				5.162	0.002
secondary	7	1.5	4.37±0.53		
college	56	11.8	4.35±0.48		
Bachelor	404	85.4	4.04±0.65		
Master or above	6	1.3	4.46±0.80		
Marital status				-3.599	0.001
Unmarried	65	13.7	3.80±0.60		
Married	408	86.3	4.13±0.63		
Practice setting				2.644	0.049
Community health center	195	41.2	4.16±0.59		
Township health center	253	53.5	4.02±0.67		
Village clinic	1	0.2	5.00		
others	24	5.1	4.15±0.65		

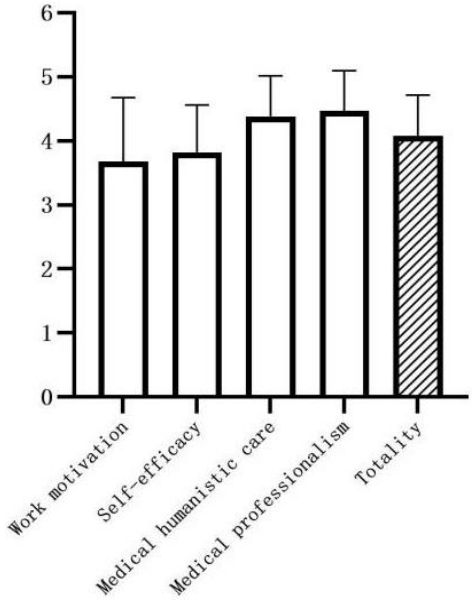

Figure 1. Totality and dimensions of implicit competency

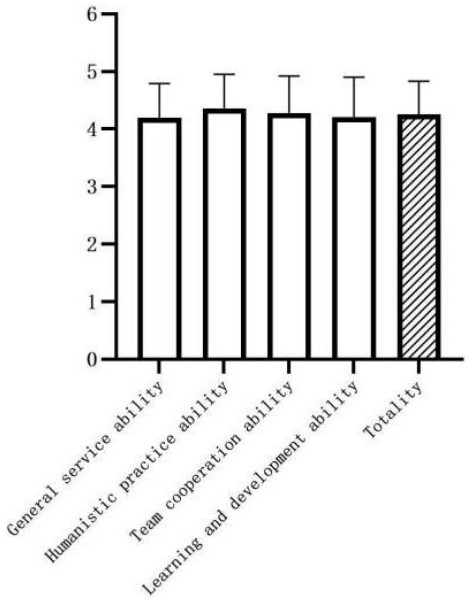

Figure 2. Totality and dimensions of post competency

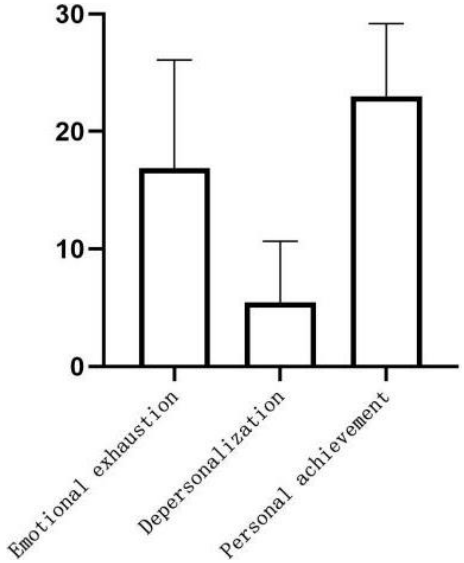

Figure 3. Dimensions of job burnout

Men had higher average total scores for implicit competency and its dimensions than women. Moreover, implicit competency scores increased with age. The average total implicit competency scores among participants < 40 years of age were relatively low, whereas those among participants > 40 years of age, particularly those aged > 50 years, were significantly higher. Participants with senior professional titles had higher average total scores of implicit competency than those with junior and intermediate professional titles. Participants with bachelor's degrees had lower average total implicit competency scores than those with secondary school, college, or master's degrees. Participants working in community healthcare centres had higher implicit competency scores than those working in township hospitals. Finally, married participants had significantly higher implicit competency scores than unmarried ones.

3.2 Reliability and Validity Analysis

The reliability of each scale was assessed, and the results are presented in Table 2. All dimensions exhibited high reliability and good internal consistency. As shown in Table 3, the KMO values for all three scales exceed 0.9, and the significance probability (P) from Bartlett's sphericity test was less than 0.001. This indicating that factor analyses could be conducted and a structural equation model could be utilised [16].

Table 2. Reliability analysis results of the scale for implicit competency, job competency, and job burnout.

scale	Cronbach's α	terms
Implicit competency	0.932	14
Post competency	0.964	19
Job burnout	0.886	22

Note: Cronbach's α > 0.7 indicates good reliability.

Table 3. Validity analysis results of the scale for implicit competency, job competency, and job burnout

		Implicit competency	Post competency	Job burnout
KMO		0.926	0.950	0.916
Bartlett's sphericity test	X^2	6156.725	8691.704	9340.755
	DF	91	171	231
	P	0.000	0.000	0.000

Note: KMO > 0.6 and P < 0.05 indicate good validity.

3.3 Correlation Analysis

As shown in Table 4, an exploratory analysis using Pearson correlation was conducted to examine the relationships between implicit competency, post competency, and job burnout. The results revealed significant correlations among all variables at the 99% significance level. Positive correlations were observed between implicit competency, post competency, and the personal accomplishment dimension of job burnout. Furthermore, a significant negative correlation was found between emotional exhaustion and the depersonalisation dimension of job burnout (P < 0.01).

Table 4. Correlation analysis results for implicit competency, post competency, and dimensions of job burnout

	implicit competence	post competence	EE	DP	PA
implicit competence	1				
post competence	.776**	1			
EE	-.358**	-.246**	1		
DP	-.304**	-.226**	.677**	1	
PA	.561**	.546**	-.201**	-.121**	1

Note: ** P < 0.01. EE=Emotional exhaustion, DP=Depersonalization, PA=Personal achievement.

3.4 Structural Equation Model

3.4.1 Hypothesis

Based on a review of the relevant literature and theoretical analysis [17-21], we hypothesised that an interaction would be observed between implicit competency, post competency, and job burnout. We proposed the following hypotheses:

H1: Implicit competency and post competency interact.
H2: Implicit competency negatively affects job burnout.
H3: Post competency negatively affects job burnout.
H4: Among the dimensions of job burnout, emotional exhaustion positively affects depersonalisation.

3.4.2 Structural Equation Construction

A structural equation model was constructed to test the research hypotheses, with implicit competency as the underlying variable, post competency as the underlying variable, and job burnout as the outcome variable. The initial model was analysed using the maximum likelihood method and modified by adjusting the indices. Three non-significant paths (post competency → emotional exhaustion, post competency → depersonalisation, implicit competency → personal achievement) were removed. The final structural equation image is shown in Figure 4.

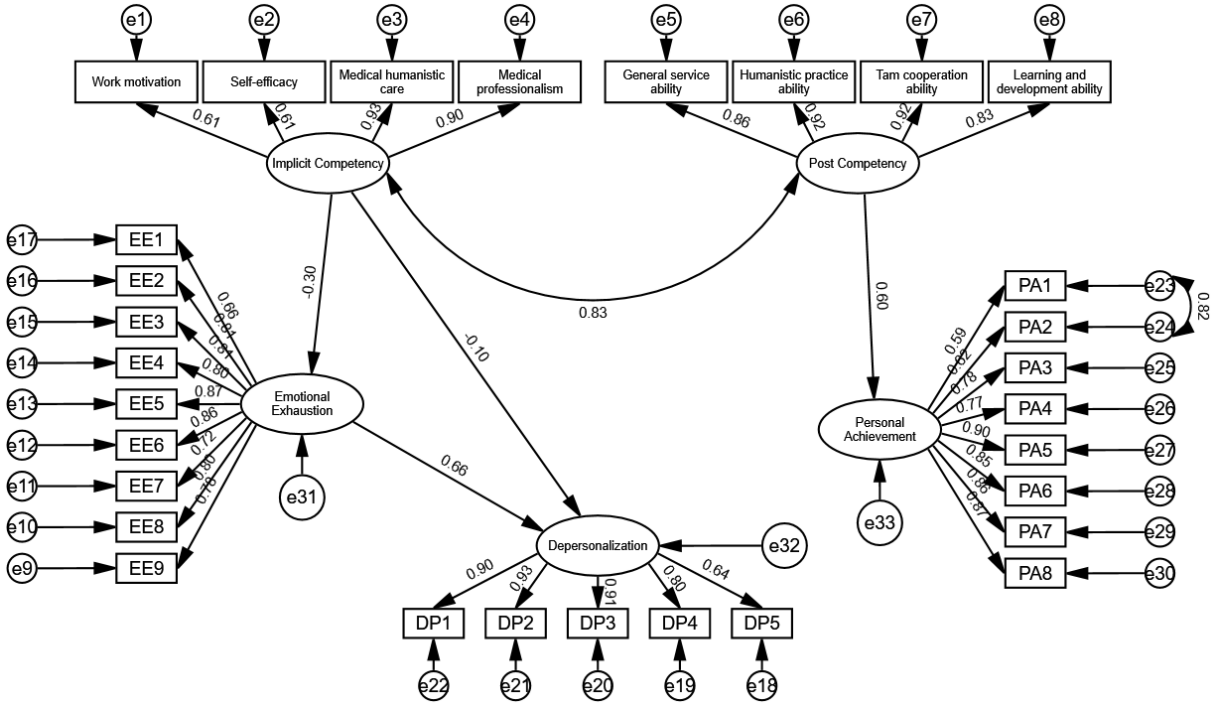

Figure 4. The structural equation model of implicit competency, post competency and job burnout of general practitioners. Notes: EE=Emotional exhaustion, DP=Depersonalization, PA=Personal achievement

3.4.3 Model Estimation and Testing

The AMOS28.0 statistical analysis software was used to estimate and test the structural equation model. NFI and TLI exceeded 0.85, and IFI and CFI were close to 0.9 (Table 5), indicating a good model fit. Moreover, path standardisation coefficients and test indicated a good model fit, with C.R. ≥ 1.96 and P < 0.05 (Table 6).

Table 5. Structural equation model fitting indicators

index	CMIN/DF	RMSEA	NFI	TLI	IFI	CFI
Standard	＜5	＜0.1	＞0.8	＞0.8	＞0.8	＞0.8
Result	4.886	0.091	0.855	0.870	0.881	0.881

Table 6. Structural equation model path coefficient test

path			Standardized path coefficient	S.E.	C.R.	P
Implicit competency	<-->	Post competency	0.826	0.026	10.001	**
Emotional exhaustion	<---	Implicit competency	-0.304	0.083	-5.876	**

Personal achievement	<---	Post competency	0.596	0.063	10.323	**
Depersonalization	<---	Implicit competency	-0.1	0.053	-2.507	0.012
Depersonalization	<---	Emotional exhaustion	0.657	0.049	11.267	**

Note：** P＜0.01

The results of the structural equation model path analysis revealed a significant positive relationship ($P < 0.05$) between implicit and post competencies. Implicit competency had a significant negative impact on emotional exhaustion and depersonalisation ($P < 0.05$), whereas emotional exhaustion had a significant positive effect on depersonalisation ($P < 0.05$). Post competency had a significant positive influence on the personal achievement dimension of job burnout ($P < 0.05$). These results supported hypotheses H1–H4. Furthermore, the indirect effect of general practitioners' implicit competency on depersonalisation through emotional exhaustion was greater than the direct effect, indicating that emotional exhaustion mediated the relationship between implicit competency and depersonalisation.

4. Discussion

4.1 Insufficient Implicit Competency among General Practitioners

The overall level of general practitioners' implicit competency was good but far from excellent. Moreover, the dimensions of work motivation and self-efficacy were at an average level, which was in line with the results presented by Ma [11]. Several potential reasons for this exist.

4.1.1 Physician Perspective

The current salary incentive mechanism is flawed, resulting in a lack of professional appeal and high turnover among general practitioners [22]. Grassroots general practitioners are required to support their families while balancing their duties to both their families and patients. This is particularly challenging for married individuals, due to the pressure caused by the low income [23]. Research indicates that general practitioners in economically developed areas of eastern China receive higher salaries, experience greater job satisfaction, and have lower turnover intentions [24]. The current competency model places a strong emphasis on the professional ethics and dedication of general practitioners; however, the salary package does not align with these requirements. This may lead to decreased motivation at work and a lack of intrinsic competency among general practitioners.

General practitioners carry heavy workloads and experience high-intensity physical and mental demands at work, which can result in emotional exhaustion and mental pressure [14]. According to the 2021 Statistical Yearbook [25], the number of visits to primary medical and healthcare institutions in China increased from an average of one visit per person per year in 2010 to 1.5 visits in 2020. Combined with the strained doctor–patient relationships and high-risk medical environment, the work burden on general practitioners in primary healthcare intensified significantly. Prolonged high-intensity work provides little opportunity for rest, recovery, and adjustment [9], leading general practitioners to experience extreme fatigue, lack of intrinsic work motivation, and decreased implicit competency.

General practitioners have deficiencies in abilities and knowledge of general practice. Previous studies have shown that most of China's current general practitioners are specialists who obtain general professional qualifications after transferring [26-27]. Chongqing has 7,192 registered general practitioners, but only 3,678 of them have received standardised training and are qualified as general practitioners [28]. Consequently, most general practitioners lack the expertise and knowledge of theory, practice, policy adjustments, and global developments in the field of general medicine. Many general practitioners do not clearly define their roles or understand the responsibilities and significance of their work, leading to a lack of motivation, low self-efficacy, and implicit competency.

4.1.2 Medical Institution Perspective

Manager leadership in primary medical institutions is inadequate, and the development of general practice is insufficient. Managers in primary medical institutions play an important role in promoting the development of general practice and community health. However, a survey conducted in Gansu, China, found that over half of general practitioners believed that their institutions did not prioritise the establishment, training, and development of general practice [23]. With the advancement of national medical and healthcare reforms, primary medical institutions must enhance the capacity of community healthcare services and promote disciplinary development

for sustainable high-quality growth. This places high demands on managers in primary medical institutions [29]. A previous study demonstrated that managers in primary medical institutions in China lack leadership skills, particularly forward-thinking abilities [30]. A management team with forward-thinking abilities needs to have a broad perspective concept, be able to clarify the direction and path for community healthcare service development, and lead the team towards scientific research innovation while developing new technologies and businesses. A strong vision for development can mobilise team members' work motivation and stimulate their enthusiasm to enhance implicit competency among general practitioners.

Educators for general practice are weak. The current medical education in China has several problems, such as one-sided teaching of general courses, short-term rural internships, and failure of teachers to become good role models, which may lead to student dissatisfaction with the general practitioner profession [24]. Teachers are generally designated by continuing medical education centres in colleges and universities, and some lack a general philosophy or do not receive general training [31]. In addition, general practitioners tend to converge with specialised practitioners when rotating in clinical bases and accept the disease-centred knowledge system taught by specialised medical teachers, which hinders cultivating their comprehensive and systematic thinking of general practice diagnosis and treatment [32].

4.1.3 National Policy Perspective

Currently, hierarchical diagnosis and treatment systems have not been fully implemented or improved, leading to an imbalance in medical and healthcare resources. Residents lack awareness of and trust in primary medical and healthcare institutions and general practitioners, resulting in low self-efficacy, professional identity, and implicit competency of general practitioners [33].

4.2 Implicit Competency and Demographic Characteristics

This study found that women had lower implicit competency than men, which was in line with the findings of Cheng in Chongqing [34]. In traditional Chinese culture, women are expected to accept more family responsibilities and may have less physical strength and energy to cope with work pressure [24]. In contrast, male general practitioners may be better able to fully engage in their work. Consequently, female general practitioners may experience time and energy deficits, leading to lower levels of work commitment and motivation.

The implicit competency of general practitioners increased with age. This could be due to the relatively low salary level, heavy workloads, and lack of clinical knowledge and experience of young general practitioners, which can create difficulties in their work. In addition, physicians in this age group face pressure to establish families and raise children. Balancing a demanding medical workload with personal life can be challenging for young physicians. As they grow older, especially after the age of 40 years, general practitioners tend to have more stable family lives and independent children who do not require as much attention. At this stage, general practitioners have accumulated significant clinical experience, medical expertise, and doctor-patient communication skills, improving their job proficiency. Their salaries gradually increase as they become key members in their departments and hospitals. They develop a stable career mindset and are more willing to assist others. Their motivation comes from within, which leads to higher implicit competency [11].

In our study, participants with bachelor's degrees had the lowest level of implicit competency. The Ministry of Education in China is continuously reforming the content and format of secondary education entrance examinations and expanding undergraduate enrolment in vocational college entrance examinations [35]. The scale of entrance exams has intensified along with the competition for college entrance [36]. A degree is crucial for physicians in today's job market. This has led to a significant increase in the number of general practitioners in primary healthcare pursuing academic advancement through college upgrades and adult college entrance examinations. This trend may also explain the high number of undergraduate degree holders in this study. However, after completing several years of education, most medical students have high expectations regarding salaries and aspire to work in large hospitals with good career prospects [37]. Working in primary healthcare facilities can lead to psychological dissonance due to disparities in the expected work environment, treatment methods, and content [38], which reduces job satisfaction and motivation and impacts implicit competency.

General practitioners with senior titles had higher implicit competency than those with junior and intermediate titles. Professional titles serve as a crucial indicator for assessing the professional ability and comprehensive quality of general practitioners [33]. As the professional title of general practitioners advances, their social status gradually improves, leading to an enhanced sense of professional identity [31]. This enables them to derive more positive emotions from their work and enhance their implicit competency.

The implicit competency of married general practitioners was significantly higher than that of unmarried ones. This may be attributed to the fact that married general practitioners have a support system comprising their partners and families [39], enabling them to effectively cope with challenging situations and return to work with renewed enthusiasm and stronger implicit competency.

The implicit competency of general practitioners working in community health service centres was higher than that of those working in township hospitals. In recent years, the growth in the volume of medical services provided at community healthcare service centres has significantly exceeded that of other primary medical institutions [25]. Furthermore, the educational attainment of general practitioners in community health service centres is higher than that of those in other primary medical institutions [40]. Compared to community healthcare centres, township healthcare centres and village clinics face challenges, such as inadequate workforce and imperfect allocation of medical equipment [40]. Conversely, community healthcare centres have more advanced facilities and equipment, as well as personnel with generally higher qualifications [40]. Consequently, the provision of medical services in community healthcare centres has increased annually, and general practitioners in these centres exhibit a stronger sense of self-worth and intrinsic work motivation, resulting in higher implicit competency scores.

4.3 Relationships between Implicit Competency, Post Competency, and Job Burnout

4.3.1 Implicit and Post Competencies

General practitioners with strong implicit competency demonstrate high levels of activity at work, possess resilience to pressure, exhibit adaptability and self-regulation abilities, and can effectively fulfil their responsibilities, thereby enhancing their post competency. Those with strong post competency display elevated clinical skills and professional knowledge, enabling them to handle complex clinical tasks with composure. This boosts their self-confidence and self-efficacy, ultimately leading to increased implicit competency.

4.3.2 Implicit Competency, Emotional Exhaustion, and the Depersonalisation Dimension of Job Burnout

General practitioners with strong implicit competency are likely to sustain their passion and motivation for work, demonstrate greater adaptability and resilience in the face of challenges, and possess confidence and belief in their ability to accomplish specific tasks. Moreover, they are less prone to experiencing emotional exhaustion and depersonalisation. Implicit competency had a significant negative impact on both emotional exhaustion and depersonalisation, whereas emotional exhaustion had a significant positive influence on depersonalisation. Therefore, emotional exhaustion partially mediated the relationship between implicit competency and depersonalisation.

4.3.3 Post Competency and the Personal Achievement Dimension of Job Burnout

General practitioners with a high level of post competency demonstrate superior performance in their professional duties, garner greater patient satisfaction, and are likely to receive positive feedback from patients and colleagues. Furthermore, they experience heightened feelings of personal value and achievement, increased job fulfilment, and reduced burnout [41].

4.4 Suggestions for Improving Implicit Competency

4.4.1 Physician Perspective

Establishing the concept of lifelong learning and continuing education are crucial for physicians to be highly competent and attract residents and patients to use general practice services. Patients do not merely choose hospitals with many physicians but rather based on trust that physicians can alleviate their pain and treat their diseases. Considering the rapid development of medical knowledge, the ability to learn independently is essential for physicians, reflecting a person's lifelong learning and problem-solving abilities [27]. Unlike specialists, general practitioners manage a variety of diseases that involve multiple systems in clinical practice; therefore, they must constantly update their knowledge and skills through ongoing learning. Moreover, strengthening their understanding of theory, practice, and policy adjustments in general practice can enhance their professional confidence and identity. This emphasises the importance of continuing education for physicians to develop their expertise and provide quality care to patients.

4.4.2 Medical Institution Perspective

Medical institutions should reduce the workload of general practitioners. High workloads and lack of leave for research are the main barriers to general practitioners' access to further education [42]. Most general practitioners hope to improve their professional abilities through continuing education [43]. Therefore, hospital managers should consider how to scientifically and effectively reduce the work burden, optimise workflows, and reduce the burden of non-clinical work among general practitioners to improve their work efficiency and satisfaction . This

could be achieved by adopting a team approach; hiring other professionals, such as case managers; and using electronic health records [44].

Furthermore, the continuing education of general practitioners should be promoted. Medical institutions should focus on the personal development of general practitioners and provide them with comprehensive re-education opportunities, such as regular online and offline continuing education, out-of-home training, degree study, exchange, and further study, to continuously improve their knowledge and technological skills and enhance their competencies [14].

In addition, the quality of teaching staff should be improved. Teacher strength is an important factor affecting the development of general practice and is required for training high-quality general practitioners [45]. General hospitals are standardised training bases for residents and play a key role in increasing the number and quality of general practitioners. General practice is vital in general hospitals and is essential for strengthening the grassroots and promoting development [26]. Therefore, the department of general practice in general hospitals should strive to provide training to general practice teachers and senior physicians, follow the laws of medical education and growth of general practitioners, formulate standardised and individualised training plans, and improve education management and quality assurance systems [26]. This could help enhance general practitioners' competencies

Managers of primary medical institutions should engage in self-improvement. They need to continuously improve their forward-thinking and strategic management abilities to adapt to the continuous changes in the market environment and competitive pressures. This would allow them to better serve patients and general practitioners and achieve sustainable development of the organisation [29]. In addition to professional knowledge and skills, managers should acquire relevant management knowledge, improve their management abilities, and promote the development of general practice in primary medical institutions [29].

4.4.3 National Policy Perspective

Effective long-term incentives should be established. Appropriate rewards are associated with the enhancement and shaping of behaviours, whereas inadequate recognition and rewards devalue people and are associated with low self-energy [9]. Consistent rewards can bring material ones and promote internal satisfaction [9]. A survey in community healthcare institutions in Beijing, Zhengzhou, and Chongqing revealed that more than 85% of general practitioners listed improving personal income as their top priority, and 96.6% of general practitioners believed that the best way to improve family physicians' enthusiasm was to provide consistent financial rewards [46]. Therefore, an effective long-term incentive mechanism should be established to promote enthusiasm, improve clinical skills, and enhance implicit and post competencies among general practitioners.

The evaluation of professional titles should be revised. Currently, most general practitioners in China come from the transfer training[26, 27], with few having postgraduate education and scientific research abilities. An evaluation system for general practitioners should emphasise medical services rather than scientific research indicators. The government should establish a professional title evaluation mechanism suitable for general practitioners to improve their career development prospects and overall competency.

Compact medical communities should be established, including allocating high-quality medical resources to primary healthcare [47]. Staff from top-tier hospitals should be assigned to primary healthcare facilities to alleviate pressure on local healthcare workers. Opportunities for continuing education and advanced training for general practitioners in primary healthcare should be provided. Finally, the skills and service quality of primary healthcare medical teams should be improved.

The integration of medicine and industry represents a novel approach for enhancing the capabilities of general practitioners. Lin'an District in Hangzhou has fully implemented a medical artificial intelligence assistant system, which utilises computer-aided diagnosis technology to provide intelligent consultation, diagnostic support, medical knowledge retrieval, quality control for medical documentation, and rational drug utilisation for primary care physicians [48]. This not only standardises the clinical pathway for primary care but also enhances the diagnostic efficiency of primary care physicians while reducing their workload. This has significantly bolstered the capacity of primary healthcare services, ensuring that individuals have access to equitable, accessible, and systematic medical and healthcare services in close proximity.

5. Conclusion

This study demonstrated that the implicit competency of grassroots general practitioners in Chongqing was inadequate. A significant correlation was observed between implicit and post competencies, both of which had a significant impact on job burnout. Enhancing the implicit competency of general practitioners could improve their post competency and reduce job burnout. This is crucial for developing grassroots general practitioners and

promoting the implementation and improvement of hierarchical diagnosis and treatment systems. Efforts to improve the implicit competency of general practitioners can be made at the physician, institutional, and national policy levels.

6. Limitations

This study had several limitations. First, this study did not investigate the influence of varying salary levels on the implicit competency of general practitioners. Future research should consider salary levels. Second, this study gathered data through subjective self-assessments. Future studies should use more objective evaluation methods by integrating the literature pertaining to implicit competency. Third, variations in the survey findings may be present across areas due to regional disparities in the development of general practice across China, particularly between the eastern and western regions.

Author Contributions

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Competing interests

The authors have declared that no competing interests exist.

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