An Examination of Job Burnout and Self-Efficacy in Hospital Pharmacists under the Dual-Factor Model of Mental Health

Jia Guo[1,1st], Fangfang Zheng[2,1st], Feifei Wang[3,*], Guoyu Yang[4]

[1]Chongqing Business Vocational College, Chongqing, China
[2]School of Basic Medicine, Army Medical University, Chongqing, China
[3]Department of Developmental Psychology of Armymen, Department of Medical Psychology, Army Medical University, Chongqing, China
[4]School of Psychology, Army Medical University, Chongqing, China
[1st]Jia Guo and Fangfang Zheng contributed equally to this work and share first authorship.

*wff_0918@163.com

Abstract. A comprehensive online questionnaire survey was conducted among 1400 hospital pharmacists in Chongqing, China, utilizing a convenient sampling method, to evaluate the applicability of the Dual-Factor Model of mental health among hospital pharmacists, assess their mental health status, and examine differences in self-efficacy and job burnout across different mental health states. The data were analyzed using SPSS 24.0 and Amos 24.0. The results indicate that the dual-factor model of mental health had a superior fit in comparison to the single-factor model among hospital pharmacists. Significant differences were observed in the levels of job burnout and self-efficacy among the four distinct mental health states. Notably, those with complete mental health exhibited the lowest levels of job burnout and the highest levels of self-efficacy, which highlights the importance of considering the dual-factor model of mental health in understanding the well-being of hospital pharmacists.

Keywords: Hospital pharmacist, Mental health, Dual-Factor Model, Job burnout, Self-efficacy.

1   Introduction

Since 1985, China's healthcare system reform has undergone several stages, an ever-deepening, complex, and multifaceted process. In the context of this transformation, the professional role and contribution of hospital pharmacists cannot be overlooked. They are not only suppliers of medications but also crucial members of the healthcare team, responsible for ensuring the safety and efficacy of patients' medication use. However, with the gradual advancement of reform and the widespread application of cutting-edge technologies such as artificial intelligence and big data, the professional pressure and challenges faced by hospital pharmacists have also shown an unprecedented increase[1, 2].

According to a cross-sectional online survey conducted in Ontario, Canada, a burnout rate of 61.1% was found among 270 hospital pharmacists[3, 4]. For pharmacists in Japan, of the 823 participants from 154 hospitals, 49.2% were experiencing burnout, and 29.2% were at high risk of compassion fatigue(CF)[1]. This situation is particularly pronounced in China. Data suggests that A certain percentage (ranging from 44.31% to 96.2%) of pharmacists in China experience emotional exhaustion to some extent, while a range of 38.92% to 99.2% show moderate to high levels of depersonalization, and 67.07% to 99.4% have low personal accomplishment, which are considered the primary indicators of burnout[3]. As an occupational risk factor for mental ill-health, burnout shows significant association with depression, anxiety and suicidality[5, 6]. According to the data, the prevalence of depression among healthcare professionals was noticeably greater compared to the general population[7]. Among the various reasons for pharmacists' suicide, 15.82% (62 out of 392) were caused by work-related stress[8].

Although traditional psychotherapies do aim to improve general well-being outcomes, such as quality of life and functioning, they typically focus on reducing psychopathology rather than promoting positive mental health. With the rise of positive psychology, more researchers are proposing positive mental health[9]. The Dual-Factor Model of Mental Health (DFM), however, considers mental health as a multidimensional construct where the absence of mental health problems represents a necessary but insufficient condition for mental health[10]. According to DFM, mental health statuses are categorized into four groups using positive and negative indicators. "Complete mental health" refers to individuals with low psychiatric symptoms and high subjective well-being. "Vulnerable" individuals have low psychiatric symptoms and low subjective well-being. "Symptomatic but content" individuals experience high psychiatric symptoms but maintain high subjective well-being. "Troubled" individuals have high psychiatric symptoms and low subjective well-being[11].

Although the Dual-Factor Model of mental health has been widely recognized and applied internationally, relevant research in China is still in its infancy, especially for professional groups like hospital pharmacists. In addition, there are relatively few studies on occupational burnout and self-efficacy based on this model. Therefore, this study aims to investigate the applicability of the DFM in the population of hospital pharmacists, to examine the distribution of their mental health states based on this model and to explore the differences in self-efficacy and job burnout across different mental health states.

2   Methods

2.1   Participants

A convenient sampling method was employed to select 1400 hospital pharmacists from medical institutions in Chongqing. The survey was conducted on the Wenjuanxing platform and 1322 valid responses were received, resulting in an effective response rate of 94.42%. Among the participants, there were 375 males (28.4%) and

947 females (71.6%). Furthermore, 907 participants were from tertiary hospitals (21.4%), while 415 were from non-tertiary hospitals (78.6%).

2.2   Measurements

The Self-Rating Depression Scale (SDS) was utilized as a research instrument in this study. The SDS is a self-assessment questionnaire consisting of 20 items, each rated on a 4-point scale ranging from 1 (none or very little) to 4 (most or all of the time). The raw score was converted into a standard score by multiplying the sum of item scores by 1.25 and rounding it to the nearest integer. A higher score on the SDS indicates a higher level of depression. According to Wang, Cai, and Xu, an index score of 53 (raw score 42) for depression has since been widely adopted for Chinese populations[7]. The internal consistency of the SDS was determined to be satisfactory, with a Cronbach's α coefficient of 0.881 in this study.

The State-Trait Anxiety Inventory (STAI), which consists of 40 items, measures both state and trait anxiety, with the first 20 items assessing state anxiety and the latter 20 items assessing trait anxiety. The primary statistical indicators are the total scores of state anxiety and trait anxiety. In this study, the cutoff score for both state and trait anxiety was determined to be 58. The STAI demonstrated high internal consistency with a Cronbach's α coefficient of 0.965.

The General Well-Being Schedule (GWB) was developed and revised by Duan Jianhua et al. in 1996. It consists of 18 items across 6 dimensions. The main statistical indicators include the total scores of each dimension and the overall score of the scale. Greater well-being is positively correlated with higher scores on the scale. In this study, the GWB exhibited good internal consistency, with a Cronbach's α coefficient of 0.893.

The Chinese version of the General Self-Efficacy Scale (GSES) was revised in 1995 and has shown good reliability and validity. The primary statistical indicator is the average total score, obtained by dividing the sum of item scores by 10. A higher score indicates higher levels of self-efficacy. In this study, the GSES demonstrated satisfactory internal consistency, with a Cronbach's α coefficient of 0.908.

The Maslach Burnout Inventory (MBI), developed by Maslach et al. in 1996, was used to assess burnout syndrome in the majority of studies. It comprises 15 items across three dimensions: emotional exhaustion, work attitude, and occupational efficacy. The main statistical indicators include the total raw score and the total scores for each dimension. The formula for converting the raw score to the standard score is: $Y = 20*X/15$, where higher standard scores indicate higher levels of occupational burnout. The Cronbach's α coefficient for this scale was computed as 0.889 in this study.

2.3   Statistical Analysis

The data were analyzed using SPSS 24.0 and Amos 24.0. Since all variables in this study were self-reported by hospital pharmacists, a test for common method bias was conducted, and the results showed that 15 eigenvalues of the factors were greater than 1. The first factor accounted for 13.185% of the total variance, which was lower than

the critical value of 40% (<40% critical value). Therefore, there was no evidence of common method bias in this study. Descriptive statistics were used to analyze the distribution of pharmacist's psychological health states, presented as percentages (%).

The differences in self-efficacy and occupational burnout among pharmacists in the four psychological health states were analyzed using the non-parametric Kruskal-Wallis test, with a significance level of $\alpha=0.05$. The Amos 24.0 software was used to perform confirmatory factor analysis on the two psychological health models. Model fit was assessed based on smaller values of $\chi2/df$, RMSEA, and SRMR, and closer values to 1 for GFI, AGFI, CFI, NFI, and TLI, indicating a better fit of the models.

3   Results

3.1   Classification of Four Psychological Health States of Pharmacists

In this study, the psychological well-being of hospital pharmacists was classified using a quartile-based approach. Based on the Dual-Factor Model (DFM) theory, the mental health status of hospital pharmacists was divided into four categories by combining the level of positive psychological well-being with the presence or absence of psychological symptoms. The specific classification criteria can be found in Table 1.

Table 1. Classification of 4 Psychological Health States of Pharmacists

Psychiatric Symptom Level	Well-being Level	
	low	high
low	Vulnerable group: ① Overall well-being score $\leq$ 40; ② SDS standard score $\leq$ 53, or state anxiety $\leq$ 58, or trait anxiety $\leq$ 58.	Complete psychological health: ① Overall well-being score > 40; ② SDS standard score $\leq$ 53, or state anxiety $\leq$ 58, or trait anxiety $\leq$ 58.
high	Complete psychiatric symptoms: ① Overall well-being score $\leq$ 40; ② SDS standard score > 53, or state anxiety > 58, or trait anxiety > 58.	Symptomatic but meets criteria: ① Overall well-being score > 40; ② SDS standard score > 53, or state anxiety > 58, or trait anxiety > 58.

The results revealed that among the total number of participants, the largest proportion consisted of individuals classified as mentally healthy, accounting for 68.2% (901 individuals). Susceptible individuals accounted for 2% (26 individuals), while 16.9% (223 individuals) exhibited symptoms but met the criteria for healthy classification. Those classified as having complete mental symptoms accounted for 13% (172 individuals).

3.2   Validation of the Dual-Factor Model for Hospital Pharmacists' Psychological Health

A structural equation model was used to examine the applicability of the Dual-Factor Model (DFM) in evaluating the psychological health of hospital pharmacists and to compare it with the Single-Factor Model. Model I was a single-factor model, where psychological health was considered as a latent variable comprising positive psychological indicators and negative psychological indicators. Positive psychological indicators (in this study, overall well-being) were positively loaded on the latent variable, while negative psychological indicators (in this study, depression and anxiety) were negatively loaded on the latent variable. Model II was a dual-factor model, including separate latent variables for positive psychological health and negative psychological health.

The results showed that all fit indices for the Dual-Factor Model of psychological health among hospital pharmacists were within an acceptable range. The model fit was superior to that of the Single-Factor Model. Detailed fit indices are presented in Table 2.

Table 2. Model I and Model II fitting index calculation results

	χ^2/df	GFI	AGFI	CFI	TLI	RMSEA	SRMR
Model I	7.430	0.944	0.907	0.784	0.712	0.070	0.042
Model II	5.343	0.961	0.933	0.859	0.805	0.057	0.035

3.3   Differences in self-efficacy and burnout among hospital pharmacists in four mental health states

The Kruskal-Wallis test (KWT) method of non-parametric test was used for analysis. On burnout scores, there was a significant difference among the four types of hospital pharmacists ($\chi2(3)=324.440$, P<0.001), and after two-by-two comparisons, we found that the total burnout scores of those who were completely psychologically healthy were significantly lower than those who were symptomatic but contented (P<0.001) and those who had complete psychological symptoms (P<0.001); the total burnout scores of those who were susceptible were significantly lower than those who had complete psychological symptoms (P<0.001); total burnout scores were significantly lower for those who were symptomatic but contented than for those with complete psychological symptoms (P<0.001). The difference in scores on self-efficacy among the four types of hospital pharmacists was significant ($\chi2(3)=214.416$, P<0.001). A two-by-two comparison revealed that self-efficacy scores were significantly higher for those who were fully mentally healthy than for those who were symptomatic but contented (P<0.001) and fully psychologically symptomatic (P<0.001); self-efficacy scores were significantly higher for susceptible than for those who were fully psychologically symptomatic (P<0.001); and self-efficacy scores were significantly higher for symptomatic but contented than for those who were fully psychologically symptomatic (P<0.001). Therefore, it has been verified that there are differences in burn-

out and self-efficacy among hospital pharmacists in the four mental health states. The specific results are shown in Table 3.

4   Conclusions

According to the DFM, the mental health of hospital pharmacists can be categorized into four groups: "Completely mentally healthy individuals," "Susceptible individuals," "Symptomatic individuals who meet the criteria," and "Completely symptomatic individuals." In contrast to classifications based on psychopathological models, the four-group classification based on DFM theory can distinguish those who are completely mentally healthy.

The study revealed that 68.2% of hospital pharmacists exhibited good mental health, indicating a higher proportion of individuals in the completely mentally healthy category.

Table 3. Differences in pharmacist occupational burnout and self-efficacy among four types of psychological well-being states in hospitals.

	Complete mental health(n=901)		Vulnerable (n=26)		Symptomatic but content(n=223)		Troubled (n=172)		χ^2
	M	SD	M	SD	M	SD	M	SD	
Job burnout	20.168	11.924	26.154	14.296	32.892	12.639	40.256	14.512	324.440***
self-efficacy	2.737	.514	2.300	.460	2.445	.495	2.113	.502	214.416***

Note: ***: $P<0.001$.

Previous research has indicated that individuals with different mental health statuses exhibit differences in psychological, physiological, and social functioning. Completely mentally healthy individuals tend to demonstrate the most favorable psychological states, physiological conditions, and social functioning. In this study, hospital pharmacists were examined as participants to investigate the impact of four different mental health statuses on occupational burnout and self-efficacy, thus validating hypothesis three. The findings revealed that in terms of occupational burnout, the order of levels was as follows: completely mentally healthy individuals < susceptible individuals < symptomatic individuals who met the criteria < completely symptomatic individuals, with completely mentally healthy individuals displaying the lowest levels of occupational burnout. Consequently, it is imperative to implement psychological interventions targeting hospital pharmacists to reduce occupational burnout, enhance job performance, and improve job satisfaction. Concerning self-efficacy, a similar pattern was observed: completely mentally healthy individuals < susceptible individuals < symptomatic individuals who met the criteria < completely symptomatic individuals, with completely mentally healthy individuals exhibiting the highest levels of self-efficacy.

In conclusion, the dual-factor model of psychological health encompassing depression, anxiety, and overall well-being proves to be more ideal for understanding the mental health of hospital pharmacists. By employing the four-quadrant framework of the Dual-Factor Model (DFM), it becomes possible to categorize the psychological health status of hospital pharmacists. Among these categories, hospital pharmacists who exhibit complete psychological health demonstrate the lowest levels of occupational burnout and the highest levels of self-efficacy.

Acknowledgments

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