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Factors associated with burnout and job satisfaction in Chinese hospital pharmacists

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Abstract

Pharmacists with long experience and low personal satisfaction from work are at higher risk of burnout, but the role of specific personality traits is less well understood. In addition, the medical system in China is different from that of other countries, and the characteristics of pharmacist burnout might be different from that of other countries. This study evaluated the roles played by personality, working environment, and work characteristics on burnout and job satisfaction among Chinese hospital pharmacists.

This was a cross-sectional study undertaken between April 28 and 30, 2017. The questionnaires were completed at the "National Academic Conference of the Chinese Society of Clinical Pharmacy". Questionnaires were handed out to 1786 pharmacists, and 1394 valid questionnaires were analyzed using structural equation modeling techniques.

The final structural model showed that, as expected, personality and working environment factors directly or indirectly predicted burnout dimensions (emotional exhaustion, depersonalization, and reduction of personal accomplishment) and job satisfaction variables. The analyses were consistent with the features of pharmacists' work characteristics, including job demands, job control, and workload playing mediating roles between antecedent variables (personality and working environment) and emotional outcomes (burnout and job satisfaction). On the other hand, job control and workload did not predict emotional exhaustion.

This study indicates that personality is a negative predictor of 2 dimensions of burnout (emotional exhaustion and depersonalization), while the working environment, especially job demand, is a predictor of burnout and greater emotional exhaustion. Work characteristics are positively related to job satisfaction and play a protective role against burnout.

Abbreviation: JD-R = job demands-resources.

Keywords: burnout, job satisfaction, personality, work characteristics, working environment

1. Introduction

Modern pharmaceutical care is focused on improving safety, therapeutic outcomes, and patient quality of life.[1] With this direct focus and their direct contact with the patients, pharmacists are facing new psychological challenges in terms of professional responsibilities, and one of these challenges is burnout. It has been estimated that about 50% of pharmacists consider themselves at risk of burnout,[2] which is a prolonged response to chronic emotional and interpersonal stressors on the job and is defined and assessed through three dimensions of emotional exhaustion, depersonalization (i.e., cynicism), and reduction of personal accomplishment that develop to make a distinct and valuable contribution to health and well-being.[3]

There have been many investigations on burnout in healthcare professionals, but most studies focused on nurses and physicians.[4] These studies show that the hospital work environment is related to burnout and job satisfaction, especially in nursing,[5] but the evidence from pharmacists is limited.[6] An English study indicated that community pharmacists had significantly higher levels of workplace stress than other health professionals.[7] A French cross-sectional study revealed that community pharmacists presented with a high prevalence of burnout syndrome that was associated with several comorbidities (anxiety, depression, and alcohol abuse).[8] Pharmacists with the longest experience were at higher risk of burnout syndrome, and this was related to their personal satisfaction from work.[9] To assist with recognizing burnout, Radde[10] named 5 stages of pharmacist burnout and pointed out that preventing burnout requires learning from past burnout-prone behavior and making the necessary changes in lifestyle, which was supported by Lahoz and Mason,[11] who initiated a nationwide mail survey among the American Pharmaceutical Association membership, which received 1261 responses and identified individual and job characteristics that make pharmacists susceptible to burnout.

Specific personality traits can increase the risk of psychological distress and burnout.[6] Among others, neuroticism is a significant positive predictor of all 3 burnout dimensions.[12] Neuroticism was associated with higher emotional exhaustion, while extraversion was inversely associated with diminished personal accomplishment.[13,14] The available evidence led to the development of many different models that aim to understand the

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relationship between the psychosocial work environment and burnout. These models include the Cox's transactional model of job stress and others that are more specifically concerned with burnout, including the job strain, effort/reward imbalance, and the job demands-resources (JD-R) models.[15] The JD-R model[16] assumes that job demands (including workload, emotional demands, and aggression at work) lead to constant overtaxing, and a lack of resources complicates a person's ability to meet job demands, which can lead to burnout and disengagement. The job strain model is considered the most influential model of stress in the workplace at the present time,[17] and this focuses on 2 work characteristics: job demands and job control.[18]

Although pharmacist burnout is a global problem, there may be issues specific to China. The most important goal of China's New Medical Reform policy is to establish a basic medical and health service system covering all urban and rural residents.[19] In this system, the population coverage rate reaches 90% through the 3 major insurance systems found in China (basic medical insurance for urban workers, new rural cooperative medical insurance, and basic medical insurance for urban residents). This reform also aims to establish the national essential drug system in order to reduce the price of drugs and to let ordinary residents be able to afford their medicine. Finally, the reform aims to narrow the difference in public health services among the different residents so that everyone can get the same basic public health services, that is, reducing the differences between rural and urban residents. As the New Medical Reform policy in China has been enacted across the entire country, the traditional drug-oriented service that was found in China is currently undergoing a rapid transformation. Because Chinese pharmacists have little contact with patients, it is likely that they may suffer from several occupational stresses such as effort/reward imbalance, high job demands, limited autonomy, and low social support.[20] Therefore, studies involving Chinese pharmacists are needed.

The purpose of this investigation was to examine individual and environmental factors and work characteristics that contribute to job satisfaction and burnout in Chinese hospital pharmacists. Therefore, we examined the relationships among personality, working environment, and work characteristics (job demands, job control, and workload) among hospital pharmacists in China.

2. Methods

2.1. Participants

This was a cross-sectional, survey-based observational study. We invited the pharmacists who participated in the "National Academic Conference of the Chinese Society of Clinical Pharmacy (2017)" and the questionnaires were handed out as 2 versions: a paper version and a quick response code that could be scanned to follow an electronic link. The participants could freely choose which version of the survey they preferred. The researchers provided a briefing on the study objectives as well as statements guaranteeing both confidentiality and anonymity. Participants had to return their questionnaire during the conference, which was held from April 28 to 30, 2017. The ethics committee of the First Affiliated Hospital of Zhengzhou University evaluated the study. Because the study was a survey that was answered anonymously, without any means to trace back the participants' identity, and because there was no intervention, the committee waived the need for formal consent and considered that answering the survey constituted a *de facto* consent to participate.

2.2. Measures

The questionnaire was made up of 6 previously published questionnaires known to have adequate psychometric properties (burnout, job satisfaction, workload, job control, and demands, personality, and work environment). These questionnaires were translated from English to Chinese and then validated (both regarding reliability and validity) in their Chinese versions. Demographic questions included the participants' age, marital status, length of employment, educational status, and wage level.

Burnout was measured with the Maslach Burnout Inventory-Human Services Survey (MBI-HSS).[21] This questionnaire uses 22 items representing 3 dimensions: emotional exhaustion (the feeling of being emotionally overextended and exhausted by work; 9 items), depersonalization (the state of unfeeling and impersonal response towards the recipient of one's care or service; 5 items), and personal accomplishment (the feelings of competence and successful achievement in one's work with people; 8 items).[22] The items are scored on a 7-point scale ranging from 0 (never) to 6 (every day). Higher scores for emotional exhaustion and depersonalization and lower scores for personal accomplishment indicate a higher degree of burnout. Emotional exhaustion scores >27 indicate high emotional exhaustion, while score <16 means a low level of emotional exhaustion. Depersonalization scores >13 indicate a high level of depersonalization, while <6 indicates a low level. Personal accomplishment scores >39 indicate a high level of self-accomplishment, and <31 indicate a low level.[22] Cronbach alpha was 0.81, and the Kaiser-Meyer-Olkin (KMO) coefficient was 0.897.

Job satisfaction was determined using Chinese versions of the Job Satisfaction Survey (JSS)[23] and the Minnesota Satisfaction Questionnaire (MSQ).[14,23–25] The final questionnaire was made of 15 items (sample item: "The benefits package we have is equitable") scored using a 5-point scale ranging from 1 (very dissatisfied) to 5 (very satisfied). Cronbach alpha was 0.68, and the KMO coefficient was 0.878.

Work characteristics were defined as job demands, job control, and workload. The Job Content Questionnaire (JCQ)[26] was used to assess job demands (6 items) and job control (4 items) using 5-point Likert-type scales ranging from 1 (strongly disagree) to 5 (strongly agree). The workload was measured with the 5-item adaptation of the areas of work-life scale[27] using a 5-point scale for each item. The total Cronbach alpha was 0.77, and the KMO coefficient was 0.724.

Personality was assessed using the Eysenck Personality Questionnaire (EPQ).[28] In the past, many studies have combined job burnout with personality to investigate the role of personality in the development of job burnout, but because of the complexity of the personality structure, there is no integrated and comprehensive theory to explain it completely. Therefore, this study selected 3 major personality traits that are evaluated by the Eysenck Personality Questionnaire. There are 48 entries in the Eysenck Personality Questionnaire (Chinese edition). Because the personality trait factor scale is embedded in the whole questionnaire and in order to prevent the respondents from feeling bored because of the large number of items, 6 items were selected according to the characteristics of the pharmacist job (including introversion, extroversion, emotionality, and neuroti-

cism), and a preliminary survey was carried out among pharmacists in third-grade class-A hospitals. Cronbach alpha was 0.82, and the KMO coefficient was 0.787. Each item was scored using a 5-point Likert-type scale for each item (1 = strongly disagree, 5 = strongly agree).

The work environment was assessed using two questionnaires: The Chinese version of the essentials of magnetism II tool[29] and the '5-factors of work environment'.[30] We used 6 items (each on a 5-point scale) to determine the pharmacists' agreement with different statements regarding the work environment in their current positions. Cronbach alpha was 0.95, and the KMO coefficient was 0.880.

2.3. Data analysis

We first conducted exploratory factorial analyses for each scale using the R software, version 3.4.1 (psych package). Covariance and correlation matrixes were calculated for each scale and used for subsequent analyses. The "Maximum Likelihood Estimates" method was used to extract factors in the exploratory factorial analyses. The factorial subordinative relationship to the general factor that emerged from this analysis was compatible with previous assumptions. The 6 scales were analyzed with the maximum likelihood method, and factorial scores were then calculated for each factor.

Structural equation models in which the process components were considered latent constructs and operationalized by some established procedures were performed:

1) model specification (the relationship between designated observation variables and latent variables, and the relationship between latent variables);
2) model fitting (estimation of model parameters);
3) model assessment (various fitting indexes meeting the requirements, such as NNFI, CFI, RMSEA, etc); and
4) model modification. The AMOS software (version 22.0) was used to test and modify the hypothesized model for investigating the relationships among the variables measured in the study. A total of 124 variables (error measurements, observed and latent variables) were included in the model. Path analyses (determined by the maximum likelihood method) were performed on polyserial and Pearson product-moment correlations. Several goodness-of-fit indices were calculated and compared against accepted criterion levels (CFI and NNFI $\geq$0.90; RMSEA $<$0.80) to verify and improve model plausibility (please consult Unruh et al[31] and https://www.cscu.cornell.edu/news/Handouts/SEM_fit.pdf for further details on the indices). Pathways were subtracted based on Chi-squared statistics as well as on empirical and theoretical grounds to achieve an optimal fit of the model.

3. Results

3.1. Characteristics of the respondents

Questionnaires were completed by 1786 pharmacists during the conference, and 1394 could be analyzed. The majority of the 1394 respondents were female (60.2%), most respondents were married (78.4%), the most common age group was 31 to 40 years (40.9%), more than half had a bachelor's degree (55.1%), and 36% of the respondents had a master's degree. Among the 1394 respondents, 68% had 10 or fewer years of experience, the majority of the conference participants were from tertiary hospitals (71.1%), and most were located in a capital or a municipal city. The average monthly salary was 4000 to 6000 RMB (36.8%) to 6000 to 8000 (25.6%), which is considered to be an upper middle-class in China. Almost half of the respondents identified themselves as clinical pharmacists, followed by 27% identifying themselves as dispensing pharmacists (Table 1).

Table 1

Demographics and relevant characteristics of participants (n = 1394).

Variables	n = 1394
Sex, n,%	
Male	555 (39.8)
Female	839 (60.2)
Age (yr), n,%	
20–30	439 (31.5)
31–40	570 (40.9)
41–50	315 (22.6)
51 and above	70 (5.0)
Marriage, n,%	
Single	287 (20.6)
Married	1093 (78.4)
Other	14 (1.0)
Education level, n,%	
Bachelor's degree	768 (55.1)
Master's degree	502 (36.0)
Doctoral degree	28 (2.0)
Missing/invalid	96 (6.9)
Working experience (yr), n,%	
4 or less	368 (26.4)
5–10	591 (42.4)
11–15	145 (10.4)
>15	290 (20.8)
Types of hospital, n,%	
Tertiary hospital	991 (71.1)
Secondary hospital	343 (24.6)
Primary hospital	60 (4.3)
Geographical distributions, n,%	
Capital city	555 (39.8)
Municipal city	509 (36.5)
County	330 (23.7)
Incomes (RMB ¥ per mo), n,%	
<4000	230 (16.5)
4000–6000	513 (36.8)
6000–8000	357 (25.6)
8000–10,000	149 (10.7)
>10,000	145 (10.4)
Work role, n,%	
Clinical pharmacist	711 (51.0)
Dispensing pharmacist	383 (27.5)
Other	300 (21.5)

3.2. Prevalence of burnout

Table 2 shows the prevalence of burnout in the study population. Among the 1394 participants, 672 (48.2%) and 669 (48.0%) had high and moderate emotional exhaustion, respectively; 1216 (87.2%) and 167 (12.0%) had high and moderate depersonalization, respectively; and 1386 (99.4%) had low personal accomplishment.

3.3. Correlations

Before model testing, a correlation matrix of the studied variables was prepared (Table 3), and the significant relationships among

Table 2

Prevalence of burnout symptoms and related factors of participants.

Burnout	n = 1394
Emotional exhaustion, n,%	
High	672 (48.2)
Moderate	669 (48.0)
Low	53 (3.8)
Depersonalization, n,%	
High	1216 (87.2)
Moderate	167 (12.0)
Low	11 (0.8)
Personal accomplishment, n,%	
High	0
Moderate	8 (0.6)
Low	1386 (99.4)

the variables were partially in the expected direction. Depersonalization and working environment were positively correlated with emotional exhaustion. Personal accomplishment, job demands, and workload were negatively correlated with emotional exhaustion. Satisfaction, job demands, and workload correlated in the same way with depersonalization and personal accomplishment. Job control and working environment correlated positively with depersonalization but correlated negatively with personal accomplishment. Only the working environment was positively correlated to satisfaction, while negative correlations were shown for job demands, job control, and workload with job satisfaction. The 3 measures of work characteristics (job demands, job control, and workload) were of higher importance.

3.4. Structural analyses

For the initial embedded model, we hypothesized that all variables had pathways (Fig. 1). The outcome variables (emotional exhaustion, depersonalization, personal accomplishment, and satisfaction) and the mediating variables (job demands, job control, and workload) were not allowed to correlate among themselves. The first model we tested did not fit the data adequately (CFI = 0.87; NNFI = 0.85), and the initial hypothesis was, therefore, not verified.

After removing 8 non-significant paths, the adjusted model (Fig. 2) was accepted ($\chi^2 = 99.66$; df = 20; $P < .001$; CFI = 0.91; NNFI = 0.89; RMSEA = 0.10), and all pathways were statistically significant ($P < .05$). Personality and working environment can have both direct and indirect impacts, via work characteristics, on burnout and job satisfaction (Table 4). The work characteristics partially mediated the impacts of positive and negative affectivity on burnout and job satisfaction.

In the final model (Table 4), the antecedent variables of personality and working environment both had a direct impact on two of the burnout dimensions. While personality was negatively related to emotional exhaustion and depersonalization, the working environment was positively related to these 2 burnout measures. Personality was also indirectly related to depersonalization, personal accomplishment, and job satisfaction. The working environment had an indirect impact on 2 of the burnout dimensions and job satisfaction through job control and workload. Both personality and environment variables were not related to job demands. Moreover, job demands had an inverse impact on personal accomplishment, as well as on job control and workload. The workload was a negative predictor of depersonalization. Job control and workload did not predict emotional exhaustion either, while job demands were directly and positively related to emotional exhaustion. Job satisfaction was directly positively impacted by components of work characteristics.

4. Discussion

In this study, we analyzed the interrelationships among personal and environmental factors for burnout and job satisfaction, and the role played by pharmacists' work characteristics, as well as the influence of personality and the pharmacists' working environment on work characteristics. The final structural equation model was accepted based on a set of fit measures, and analyses confirmed the hypothesized pathways of each variable guided by a modification process on empirical and theoretical grounds. Previous studies examined the moderating or motivating role played by work environments and characteristics or personality-related emotional display factors to affect burnout and job satisfaction among doctors or nurses,[24,31–35] but studies on pharmacists are rare. Our study provides complementary findings by investigating hospital pharmacists' awareness of burnout and job satisfaction and investigating the distinction between pharmacists and other health workers. A previous study in nurses supports the SEM models developed in the present study.[31]

In the present study, Eysenck personality theory was used as the basis for personality factor analysis.[36,37] As expected,

Table 3

Polyserial and Pearson product-moment correlations of the studied variables.

	1	2	3	4	5	6	7	8	9
1. Emotional exhaustion	1								
2. Depersonalization	0.66**	1							
3. Personal accomplishment	−0.30**	−0.26**	1						
4. Satisfaction	0.16*	0.27*	0.28**	1					
5. Job demands	−0.08**	−0.14**	−0.27**	−0.24**	1				
6. Job control	−0.04	0.09**	−0.20**	−0.08*	0.36**	1			
7. Workload	−0.30**	−0.23**	−0.04**	−0.15*	0.41**	0.43**	1		
8. Personality	−0.02	0.01	−0.14	−0.05	0.20**	0.32**	0.30**	1	
9. Environment	0.08**	0.16**	−0.12**	0.11**	0.15**	0.37**	0.26**	0.50**	1

* $P < .05$.
** $P < .01$.

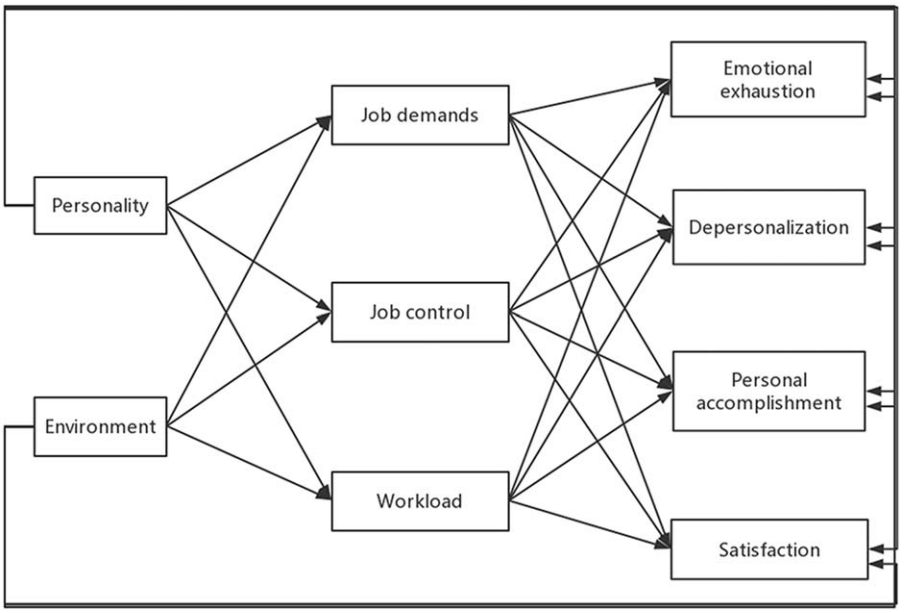

Figure 1. The initially tested structural equation model.

personality is a negative predictor of 2 dimensions of job burnout,[5] while the results showed no impact on 1 dimension of job burnout: personal accomplishment. Personality was also indirectly related to job satisfaction through its impact on job control. Abedi et al's work[38] showed that job satisfaction was low in terms of neurosis and suggested that a personality test should be undertaken before the selection of people for managerial and supervisory positions.

The Eysenck Personality Questionnaire (EPQ) has been translated and validated into Chinese and may be more consistent with the Chinese way of thinking. Some studies recently used the EPQ on the medical workers' status of burnout and satisfaction[24,38] and suggested that the sense of job satisfaction was related to aspects of neurosis, psychoticism, and introversion. Personality (in a proactive way) exerts a beneficial lagged effect on increase in job demands and job control,[39] and most dimensions of personality traits significantly interacted at least with one workload source.[40]

In this study, the working environment played a positive role in emotional exhaustion and depersonalization but also had no influence on personal accomplishment. In the same way as personality, the working environment had a strong negative effect on job control and workload. The EOMII scale has been shown to be reliable and valid for measuring a healthy work

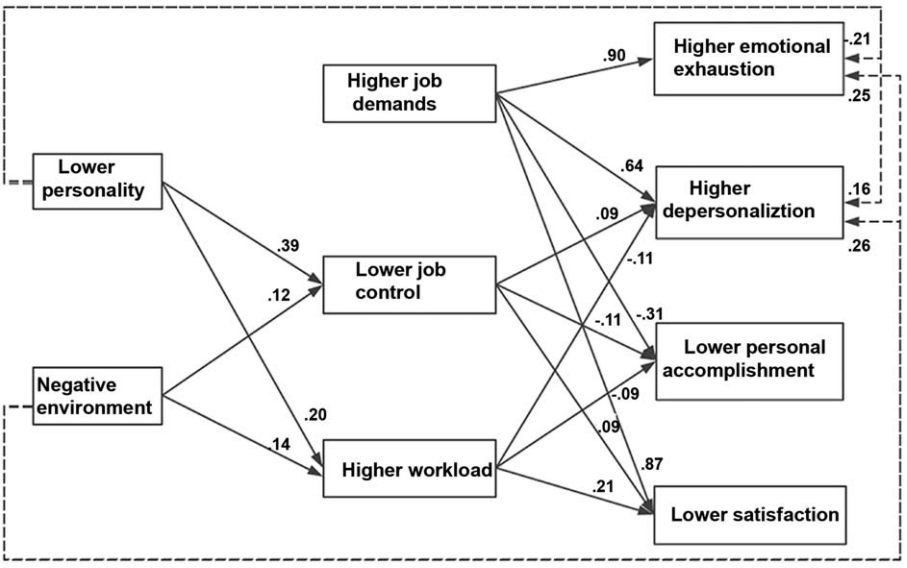

Figure 2. The final adjusted structural equation model.

Table 4

Standardized estimates (direct and indirect effects) from the final structural model (M2).

	Job demands	Job control	Workload	Emotional exhaustion	Depersonalization	Personal accomplishment	Job satisfaction
Direct effects							
Personality	0.10* (0.05)	0.28*** (0.09)	0.17** (0.07)	−0.16** (0.01)	−0.16* (0.07)	—	—
Environment	−0.10* (0.03)	0.11* (0.04)	0.15** (0.05)	0.14*** (0.07)	0.24*** (0.05)	—	—
Job demands	—	—	—	0.75*** (0.62)	0.76*** (0.37)	−0.30*** (0.09)	0.45*** (0.21)
Job control	—	—	—	—	0.13* (0.04)	−0.31*** (0.02)	0.14* (0.04)
Workload	—	—	—	—	−0.13* (0.05)	−0.22*** (0.03)	0.28*** (0.04)
R^2	**0.02**	**0.08**	**0.05**	**0.92**	**0.65**	**0.27**	**0.31**
Indirect effects							
Personality				—	—	-0.13* (0.05)	—
Environment				0.12* (0.02)	0.18* (0.03)	—	—

* $P < .05$.
** $P < .01$.
*** $P < .001$.

environment (HWE) for nurses in Western health care settings,[29] and as Razak et al[30] interpreted, the work environment influences job performance. Bogaert et al[41] found support for a model where the nurse practice environment dimensions predicted job dissatisfaction, intention to leave the institution or the profession, and nurse-assessed quality of care. A systematic review indicated that low workplace support increased emotional exhaustion and that low supervisor support and low co-worker support were associated with burnout symptoms.[42] Nurse working environment-job satisfaction relationships have been the focus of most studies. As they have demonstrated a strong positive association between job satisfaction and work environment, they show that improvement of work conditions and the creation of a supportive work environment is critical.[43] Thus, Alves et al[32] indicated initiatives to improve the professional practice environment to improve the well-being of professional nurses, and Copanitsanou et al,[44] showed that a good work environment constitutes a determinant factor for high care quality and relates to improved outcomes for nurses.

We also noted the intermediate role played by job demands in influencing burnout and job satisfaction. Inconsistent with the observations in nurses,[18,31,34] job demands diminished the pharmacists' personal accomplishment, and increased their satisfaction at work, whereas in the results were in accordance with nurses' emotional exhaustion and depersonalization.

In consideration of the independent role of workload in identifying the general areas of working life,[45] we listed workload independently and combined the 2 classical JD-R and job strain models, taking workload, job demands, and job control as work characteristics. According to the job strain model, workers who are exposed to high levels of demands, but have low levels of job control are more likely to exhibit increased levels of depression, fatigue, cardiovascular disease, and mortality.[18] Job demand has a significant but negative relationship with job satisfaction,[35] but job control has the most consistent impact with direct effects on job satisfaction, psychological distress, and depression.[33] In this study, the impacts of job control and workload on burnout and job satisfaction were similar. They were both inversely correlated with personal accomplishment, and an increase in the workload and job control was significantly associated with higher job satisfaction. The only difference is that as pharmacists felt depersonalization in response to higher levels of job control, the relationship between workload and satisfaction was attenuated. According to other studies on health workers, especially nurses,[18] their findings were almost the opposite of our results on the relationship between work characteristics and burnout, which might be interpreted to be because of the different characteristics of people in different occupational groups.

The findings of this study suggest that some work is needed to improve the working situation of pharmacists in China and that efforts should be taken to optimize their working environment in order to reduce emotional exhaustion and depersonalization at work. Our results also suggest that managers and/or decision-makers should give pharmacists more comprehension and humanistic care, and this could be important for reducing emotional exhaustion and increasing job satisfaction. While the relationships of work characteristic dimensions to job burnout and satisfaction have been explored in other studies, the results of this study vary in showing their different ways of influencing pharmacists. Therefore, it seems important to shift patterns of work in dispensing and clinical pharmacies to reflect employee's values during work. Presumably, this change in the management mode at work and efforts to create healthy workplaces would benefit not only the pharmacists themselves but also the pharmaceutical discipline.

Several limitations should be considered. First, the research was cross-sectional, and it cannot be considered to be representative of the entire population of pharmacists in China. As causal relationships cannot be drawn with certainty, longitudinal studies are obviously needed.[34] Second, because the study was undertaken during an annual meeting and the completed surveys had to be returned before the end of the meeting, they were completed in an uncontrolled setting. This raises the possibility of some communication between the participants or hasty completion of the survey without fully considering the questions. So, the information recorded for the respondents, in particular regarding their awareness of personality and characteristics, may have been under-reported or biased. Because this national conference is the "Annual Meeting of Clinical Pharmacists", the conference notice is issued to all members of the Clinical Pharmacy Branch of the Chinese Medical Association, that is, only to clinical pharmacists working in hospitals in China. Community pharmacists in China are not classified as clinical pharmacists. Therefore, we assume that pharmacists attending the conference are from hospitals, but we

cannot exclude the possibility that some pharmacists registered as clinical pharmacists because of previous employment were, in fact, working in the community. In addition, the Eysenck Personality Questionnaire had 48 items, which were too many for the context of a survey, and 6 items were selected to cover introversion, extroversion, emotionality, and neuroticism, which are considered as personality traits of pharmacists. Future studies will have to analyze personality more comprehensively. Furthermore, both predictors and criterion variables were assessed by the same self-reported measures, so the results might be contaminated by self-reported bias. Future research is recommended, such as intervention evaluation research for confirming and extending the study findings. Moreover, qualitative interviews among health-care staff could be useful to examine how medical personnel's emotional demands impact occupational health and job satisfaction. In addition, the triangulation of quantitative studies with qualitative analyses would create a richer data set. Third, this study lacks a comparative analysis. It would be useful to conduct studies in order to make comparisons between pharmacists and doctors and nurses.

This study investigated the roles played by personality, working environment, and work characteristics on burnout and job satisfaction in Chinese hospital pharmacists. The results showed that personality was a negative predictor of 2 dimensions of burnout (emotional exhaustion and depersonalization), while the working environment was a predictor of burnout. Job demands was a predictor of emotional exhaustion, and work characteristics were positively related to job satisfaction. These results show that factors related to burnout and job satisfaction for pharmacists are subtly different from those for other health workers, such as nurses. Strategies already used in nurses should be tried in pharmacists, and future research should also examine and identify the specific needs of pharmacists.

Author contributions

All authors contributed to data analysis, drafting or revising the article, gave final approval of the version to be published, and agree to be accountable for all aspects of the work.

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