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Latent Profiles of Nurse Burnout and Their Relationship with Job Performance: A Cross-sectional Survey

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Keywords: Nursing; Nursing Management; Burnout, Performance

ABSTRACT

Background: The prevalence of nurse burnout is high, and it has a significant impact on the job performance. However, currently, nurse burnout is evaluated solely based on the overall score, and a single analysis is conducted to examine the relationship between a certain dimension and the nurses' job performance. The Latent Profile Analysis (LPA) can focus on the individual differences, dividing the nursing group into different potential categories. Based on this analysis, we studied the relationship between different potential categories and the work performance of nurses.

Methods: A cross-sectional design using a multi-stage stratified cluster random sampling method. From December 2022 to January 2024, eligible nurses were recruited from four Grade-A tertiary hospitals in Shandong Province, yielding 1,877 valid questionnaires. The survey instruments included a self-designed demographic questionnaire, the Maslach Burnout Inventory-Human Service Survey (MBI-HSS), and the Work Performance Scale. Latent Profile Analysis (LPA) was utilized to categorize nurse burnout. Additional statistical analyses included descriptive statistics, one-way ANOVA, general linear regression analysis. Data were processed using SPSS 26.0 and Mplus 7.0. This study was reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines.

Results: Through LPA, we identified four distinct burnout profiles: "Low Burnout," "Emotional Exhaustion/Depersonalization," "Reduced Personal Accomplishment," and "Moderate Burnout." Significant differences were observed across these profiles in total job performance scores, task performance. and contextual performance. Post-hoc tests revealed that nurses in the "Low Burnout" group scored significantly higher in task performance, contextual performance, and total job performance than those in the other three categories. Conversely, nurses in the "Reduced Personal Accomplishment" group had significantly lower scores for contextual and total job performance than those in the "Low Burnout" and "Emotional Exhaustion/Depersonalization" groups. General linear regression analysis, controlling for age, gender, marital status, education level, years of service, and monthly night shifts, indicated that compared to the "Low Burnout" group, job performance scores for the "Emotional Exhaustion/Depersonalization," "Reduced Personal Accomplishment," and "Moderate Burnout" groups decreased by 3.814 standard deviations, respectively.

Conclusion: The prevalence of burnout among nurses in Grade-A tertiary hospitals is high. Nurse burnout can be categorized into four latent profiles: "Low Burnout," "Emotional Exhaustion/Depersonalization," "Reduced Personal Accomplishment," and "Moderate Burnout." Nurses in the "Low Burnout" group demonstrated the best job performance, whereas those in the "Reduced Personal Accomplishment" group exhibited the poorest performance.

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What do we already know about this topic?
The prevalence of burnout among nurses is high, and it has a negative impact on their job performance. The various dimensions of burnout have varying degrees of influence on the job performance of nurses. Nurse burnout can be classified into different potential categories.
What is the main contribution to Evidence-Based Practice from this article?
According to the individual's specific characteristics, nurse burnout can be classified into four potential categories. Nurses belonging to different potential categories exhibit inconsistent performance in their work.
What are the article's implications towards theory, practice, or policy?
Managers should identify the potential categories of nurse burnout, pay attention to those categories with low job performance, and take measures to improve their job performance.
Authors' Contributions Statement:
JPY and MS collected the data and drafted the article or revising it critically for important intellectual content; FXM analyzed the data; HXS assisted in data interpretation and manuscript editing; FLC finally approved of the version to be published.

1 Introduction

Freudenberger first introduced the concept of Burnout in 1974 (Freudenberger, 1974), describing a state of physical and mental exhaustion resulting from intense work pressure. Later, Maslach (Maslach, 1981) proposed a three-dimensional theoretical model, defining burnout as comprising Emotional Exhaustion, Depersonalization, and Diminished Personal Accomplishment.

Burnout is prevalent among service industry workers (Parola, et al., 2017), with healthcare professionals being particularly susceptible (See, et al., 2018). Due to the unique demands of their profession, nurses generally experience higher levels of burnout compared to other medical staff (Cañadas-de, et al., 2014). A 2018 meta-analysis revealed that among community healthcare nurses, 28%, 15%, and 31% exhibited high levels of emotional exhaustion, high depersonalization, and low personal accomplishment, respectively (Monsalve-Reyes, et al., 2018). Tertiary hospitals typically shoulder critical healthcare responsibilities in their regions, treating patients who are often in more critical condition; consequently, nurses in these Grade-A facilities usually experience more severe burnout (Wang 2013).

While it is established that burnout impacts job performance (Parker, et al., 1995), previous research on the relationship between specific burnout dimensions and nurse performance has yielded inconsistent results (Xia, 2019; Zhao, et al., 2015). A likely reason is that most prior studies adopted a variable-centered approach. By treating nurses as a homogenous group of independent units and analyzing single dimensions in isolation, these studies failed to account for individual heterogeneity. They overlooked the fact that individuals, as whole entities, may exhibit varying patterns across dimensions, which can obscure practically significant findings. In contrast, person-centered research accounts for group heterogeneity by synthesizing scores across burnout dimensions to better characterize subgroup differences (Spence, et al., 2006). Latent Profile Analysis (LPA) focuses on these characteristic differences between individuals. It classifies people into distinct categories based on shared patterns, allowing analysis of unique traits within each group and identifying inequalities that variable-centered studies often miss (Mori, et al., 2020). This study uses LPA to identify latent classes of burnout among nurses in Grade-A tertiary hospitals and to explore their relationship with job performance. The goal is to enable managers to timely identify these latent profiles and develop targeted interventions to enhance nurse performance.

2 Methods

2.1 Study Design

This study utilized a multi-stage stratified cluster random sampling strategy. In the first stage, cities in Shandong Province were stratified into four tiers based on economic development (Kuang, et al., 2017), and a town was randomly selected from each tier. In the second stage, one Grade-A tertiary hospital was randomly selected from each of the chosen cities, for a total of 4 hospitals. In the third stage, we randomly assigned two-thirds of the departments from Internal Medicine, Surgery, Obstetrics & Gynecology, and Pediatrics within these hospitals. Eligible nurses from the selected departments were enrolled, yielding a final sample of 1,877 nurses. This study was reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines.

2.2 Participants

Nurses were included if they met the following criteria: (1) held a valid Nurse Practitioner Certificate of the People's Republic of China; and (2) were formal employees of the hospital.

Exclusion criteria included: (1) absence from work during the survey period due to leave, training, etc.; (2) receipt of psychological or drug therapy within the past three months; or (3) refusal to participate.

2.3 Instruments

2.3.1 Demographic Questionnaire

A self-designed questionnaire collected demographic data (age, gender, marital status, education level, average monthly income, etc.) and work-related characteristics (years of service, employment type, professional title, number of night shifts per month, etc.).

2.3.2 Maslach Burnout Inventory-Human Service Survey (MBI-HSS)

We used the MBI-HSS to assess nurse burnout. Initially developed by Maslach and Jackson, the scale was translated into Chinese by Professor Pang Meici of Hong Kong Polytechnic University and tested by Feng Ying (Feng, et al., 2004) and colleagues among Chinese nurses, demonstrating high reliability and validity. The scale comprises 22 items across three dimensions: Emotional Exhaustion, Depersonalization, and Personal Accomplishment. Items are rated on a 7-point Likert scale ranging from "Never" (0) to "Every day" (6). Higher scores in each dimension indicate more severe burnout (note: strictly speaking, lower scores in Personal Accomplishment indicate higher burnout, but scoring is often reversed for calculation). In this study, the total Cronbach's α for the scale was 0.891, with the dimensions of Emotional Exhaustion, Depersonalization, and Personal Accomplishment having Cronbach's α coefficients of 0.922, 0.829, and 0.907, respectively.

2.3.3 Work Performance Scale

Borman and Motowidlo (Borman, et al., 1993) proposed a two-dimensional model of job performance. Based on this, Taiwanese scholar Yu Decheng revised an 11-item Work Performance Scale. It includes two dimensions: Task Performance (items 1-6), which measures work efficiency, quality, and job-related factors; and Contextual Performance (items 7-11), which measures extra effort, such as helping colleagues solve problems and managing interpersonal relationships. Items are rated on a 5-point Likert scale from "Strongly Disagree" (1) to "Strongly Agree" (5), with higher scores indicating better performance. This scale has demonstrated good reliability and validity(Jiang, 2012).

In this study, the total Cronbach's α was 0.956, with Task Performance and Contextual Performance having coefficients of 0.931 and 0.916, respectively.

2.4 Statistical Analysis

The study employed SPSS 26.0 and Mplus 7.0 for statistical analysis, with a two-sided P value < 0.05 indicating statistical significance. Descriptive statistics, specifically the means and standard deviations, along with frequencies and percentages, were used to profile the nurses' demographic information, burnout status, and job performance. The Maslach Burnout Inventory-Human Services Survey (MBI-HSS), encompassing its three dimensions—Emotional Exhaustion, Depersonalization, and Reduced Personal Accomplishment—served as the burnout indicators. Latent Profile Analysis (LPA) was utilized to identify potential latent classes of nurse burnout. The model fitting process began with the null model and progressively increased the number of latent classes. The most appropriate model was determined by evaluating fit indices such as the Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), entropy, Bootstrap Likelihood Ratio Test (BLRT), and Lo-Mendell-Rubin (LMR) test, while also considering the interpretability and practical relevance of each class. One-way analysis of variance (ANOVA)

were used to compare the distribution of the latent burnout classes across demographic characteristics, work-related factors, and job performance outcomes. Finally, single-factor analysis and general linear regression analysis were conducted to examine differences in nurse job performance across distinct burnout classes, controlling for relevant covariates.

2.5 Ethical Considerations

This study strictly adhered to ethical principles and was approved by the Ethics Committee of the School of Nursing and Rehabilitation, Shandong University (No. 2020-R-061). Throughout the research process, we strictly protected nurses' privacy and adhered to the principle of informed consent.

3 Results

3.1 Nurse Demographics and Work-Related Characteristics

In this research, the study participants' average age was 31.37±6.14 years. Females constituted 97.1% of the sample. There were 1,304 married nurses (accounting for 69.5%), and 1,724 nurses had an educational level of bachelor's degree or above (91.8%). Detailed information is presented in Table 1.

Table 1: Nurses' general information (N=1877)

Variables	***n/M***	**Percentage/*SD***
Age	31.37	6.14
Gender		
Male	54	2.9
Female	1823	97.1
Marital Status		
Married	1304	69.5
Other	573	31.5
Educational Level		
Junior College and Below	153	8.2
Bachelor's Degree and Above	1724	91.8
Average Monthly Income (CNY)		
＜4000	413	22.0
4000-7999	1082	57.6
8000-9999	281	15.0
≥10000	101	5.4
Service Length (years)		
＜6	707	37.7
6-10	629	33.5
11-15	272	14.5
＞15	269	14.3
Employment Type		
Authorized Staff	336	17.9
Agency Contract	461	24.6
Contractual Employment	1071	57.1

Variables	*n/M*	Percentage/*SD*
Labor Dispatch	9	0.5
Professional Title		
Nurse	402	21.4
Primary Nurse	839	44.7
Senior Nurse	590	31.4
Deputy Chief Nurse and Above	46	2.5
Monthly Number of Night Shifts		
None	326	17.4
1-4	426	22.7
5-9	968	51.6
More than 10	157	8.4

3.2 Descriptive Analysis of Study Variables

3.2.1 Descriptive Analysis of Nurse Burnout

Using the MBI-HSS, we determined that the overall burnout score for the participating nurses was 41.00 ± 20.40. Breaking this down by dimension, the scores were 16.81 ± 12.26 for emotional exhaustion, 5.54 ± 6.09 for depersonalization, and 18.64 ± 13.17 for reduced personal accomplishment.

Table 2: Descriptive Analysis of Burnout Dimension Scores

Variables	*M*	*SD*
Total Burnout Score	41.00	20.40
Emotional Exhaustion	16.81	12.26
Depersonalization	5.54	6.09
Reduced Personal Accomplishment	18.64	13.17

3.2.2 Descriptive Analysis of Nurse Job Performance

We assessed job performance using the Work Performance Scale, yielding a total score of 43.80 ± 9.00. Specifically, scores for task performance and contextual performance were 23.73 ± 5.15 and 20.07 ± 4.19, respectively.

Table 3: Descriptive Analysis of Nurse Job Performance

Variables	*M*	*SD*
Job Performance	43.80	9.00
Task Performance	23.73	5.15
Contextual Performance	20.07	4.19

3.3 Latent Profile Analysis of Nurse Burnout

3.3.1 Determining the Optimal Model Based on Fit Indices

We conducted a latent profile analysis on the

1,877 participating nurses. To identify the optimal model, we fitted models ranging from one to five latent classes, using scores from the three burnout dimensions as indicators. Table 4 details the fit indices for each potential class configuration.

Table 4: Latent Profile Fit Statistics for Different Burnout Types

Mode	Loglikelihood	AIC	BIC	aBIC	Entrop	LMR	BLRT
1	-7988.542	15989.085	16022.310	16003.248	-	-	-
2	-7319.672	14659.345	14714.719	14682.949	0.871	0.0000	0.0000
3	-7006.830	14041.659	14119.183	14074.705	0.847	0.0002	0.0000
4	-6664.594	13365.188	13464.862	13407.676	0.882	0.0000	0.0000
5	-6545.686	13135.373	13257.196	13187.303	0.853	0.3491	0.3567

Note：AIC=Akaike Information Criterion；BIC=Bayesian Information Criterion；aBIC=Adjusted Bayesian Information Criterion；LMR=Lo-Mendell-Rubin；BLRT=Bootstrap Likelihood ratio test

To validate the reliability of these LPA results, we calculated the average latent class probabilities for the four-class solution. The average probabilities were 0.941 for Class 1, 0.943 for Class 2, 0.926 for Class 3, and 0.9222 for Class 4. These high probabilities suggest that the four-class model provides a reliable fit.

Table 5: Average Latent Class Probabilities (Rows) by Latent Class (Columns)

Latent Class	C1	C2	C3	C4
C1	0.941	0.000	0.025	0.034
C2	0.000	0.943	0.000	0.057
C3	0.063	0.000	0.926	0.010
C4	0.050	0.024	0.005	0.922

Note：C1：Low Burnout Group；C2：Emotional Exhaustion/Depersonalization Group；C3：Reduced Personal Accomplishment Group；C4：Moderate Burnout Group

3.3.2 Determining Latent Classes of Nurse Burnout Based on the Four-Class Model

We plotted the standardized Z-scores for emotional exhaustion, depersonalization, and reduced personal accomplishment across the four identified classes, as illustrated in Figure 1.

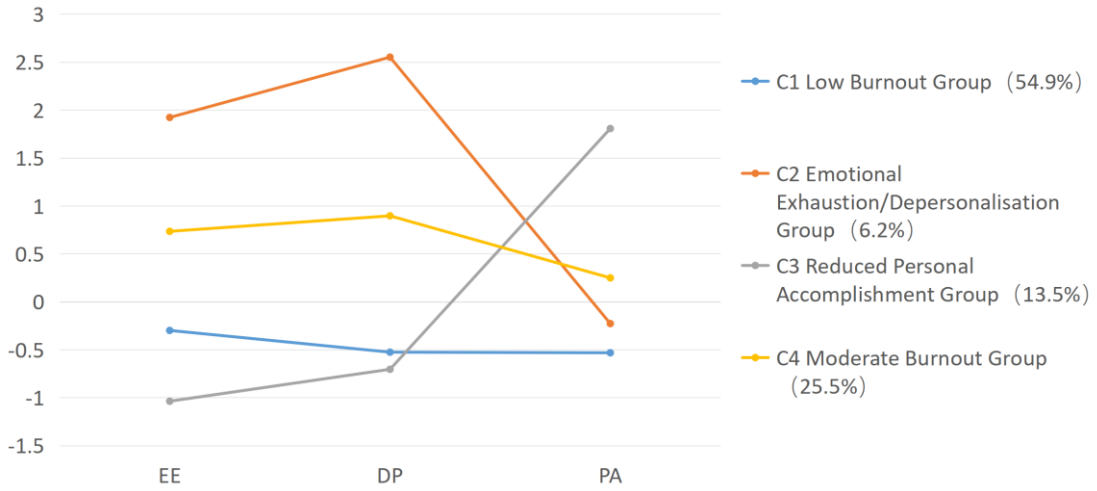

Figure 1: Latent profiles of nurse burnout

A one-way ANOVA was performed to compare scores across the three dimensions among the latent profiles. The results indicated statistically significant differences in burnout scores across all four latent classes ($P < 0.001$). Post-hoc comparison results are detailed in Table 6.

Table 6: Comparison of Burnout Dimension Scores Among Latent Classes (M ± SD)

Dimensions	C1	C2	C3	C4	*F*	Between-group comparison
Emotional Exhaustion	-0.30±0.72	1.92±0.63	-1.04±0.47	0.73±0.64	789.419***	C2 > C4 > C1 > C3
Depersonalization	-0.53±0.39	2.55±0.59	-0.71±0.32	0.90±0.49	2899.016***	C2 > C4 > C1 > C3
Low Personal Accomplishment	-0.53±0.64	-0.23±0.61	1.81±0.5	0.25±0.63	996.357***	C3 > C4 > C2 > C1

Note: *** $P < 0.001$;
C1: Low Burnout Group; C2: Emotional Exhaustion/Depersonalization Group; C3: Reduced Personal Accomplishment Group; C4: Moderate Burnout Group

3.3.3 Demographic and Work-Related Characteristics of Burnout Latent Classes

We employed one-way ANOVA to examine differences in demographic and work-related characteristics across the different burnout profiles. These results are presented in Table 7.

Table 7: Demographic and Work-Related Characteristics of Nurse Burnout Latent Classes [M ± SD / n(%)]

Variables	C1	C2	C3	C4	F/χ^2	*P*
Age	31.92±6.55	30.29±4.97	30.73±5.74	30.78±5.53	6.408	**< 0.001**
Gender					1.701	0.637
Male	25(2.4%)	4(3.5%)	9(3.6%)	16(3.3%)		
Female	1006(97.6%	111(96.5%)	244(96.4%)	462(96.7%)		

Variables	C1	C2	C3	C4	F/χ^2	*P*
Marital Status					12.241	**0.007**
Married	748(72.6%)	77(67.0%)	174(68.8%)	305(63.8%)		
Other	283(27.4%)	38(33.0%)	79(31.2%)	173(36.2%)		
Educational Level					9.695	**0.021**
Junior College and Below	86(8.3%0	11(9.6%)	30(11.9%)	26(5.4%)		
Bachelor's Degree and Above	945(91.7%)	104(90.4%)	223(88.1%)	452(94.6%)		
Average Monthly Income (CNY)					15.673	0.074
< 4000	212(20.6%)	28(24.3%)	69(27.3%)	104(21.7%)		
4000-7999	600(58.2%)	66(57.4%)	147(58.1%)	269(56.3%)		
8000-9999	166(16.1%)	15(13.0%)	31(12.3%)	69(14.4%)		
≥10000	53(5.1%)	6(5.2%)	6(2.4%)	36(7.5%)		
Service Length (years)					27.478	**0.001**
< 6	377(36.6%)	46(40.0%)	112(44.3%)	172(36.0%)		
6-10	330(32.0%)	43(37.4%)	75(29.6%)	181(37.9%)		
11-15	144(14.0%)	19(16.5%)	35(13.8%)	74(15.5%)		
> 15	180(17.5%)	7(6.1%)	31(12.3%)	51(10.7%)		
Employment Type					12.156	0.205
Authorized Staff	203(19.7%)	19(16.5%)	34(13.4%)	80(16.7%)		
Agency Contract	265(25.7%)	28(24.3%)	54(21.3%)	114(23.8%)		
Contractual Employment	559(54.2%)	67(58.3%)	163(64.4%)	282(59.0%)		
Labor Dispatch	4(0.4%)	1(0.9%)	2(0.8%)	2(0.4%)		
Professional Title					14.710	0.099
Nurse	210(20.4%)	26(22.6%)	64(25.3%)	102(21.3%)		
Primary Nurse	452(43.8%)	53(46.1%)	117(46.2%)	217(45.4%)		
Senior Nurse	333(32.2%)	35(30.4%)	70(27.7%)	152(31.8%)		
Deputy Chief Nurse and Above	36(3.5%)	1(0.9%)	2(0.8%)	7(1.5%)		
Monthly Number of Night Shifts					36.289	**< 0.001**
None	214(20.8%)	12(10.4%)	34(13.4%)	66(17.4%)		
1-4	236(22.9%)	23(20.0%)	72(28.5%)	95(19.9%)		
5-9	507(49.2%)	62(53.9%)	130(51.4%)	269(56.3%)		
More than 10	74(7.2%)	18(15.7%)	17(6.7%)	48(10.0%)		

Note: C1: Low Burnout; C2: Emotional Exhaustion/Depersonalization; C3: Reduced Personal Accomplishment; C4: Moderate Burnout

3.4 Relationship Between Nurse Burnout Latent Classes and Job Performance

3.4.1 Univariate Analysis of Nurse Burnout Latent Classes and Job Performance

Univariate analysis revealed significant differences among the latent burnout classes regarding total job performance scores ($F=80.24$, $P<0.001$), as well as task performance

(F=70.61, P<0.001) and contextual performance (F=77.988, P<0.001). These findings are summarized in Table 10.

Table 8: Univariate Analysis of Nurse Burnout Latent Classes and Job Performance (M ± SD)

Dimension	C1	C2	C3	C4	*F*	Between-group comparison
Task Performance	25.19±3.7	22.76±4.43	21.31±8.84	22.10±4.26	70.61***	C1>C2=C4=C3
Contextual Performance	21.30±2.9	19.53±3.64	17.95±7.15	18.67±3.63	77.988***	C1>C2,C4,C3 C2>C3
Total Job Performance	46.49±6.09	42.29±7.52	39.26±15.79	40.78±7.54	80.24***	C1>C2,C4,C3 C2>C3

Note: ***$P < 0.001$; C1: Low Burnout; C2: Emotional Exhaustion/Depersonalization; C3: Reduced Personal Accomplishment; C4: Moderate Burnout

3.4.2 General Linear Regression Analysis of Burnout Latent Classes and Job Performance

Initially, in the unadjusted model (Model 1), nurses in the "Emotional Exhaustion/Depersonalization" (C2) (β=-4.203, P<0.001), "Reduced Personal Accomplishment" (C3) (β=-7.229, P<0.001), and "Moderate Burnout" (C4) (β=-5.714, P<0.001) categories scored significantly lower on job performance compared to the "Low Burnout" (C1) group. Subsequently, after controlling for age, gender, marital status, education level, years of service, and monthly night shifts, the multivariate regression analysis (Model 2) confirmed that job performance scores for the C2, C3, and C4 groups remained significantly lower than those of the "Low Burnout" (C1) group. With the "Low Burnout" (C1) group as the reference, the "Emotional Exhaustion/Depersonalization" (C2), "Reduced Personal Accomplishment" (C3), and "Moderate Burnout" (C4) profiles were associated with performance score reductions of 3.814, 6.735, and 5.449, respectively (all P < 0.001).

Table 9: General Linear Regression Analysis of Burnout Latent Classes and Job Performance

Group	Model 1			Model 2		
	β	*t*	*P*	*β*	*t*	*P*
C1 (Reference	-	-	-	-	-	-
C2	-4.203	-5.042	<0.001	-3.814	-4.629	<0.001
C3	-7.229	-12.152	<0.001	-6.735	-11.438	<0.001
C4	-5.714	-12.178	<0.001	-5.449	-11.657	<0.001
Adjusted R^2		0.112			0.130	

Note: (1) C1: Low Burnout; C2: Emotional Exhaustion/Depersonalization; C3: Reduced Personal Accomplishment; C4: Moderate Burnout

(2) Model 1: Only burnout subgroups included; Model 2: Adding age, gender, marital status, educational level, years of work experience, and the monthly number of night shifts to Model 1.

4. Discussion

4.1 Current Status of Nurse Burnout

This study found that the burnout rate among nurses in Grade-A tertiary hospitals was 65.7%. This finding aligns closely with previous domestic research: Liu Fei (Liu, 2017) reported

a 60.9% positive rate among nurses in a tertiary hospital in Shandong; Wang et al.(Wang, et al., 2019) detected a 64.0% positive rate among nurses across 26 hospitals in Jiangsu Province; and Dai Yali (Dai, et al., 2011) identified a 64.4% positive rate among 2,162 nurses in Xinjiang. In contrast, international studies report significantly lower rates. For instance, a study (Poncet, et al., 2007) involving 1,392 American nurses found a burnout rate of 32.8%; De la et al. surveyed 101 nurses in Spain, reporting a positive rate of 29.6% (De la, et al., 2017); and Seyed et al. found a 14.96% positive rate in a study focused on Iranian emergency department nurses (Hosseininejad, et al, 2016). The considerably lower favorable rates reported in these foreign studies, compared with our 65.7% finding, are likely attributable to differences in healthcare systems and working environments across countries.

The overall mean burnout score in our study was 41±20.40 points, with scores of 16.81± 12.26 for emotional exhaustion, 5.54±6.09 for depersonalization, and 18.64±13.17 for reduced personal accomplishment. Notably, our scores for depersonalization and reduced personal accomplishment exceeded those reported by Tan Jianfeng (4.44±3.79 and 13.78 ±10.66, respectively)(Tan, et al., 2012) for nurses in four secondary township hospitals (Note: Tan Jianfeng's score for personal accomplishment was reverse-coded for comparison, ensuring comparability with our study). Furthermore, Chen Xiaoxia (Chen, et al., 2014) investigated nursing staff in secondary hospitals. They found scores of 14.87±7.60, 3.16±3.68, and 12.37±10.72 for the three dimensions, all of which are lower than those for tertiary hospital nurses in the current study. This suggests that nurses in Grade-A tertiary hospitals experience greater burnout than those in secondary hospitals. The primary reasons for this disparity may include.

Compared to secondary hospitals, tertiary hospitals handle larger volumes of outpatient and emergency cases, admit more inpatients, and, importantly, manage complex cases referred from lower-level facilities. These referred patients are typically critically ill with complex conditions, increasing the difficulty of nursing care and the pressure on nurses. Additionally, tertiary hospitals impose much higher demands regarding nursing research, new nursing technologies, and services than secondary hospitals, coupled with increased internal assessments and evaluations. This elevated pressure across multiple facets indirectly contributes to more severe burnout among tertiary hospital nurses.

In summary, the high positive rate and elevated burnout levels among nurses in China's Grade-A tertiary hospitals, exceeding levels seen internationally and in domestic secondary hospitals, warrant serious attention from both society and hospital administrators.

4.2 Latent Classes of Nurse Burnout

Employing LPA and guided by various model fit indices and the practical interpretability of nurse burnout profiles, this study investigated the heterogeneity of nurse burnout. We found that burnout among nurses in Grade-A tertiary hospitals is heterogeneous and can be categorized into four latent classes: "Low Burnout," "Emotional Exhaustion/Depersonalization," "Reduced Personal Accomplishment," and "Moderate Burnout."

Previous research has reported similar findings: Önder and Basim (Önder, et al., 2008) used MBI-HSS and cluster analysis to identify three burnout subtypes among Turkish nurses. The standardized Z-scores across the dimensions for these three subtypes were largely consistent with our "Low Burnout," "Reduced Personal Accomplishment," and "Moderate Burnout" profiles. Similarly, Sun Yaoyao (Sun, et

al., 2019) identified four burnout subtypes among nurses in a Chinese tertiary hospital, with characteristics across the three dimensions generally consistent with our findings.

"Low Burnout" Profile: Nurses in this category scored low across all three burnout dimensions, hovering near the sample average. Their standardized scores for depersonalization and reduced personal accomplishment were below -0.5. This type represents the most significant proportion of nurses in our sample (54.9%) and indicates the mildest burnout, reflecting a generally good overall status.

"Emotional Exhaustion/Depersonalization" Profile: This profile constitutes the smallest proportion of nurses (approximately 6.2%). Nurses here exhibit conspicuously high levels of emotional exhaustion and depersonalization, yet their reduced personal accomplishment score is low, below the sample average, with a standardized score of -0.2. This aligns with Bauernhofer's findings (Bauernhofer, et al., 2018), which also identified a subgroup characterized by high emotional exhaustion and depersonalization combined with low personal accomplishment. In China, Tian Lu (Tian, et al., 2019) also identified this burnout subtype among neurologists using cluster analysis. The substantial emotional and personal resource depletion experienced by nurses in this profile leads to severe emotional exhaustion, which progressively manifests as problematic attitudes toward patients (i.e., hostile and indifferent service). However, their scores on reduced personal accomplishment are not high. This paradox might stem from high emotional exhaustion and depersonalization, reducing the individual's motivation to pursue personal accomplishments and lowering their perception of diminished achievement. According to Maslow's Hierarchy of Needs, "emotions" and "interpersonal relationships" fall under the "love and belonging" level of needs, while "personal achievement" belongs to the "self-actualization" level of needs. When the low-level needs such as "emotions" and "interpersonal relationships" of those "high emotional exhaustion" and "high depersonalization" individuals cannot be met, the pursuit of "achievement" by the individuals will decline. As a result, the individuals will not feel the diminished of achievement. Since personal accomplishment is a subjective experience assessed via self-report, some nurses may report high emotional exhaustion and depersonalization without perceiving a reduction in personal accomplishment, forming this unique burnout type.

"Reduced Personal Accomplishment" Profile: This category accounts for 13.5% of the nursing population. Nurses in this profile show a pronounced lack of personal accomplishment. At the same time, their emotional exhaustion and depersonalization scores are the lowest among all groups, significantly lower than those of the other three categories. Marques (Marques, et al., 2018) also reported a pronounced decline in personal accomplishment among hospital healthcare workers. This study, using LPA, identified the "Reduced Personal Accomplishment" profile as a specific burnout subtype. These nurses primarily experience a severe lack of personal accomplishment, with the mildest symptoms of emotional exhaustion and depersonalization among the four profiles. Nurses of this type perceive their work stress as tolerable and maintain high enthusiasm and positive attitudes toward patients. However, factors such as low wages and low social recognition prevent them from experiencing personal accomplishment in their work. Lin Kai (Lin, et al., 2014) similarly identified a "Reduced Personal Accomplishment" latent class among corporate science and technology workers. Hu

Qian (Hu, 2009) also found a burnout subtype characterized primarily by diminished personal accomplishment among enterprise employees. Sun Yaoyao (Sun, et al., 2019) in their study of medical staff at a Chinese tertiary hospital, identified a unique "Reduced Personal Accomplishment" type, in addition to the standard low, moderate, and high burnout types.

"Moderate Burnout" Profile: Nurses in this category exhibit comparable scores across all three burnout dimensions, all at a medium level. They constitute 25.4% of the nursing population.

Therefore, administrators should holistically consider individual scoring patterns across all three burnout dimensions rather than relying solely on a single dimension's score when analyzing nurse burnout.

4.3 Relationship Between Nurse Burnout Latent Classes and Job Performance

The results of this study show that the latent classes of nurse burnout are closely associated with job performance, consistent with previous research exploring the relationship between individual burnout dimensions and performance (Parker, et al., 1995; Xia, 2019; Zhao, et al., 2015; E B, et al., 2017).However, our study, conducted at the group level, revealed significant differences in job performance among nurses belonging to different latent profiles.

Firstly, nurses in the "Low Burnout" category exhibited the best job performance. These nurses scored low across all three burnout dimensions, and their task performance, contextual performance, and total job performance scores were the highest among the four latent profiles. This confirms prior conclusions that all dimensions of burnout negatively predict job performance (Su, 2018).

Secondly, nurses in the "Reduced Personal Accomplishment" category showed the worst job performance. This group had the highest scores in the reduced personal accomplishment dimension and the lowest scores in total job performance, task performance, and contextual performance. This aligns with existing literature indicating that individuals with severe diminished personal accomplishment have poorer work performance. For example, domestic scholar Liu Wenli's (Liu, 2015) study of university teachers in Shaanxi Province found that the correlation between the reduced personal accomplishment dimension and task performance, contextual performance, and total job performance was more substantial than that observed for emotional exhaustion or depersonalization. Specifically, reduced personal accomplishment negatively predicted both task and contextual performance, while emotional exhaustion negatively predicted only contextual performance, and depersonalization negatively predicted only task performance. Nurses in the "Reduced Personal Accomplishment" profile rarely experience the sense of personal accomplishment, and demonstrates low work performance. It is consistent with Maslach's (Maslach, 1999) interpretation of the reduced personal accomplishment dimension, which reflects a decline in an individual's competence and performance at work, primarily reflecting the individual's perception of their performance achievements. This type of individuals tend to have poorer abilities and performance at work, which is manifested as "a decrease in personal sense of achievement" in the context of job burnout, and in terms of work performance, it translates into poor performance. Therefore, administrators must focus on the "Reduced Personal Accomplishment" nurses and implement targeted measures to boost their job performance.

In our study, there was a significant difference

in contextual and total job performance between the "Emotional Exhaustion/Depersonalization" and "Reduced Personal Accomplishment" profiles. However, no significant differences in job performance were detected between the "Emotional Exhaustion/Depersonalization" and "Moderate Burnout" profiles, nor between the "Moderate Burnout" and "Reduced Personal Accomplishment" profiles. The non-significant results do not necessarily negate the existence of differences; they may instead reflect an insufficient sample size to demonstrate these distinctions clearly.

4.4 Limitations

This study is a cross-sectional one, thus it is impossible to determine the temporal sequence and causal relationship between the potential categories of nurse burnout and nurse job performance and patient safety. This issue needs to be further explored in future research in the form of longitudinal studies. All the data in this study were collected through self-evaluation by nurses, which may lead to self-report bias.

5. Conclusion

Nurse burnout in Grade-A tertiary hospitals is prevalent and severe, warranting urgent attention. Nurse burnout can be classified into four types: "Low Burnout," "Emotional Exhaustion/Depersonalization," "Reduced Personal Accomplishment," and "Moderate Burnout." The "Low Burnout" profile is the largest group, while the "Emotional Exhaustion/Depersonalization" profile is the smallest. Nurses in the "Low Burnout" category exhibit the best job performance, while those in the "Reduced Personal Accomplishment" category demonstrate the poorest performance. Administrators should comprehensively analyze the distinct characteristics across all burnout dimensions to identify latent classes, enabling early screening for burnout subtypes associated with lower job performance. Furthermore, specific intervention measures should be tailored to the characteristics of each latent class to improve nurse job performance effectively.

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