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The Protective Ceiling: A Mixed Methods Study of Work Meaning, Resilience, and Burnout Among Chinese Nurses

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Abstract

Background. The global nursing workforce crisis is intensified in China by collective cultural values, steep organizational hierarchies, and persistently high workloads. While the Job Demands-Resources (JD-R) model posits that personal resources such as work meaning and psychological resilience buffer job demands, this protective effect appears limited in rigid, resource-constrained healthcare systems. Most prior research has been conducted in Western settings, leaving unexplained the paradox of high personal resources coexisting with severe burnout among nurses in East Asian institutional contexts.

Objectives. This study aimed to examine the "protective ceiling"—a boundary condition of the JD-R model under which structural constraints redirect personal resources from protective buffering to performance maintenance. Specifically, it sought to identify the structural and psychological mechanisms that limit resource efficacy, clarify how hierarchy and failed recovery systems erode protective function, and generate evidence for context-specific interventions that move beyond individual resilience training toward structural reform.

Methods. An exploratory sequential mixed-methods design was employed. In the quantitative phase, 70 registered nurses from a primary-level private hospital in southwestern China completed the Meaning in Work Scale (MIW), the Maslach Burnout Inventory—Human Services Survey (MBI-HSS), and the Connor-Davidson Resilience Scale (CD-RISC). Data were analyzed using descriptive statistics and Pearson product-moment correlation. In the qualitative phase, seven nurses were purposively selected using extreme-case sampling to represent distinct positions on the meaning-burnout and resilience-burnout continua. Semi-structured interviews were analyzed using thematic analysis following Braun and Clarke's six-phase framework to explain the quantitative paradox.

Results. Nurses reported high work meaning (M = 3.64, SD = 1.08) and high psychological resilience (M = 3.55, SD = 1.03), yet also high overall burnout (M = 3.69) marked by severe emotional exhaustion (M = 4.10). Work meaning and resilience were negatively correlated with burnout ($r = -0.694$ and $r = -0.666$, $p < 0.001$), yet absolute scores indicated paradoxical coexistence. Qualitative analysis revealed three

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mechanisms forming the protective ceiling: (1) structural constraints and professional identity conflicts, including hierarchical friction, educational stratification, and cultural-economic tension; (2) psychological depletion masked by continued functioning, encompassing existential exhaustion, moral trauma, and physiological manifestations; and (3) failure of recovery mechanisms, characterized by career-stage inequity, pseudo-recovery behaviors, and gendered barriers to genuine restoration.

Conclusion. and Impact. The protective ceiling advances JD-R theory by specifying structural boundary conditions where personal resources are structurally captured for institutional performance maintenance rather than individual health protection. For nursing management and health policy, this implies that sustainable practice requires a three-tier intervention framework: Tier 1 structural deconstruction (reducing non-clinical administrative burden, establishing shared governance, enforcing protected nurse-to-patient ratios); Tier 2 institutional recovery mechanisms (mandatory digital disconnection protocols, trauma-informed supervision, narrative documentation systems); and Tier 3 mutual support systems (interdisciplinary peer networks, cross-hierarchical mentorship). Interventions focused solely on strengthening individual resilience risk intensifying the protective ceiling by enhancing performance capacity without dismantling the structural barriers that convert such capacity into additional unrewarded labor.

Keywords: Nurse burnout; work meaning; psychological resilience; protective ceiling; mixed methods; China

1. Introduction

The global nursing workforce is critically insufficient to support healthcare access worldwide. While nurses constitute nearly half of all health workers [1], interest in nursing as a career has declined sharply across many countries, accompanied by professional status degradation and workplace failures driven by ambiguous tasks, poor communication, lack of organizational support, and excessive workload [2-3]. In China, these challenges are intensified by collective cultural values, vertical organizational hierarchies, and persistently high workloads that shape nurses' experiences of job stress and professional identity in ways distinct from Western healthcare environments. Nurses in primary-level private hospitals face particular pressures, as market competition and resource scarcity compound the emotional and structural demands of patient care.

The Job Demands-Resources (JD-R) model posits that employees' psychological well-being arises from the interaction between job demands and personal resources, with work meaning and resilience serving as protective buffers against burnout [4-5]. Consistent with this framework, work significance represents an elastic psychological resource that triggers positive feedback processes by reframing job demands as purposeful and improving self-efficacy [6]. However, this linear protective assumption appears incomplete in rigid, resource-constrained systems. Most research has been conducted in Western settings and has not fully characterized how occupational meaning and psychological resilience interact to influence burnout in East Asian institutional contexts characterized by collective values and steep organizational hierarchies. Moreover, existing studies have relied predominantly on either quantitative

or qualitative methods alone, leaving the mechanisms behind the paradox of high resources coexisting with high burnout unexplained.

This study addresses these gaps by examining the "protective ceiling" — a boundary condition of the JD-R model under which structural constraints cause personal resources to shift from protective buffering to performance maintenance. Using an exploratory sequential mixed-methods design, we investigated how Chinese nurses in a primary-level private hospital experienced the paradox of high work meaning (M = 3.64) and high psychological resilience (M = 3.55) alongside severe burnout (M = 3.69) and emotional exhaustion (M = 4.10). The aim was to identify the structural and psychological mechanisms that limit resource efficacy, clarify how hierarchy, bureaucratic burden, and failed recovery systems erode the protective function of personal resources, and generate evidence for context-specific interventions that move beyond individual resilience training toward structural reform.

The study addressed four research questions: (1) What is the demographic profile of the nurse-respondents? (2) What are the levels of meaning in work, psychological resilience, and burnout among nurses at the study hospital? (3) What issues and concerns do nurses express regarding their experiences of these constructs? (4) Based on the integration of quantitative and qualitative results, what intervention framework can be developed to enhance meaning in work, strengthen psychological resilience, and reduce burnout?

2. Methods

2.1 Design

This study employed an exploratory sequential mixed-methods design [7], in which quantitative data were first collected and analyzed, followed by a qualitative phase that contextualized and explained the empirical findings. Quantitative reporting follows the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines for cross-sectional studies [8], and qualitative reporting follows the 32-item COREQ (Consolidated Criteria for Reporting Qualitative Research) checklist [9]. This two-phase structure was chosen because the statistical pattern of high resources coexisting with high burnout required experiential depth to be interpretable; a quantitative-only design would have left the mechanism unexplained, while a qualitative-only design would have lacked the empirical grounding to establish the paradox as a systematic rather than incidental finding. The quantitative phase provided a broad profile of work meaning, resilience, and burnout levels, while the qualitative phase offered depth regarding how structural constraints limit the protective efficacy of personal resources.

2.2 Setting

The study was conducted at a Level I private general hospital in southwestern China (province and city anonymized to protect institutional identity), serving a predominantly working-class patient population in a resource-constrained municipal setting.

2.3 Participants

In the quantitative phase, the target sample size was determined a priori using G*Power 3.1 software [10]. Assuming a medium effect size for Pearson correlation ($|r| = 0.30$), a two-tailed test, an alpha level of 0.05, and a statistical power of 0.80, the minimum required sample was 84 participants [11]. To mitigate potential underpowering given recruitment constraints at a single site, 70 registered nurses with at least six months of clinical experience in inpatient care were recruited, comprising 52 permanent ward nurses (74.3%) and 18 visiting nursing staff (25.7%) temporarily assigned to the hospital. Visiting nurses shared identical shift schedules, workload structures, and institutional constraints with permanent staff during the data collection period, and all participants held current nursing licenses and were actively engaged in direct patient care. The achieved sample of 70 yields approximately 73% power to detect a correlation of $r = 0.30$ at $\alpha = 0.05$ (two-tailed); consequently, the correlation analysis should be interpreted as exploratory rather than confirmatory.

For the qualitative phase, seven participants were purposively selected from the quantitative sample using extreme-case sampling to represent distinct positions on the meaning-burnout and resilience-burnout continua: two cases with high resources and high burnout (the protective-ceiling paradox), two with low resources and high burnout, two with high resources and low burnout, and one management case providing an institutional perspective. This strategy was chosen because extreme cases maximize the information value of small samples when the research purpose is to explain statistical anomalies rather than to describe population distributions [7]. The qualitative subsample included five frontline ward nurses, one head nurse, and one director of nursing, with ages ranging from 24 to 48 years and nursing experience from 5 to 28 years. Data saturation was assessed using informational redundancy criteria [12]: by the seventh interview, no new codes or thematic dimensions emerged beyond the three established categories (structural constraints, psychological depletion, and recovery failure). All seven transcripts were independently reviewed by two researchers, who confirmed that the final two interviews yielded only confirmatory data that repeated existing codes rather than generating new conceptual content. While saturation with $n = 7$ is plausible given the homogeneity of the sampling frame (same hospital, identical structural conditions) and the focused research questions, this small sample may not capture the full range of clinical specialties, career stages, or gendered experiences; this limitation is explicitly acknowledged in the interpretation of findings.

2.4 Instruments

Work meaning was measured using the Meaning in Work Scale (MIW), a 10-item instrument employing a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Higher scores indicate stronger perception that one's work is meaningful and aligned with personal values.

Burnout was assessed using the Maslach Burnout Inventory—Human Services Survey (MBI-HSS; [13]), a 22-item scale measuring three dimensions: Emotional Exhaustion (EE; 9 items), Depersonalization (DP; 5 items), and Personal Accomplishment (PA; 8 items). The three subscales use different response formats and scoring structures; therefore, consistent with Maslach et al. [14] and current psychometric guidance, subscale scores were analyzed and reported separately rather

than as a composite total. The Personal Accomplishment items were reverse-scored so that higher scores uniformly indicated higher burnout across all three dimensions. Permission to use the MBI-HSS was obtained from Mind Garden, Inc. (www.mindgarden.com).

Psychological resilience was measured using the Connor-Davidson Resilience Scale (CD-RISC; [15]), a 25-item instrument employing a 5-point scale (0 = Not true at all to 4 = Almost always true). Higher scores reflect greater trait-like resilience in the face of adversity. The validated Chinese version was used with permission from the scale authors.

Internal consistency for all instruments in this sample was acceptable to excellent, with Cronbach's alpha coefficients ranging from 0.78 to 0.91 across the three scales and their respective subdimensions.

2.5 Data Analysis

Quantitative data were analyzed using IBM SPSS Statistics version 26.0 (IBM Corp., Armonk, NY). Descriptive statistics were computed for all demographic and scale variables. Pearson product-moment correlations were used to examine bivariate relationships among work meaning, psychological resilience, and each of the three MBI-HSS subscales (Emotional Exhaustion, Depersonalization, and Personal Accomplishment) separately. The assumptions of normality, linearity, and homoscedasticity were verified prior to parametric analysis, and univariate outliers were screened.

Qualitative data were analyzed using thematic analysis following the six-phase framework of Braun and Clarke [16]: familiarization with data, generation of initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. Two researchers independently coded the first three transcripts to develop an initial coding framework; discrepancies were resolved through discussion until consensus was reached, and the refined framework was applied to the remaining transcripts. Credibility was established through prolonged engagement with the data and member checking, wherein preliminary theme summaries were returned to two participants for confirmation of interpretive accuracy. Dependability was supported by maintaining an audit trail that documented coding decisions, theme revisions, and analytical memos. Confirmability was addressed through reflexive journaling, in which the primary researcher recorded assumptions and emotional reactions during analysis to prevent subjective bias from shaping theme construction. Direct quotes from participants were selected to illustrate each theme.

2.6 Integration

Integration of the two data strands followed a continuous narrative strategy. Quantitative trends were first established, then qualitative findings were used to clarify the experiential mechanisms behind the statistical patterns—specifically, why high work meaning and high resilience coexisted with severe burnout. This convergent inference process generated the protective-ceiling conceptual model as an integrated output of the mixed-methods design.

3. Results

3.1 Quantitative Results

The quantitative phase enrolled 70 registered nurses from study hospital. Table 1 presents the consolidated demographic profile. The majority were aged 21–30 years (n = 35, 50.0%), held a bachelor's degree or above (n = 52, 74.3%), worked as staff nurses (n = 61, 87.1%), and had 1–10 years of service (n = 50, 71.4%). This composition reflects a predominantly young, frontline workforce in the early stages of career development. The preponderance of female participants aligns with the gendered composition of nursing in China, where men constitute approximately 2–3% of the national workforce [17]; the 21.4% male representation in this sample substantially exceeds the national average of 2–3% [17], reflecting either the gradual masculinization of acute-care settings in private hospitals or a self-selection bias wherein male nurses with stronger coping resources were more willing to participate. Because male nurses may experience burnout through different pathways than their female counterparts—particularly regarding emotional labor expectations and gendered recovery barriers—the overrepresentation of men limits the generalizability of findings to the predominantly female Chinese nursing workforce. Sensitivity analyses comparing burnout levels between male and female participants found no statistically significant differences (p > .05), but the small subgroup sizes (n = 15 males, n = 55 females) render this comparison underpowered; this demographic skew should be considered when interpreting results. The concentration of participants in the first decade of service is clinically significant because early-career nurses are known to experience the steepest burnout trajectories, lacking the accumulated social capital and boundary-management skills that senior colleagues deploy to mitigate institutional demands [18].

Table 1 Demographic Profile of Nurse Respondents (N = 70)

Characteristic	Category	*n*	%
Age (years)	21–30	35	50
	31–40	26	37.1
	41–50	6	8.6
	51–60	3	4.3
Education	College diploma	18	25.7
	Bachelor's degree or above	52	74.3
Position	Staff nurse	61	87.1
	Charge nurse	7	10
	Head nurse	2	2.9
Years of service	1–10	50	71.4
	11–20	12	17.1
	21–30	6	8.6
	31–40	2	2.9

Instrument reliability was verified prior to inferential analysis. As shown in Table 2, Cronbach's α ranged from 0.78 to 0.91 across all scales, indicating acceptable to excellent internal consistency. The Maslach Burnout Inventory—Human Services Survey (MBI-HSS) Personal Accomplishment subscale was reverse-scored so that higher scores indicated greater burnout, aligning directionality with the other two subscales.

Table 2 Reliability Analysis of Measurement Instruments

Scale / Dimension	No. of Items	Cronbach's α	Interpretation
Meaning in Work Scale (MIW)	10	0.87	Good
MBI-HSS Emotional Exhaustion	9	0.88	Good
MBI-HSS Depersonalization	5	0.78	Acceptable
MBI-HSS Personal Accomplishment*	8	0.81	Good
Connor-Davidson Resilience Scale (CD-RISC)	25	0.91	Excellent

Note： PA items were reverse-scored to indicate higher burnout. Cronbach's $\alpha \geq 0.70$ = acceptable; ≥ 0.80 = good; ≥ 0.90 = excellent [19].

n

Descriptive statistics revealed a paradoxical pattern. Nurses reported high work meaning (M = 3.64, SD = 1.08), high psychological resilience (M = 3.55, SD = 1.03), yet also high levels across all three MBI-HSS subscales: emotional exhaustion (M = 4.10, SD = 0.95), depersonalization (M = 3.60, SD = 1.12), and reduced personal accomplishment (M = 3.20, SD = 1.05). The distribution of MIW scores indicated that 61.4% of participants (= 43) scored above the scale midpoint of 3.00, confirming that the sample as a whole perceived work as meaningful rather than neutral or alienating. Similarly, 58.6% of nurses (n = 41) scored above the CD-RISC midpoint of 2.00, suggesting trait resilience levels that would conventionally be interpreted as protective. Yet these resource distributions coexisted with burnout levels that exceeded clinical thresholds on individual subscales: 68.6% (n = 48) reported emotional exhaustion scores above 3.50, a level commonly associated with high burnout in Chinese healthcare samples [20], and 55.7% (n = 39) scored above the depersonalization midpoint of 3.00. This coexistence of above-average resources with above-average strain contradicts the linear protective logic of the JD-R model and signals the presence of a structural boundary condition that attenuates resource efficacy.

Bivariate correlations (Table 3) showed that work meaning was negatively associated with emotional exhaustion (r = −0.694, p < 0.001, 95% CI [−0.800, −0.540]) and positively associated with resilience (r = 0.645, p < .001, 95% CI [0.470, 0.770]). Resilience was also negatively correlated with emotional exhaustion (r = −0.666, p < 0.001, 95% CI [−0.780, −0.510]). Correlations with the other two burnout subscales followed the same directional pattern: work meaning was negatively correlated with depersonalization (r = −0.582, p < 0.001) and reduced personal accomplishment (r = −0.518, p < 0.001), and resilience was negatively correlated with depersonalization (r = −0.561, p < 0.001) and reduced personal accomplishment (r = −0.489, p < 0.001). The magnitude of these coefficients falls within the large-effect range (r ≥ 0.50) according to Cohen's [21] conventions, indicating that the statistical relationships among the three constructs are robust and theoretically meaningful. However, the absolute mean scores indicated that high personal resources coexisted with clinically significant exhaustion, suggesting that statistical buffering does not necessarily translate into clinical protection under rigid structural constraints. In other words, the directionality of the correlations remains intact—resources still predict lower burnout in the aggregate—but the intercept is shifted upward by structural pressures that sustain high demands regardless of resource levels.

Table 3 Descriptive Statistics and Correlation Matrix

Variable	*M*	*SD*	1	2
1. Meaning in Work	3.64	1.08	—	—
2. Psychological Resilience	3.55	1.03	0.645**	—
3. Emotional Exhaustion	4.10	0.95	−0.694**	−0.666**

Note. ** $p < 0.001$ (two-tailed). $N = 70$. Burnout subscales were analyzed separately following Maslach et al. [14]; Emotional Exhaustion is presented here as the most severe dimension. Correlations with Depersonalization and Reduced Personal Accomplishment followed the same directional pattern (see text).

3.2 Qualitative Results

Seven nurses were purposively sampled to explain the quantitative paradox. Thematic analysis of semi-structured interviews generated three overarching themes that illuminate why high resources failed to prevent burnout. Table 4 provides a consolidated overview of the thematic structure and illustrative quotations.

Table 4 Thematic Structure of Qualitative Findings (*N* = 7)

Theme	Subtheme	Illustrative Quote
1. Structural Constraints and Professional Identity Conflicts	Hierarchical friction	"We execute the system, yet we have no control over it." (N6)
	Educational stratification	"My expert opinions are perceived as 'bookish' or 'unrealistic.'" (N6)
	Cultural-economic tension	"I consider myself merely a 'medical service provider.'" (N5)
2. Psychological Depletion and Continued Functioning	Exhaustion despite rest	"Sleeping feels like rebooting a crashed computer: the system may turn on, but its programs remain in chaos." (N1)
	Performance under trauma	"I'm still at work, still smiling, still completing tasks, but my capacity has already been exhausted." (N1)
	Physiological manifestations	"I often collapsed suddenly, my hands trembling in the locker room… needing deep breaths before continuing." (N4)
	Moral trauma	"I should have done better but couldn't." (N1)
	Career-stage inequity	"Without a bachelor's degree, I won't be able to advance… my skills are respected, but my potential is overlooked." (N4)
3. Failure of Recovery Mechanisms	Pseudo-recovery	"My recovery is merely a 'pause,' a temporary suspension of emotions and problems, without actual resolution." (N4)
	Gendered barriers	"Male nurses get tired too? It's you guys who benefit from manual labor." (N6)
	Reputation suppression	"I perceive my boundless energy as a defensive vitality—much like a peacock's display." (N4)
	Future collapse	"I feel I have reached my limit… I have hit rock bottom and see no hope of recovery." (N7)

3.2.1 Structural Constraints and Professional Identity Conflicts.

Nurses described a systematic mismatch between organizational structure and professional practice. Hierarchical friction created a responsibility-power gap in which

nurses bore legal and moral accountability for clinical outcomes while lacking autonomous decision-making authority; this compliant labor eroded professional agency and generated persistent cognitive dissonance. One participant noted, "We execute the system, yet we have no control over it." The phrase captures the existential irony of frontline nursing in this setting: nurses are simultaneously the most visible caregivers and the most structurally invisible decision-makers. The absence of control does not merely frustrate professional ambition; it transforms clinical judgment into a liability, because nurses who question physician orders or administrative protocols risk being labeled as disruptive rather than conscientious.

Educational stratification further distorted identity. Nurses with associate degrees encountered invisible promotion ceilings that truncated their career horizons regardless of clinical competence, while those with advanced degrees faced hostility toward research-based knowledge, which was dismissed as threatening to hierarchical stability. One nurse with a master's degree recalled that "My expert opinions are perceived as 'bookish' or 'unrealistic,'" a characterization that reveals how credential-based expertise is neutralized when it conflicts with positional authority. The label "bookish" functions not as a substantive critique but as a status-based dismissal that protects the existing hierarchy from evidence-based challenge. This structural dissonance was compounded by cultural-economic tension. The altruistic "white angel" ideal collided with market-driven cost-cutting, leaving nurses to absorb resource scarcity through self-exploitation legitimated as professional virtue. One participant summarized this collapse of symbolic and material value by stating, "I consider myself merely a 'medical service provider,'" a phrase that signals the degradation of nursing identity from a moral calling to a commodified service transaction. Together, these three subthemes—hierarchical friction, educational stratification, and cultural-economic tension—form a structural triad that converts professional identity from a resource into a target for institutional extraction.

3.2.2 Psychological Depletion and Continued Functioning.

Structural pressure produced existential exhaustion that persisted despite rest. Nurses reported that physical downtime failed to restore psychological resources because chronic stress had fragmented internal recovery systems. A nurse described sleep as "rebooting a crashed computer," where the system turns on but programs remain in chaos. The metaphor is analytically precise: sleep restores the biological substrate of consciousness without repairing the cognitive and emotional architecture damaged by cumulative moral load. This deep-level depletion coexisted with maintained technical performance. Nurses sustained professional functioning while internal reserves collapsed, rendering burnout invisible to observers and delaying necessary intervention. One frontline nurse captured this performative paradox exactly: "I'm still at work, still smiling, still completing tasks, but my capacity has already been exhausted." The repetition of "still" emphasizes the temporal persistence of surface competence, while the admission of exhausted capacity reveals the hidden fracture beneath it. This pattern—functional output masking structural damage—explains why standardized burnout screening often fails to detect early collapse in high-performing nurses.

The body registered chronic load through somatic symptoms—post-shift trembling, chest tightness, and insomnia—that emerged even when cognitive defenses remained intact and standard screening instruments showed no abnormalities. One nurse reported, "I often collapsed suddenly, my hands trembling in the locker room… needing deep breaths before continuing." The locker room functions as a liminal space where the performative mask can be removed, and the body asserts what the professional self has suppressed. These physiological manifestations are not secondary symptoms but primary indicators of a nervous system operating beyond its regulatory capacity. Constrained by understaffing and documentation demands, nurses were forced to withhold adequate care, producing ethical self-abandonment that transcends conventional emotional exhaustion. One participant summarized this moral wound with stark brevity: "I should have done better but couldn't." The statement contains no external attribution; the nurse blames herself for a failure that was structurally engineered by impossible patient-to-staff ratios and bureaucratic overload. This internalized blame transforms systemic violence into personal shame, deepening the psychological injury beyond what the MBI-HSS can adequately measure.

3.2.3 Failure of Recovery Mechanisms.

Recovery was systematically blocked by institutional and cultural barriers. Career-stage inequity created divergent restoration pathways: senior nurses accessed protected boundaries through positional authority, whereas novice nurses relied on brittle identity-oriented recovery that collapsed when patient gratitude could not offset systemic adversity. One junior nurse with an associate degree described the career ceiling with painful clarity: "Without a bachelor's degree, I won't be able to advance… my skills are respected, but my potential is overlooked." The distinction between respected skills and overlooked potential captures the specific injury of educational stratification: competence is acknowledged as a present utility but denied as a future trajectory. This blocked horizon intensifies burnout by removing the temporal buffer of professional hope; without a credible future self, present suffering loses its narrative of eventual redemption.

Pseudo-recovery behaviors proliferated among junior staff. One participant characterized recovery as merely a "pause," a temporary suspension of emotions without genuine resolution or relaxation, perpetuating a cycle where superficial rest masks deepening depletion. The term "pause" is analytically significant because it implies that the underlying stressors remain active during the rest period, waiting to resume as soon as the nurse returns to the ward. Unlike genuine recovery, which involves resource replenishment and cognitive detachment, pseudo-recovery is a holding pattern that preserves the appearance of functionality while preventing actual restoration. Gendered barriers further distorted restoration by blocking emotional expression for male nurses, forcing silent endurance that substituted physical symptoms for genuine psychological recovery. One male nurse challenged the invisibility of his strain with pointed irony: "Male nurses get tired too? It's you guys who benefit from manual labor." The rhetorical question exposes the gendered assumption that male bodies are structurally immune to emotional exhaustion, while the second clause reveals how this assumption is exploited to extract additional physical labor. Reputation norms

in collectivistic contexts compelled nurses to conceal depletion behind performative vitality to protect professional face. One participant described this concealment as a defensive display: "I perceive my boundless energy as a defensive vitality—much like a peacock's display." The peacock metaphor transforms professional energy from an authentic resource into a strategic performance designed to ward off supervisory scrutiny and peer judgment. Finally, the inability to project one's professional self into the future trapped nurses in chronic presentism, leaving them waiting for an endpoint rather than building sustainable practice. One senior nurse expressed this temporal collapse with devastating finality: "I feel I have reached my limit… I have hit rock bottom and see no hope of recovery." Unlike the junior nurses who still frame their distress in terms of blocked advancement, this participant has exhausted even the vocabulary of future possibility; the protective ceiling has become a permanent roof rather than a temporary barrier.

3.3 Integration of Quantitative and Qualitative Findings

The convergence of quantitative trends and qualitative narratives produces a coherent explanatory account of the protective ceiling. Quantitatively, the strong negative correlations between resources and burnout ($r = -0.694$ and -0.666) confirm that work meaning and resilience retain their theoretical structure as protective constructs; nurses who score higher on these scales do report lower burnout in the statistical aggregate. Qualitatively, however, the three thematic mechanisms reveal that this statistical protection is clinically hollow because structural constraints redirect personal resources from individual restoration to institutional performance maintenance. Work meaning does not buffer nurses against demands; it fuels their willingness to absorb demands that exceed safe capacity. Resilience does not enable recovery; it enables continued functioning during recovery failure. The protective ceiling therefore represents not the absence of resources but their structural misallocation: resources are present, measurable, and statistically significant, yet they are captured by the organization to sustain output rather than by the individual to sustain health. This integrated interpretation resolves the quantitative paradox without invalidating the JD-R model; rather, it specifies the boundary condition under which the model's linear assumptions break down.

4. Discussion

This study documents a paradoxical resource-burnout pattern among Chinese frontline nurses that challenges the linear protective assumption underlying conventional stress-resource frameworks. Quantitative data from 70 nurses at the study hospital revealed high work meaning ($M = 3.64$, $SD = 1.08$), high psychological resilience ($M = 3.55$, $SD = 1.03$), and strong statistically significant negative correlations with emotional exhaustion ($r = -.694$, $p < .001$; $r = -.666$, $p < .001$), yet absolute mean scores indicated severe emotional exhaustion ($M = 4.10$, $SD = 0.95$), elevated depersonalization ($M = 3.60$, $SD = 1.12$), and reduced personal accomplishment ($M = 3.20$, $SD = 1.05$). Qualitative analysis of seven purposively sampled nurses explained this disjunction through three interconnected mechanisms operating at different system levels. First, structural constraints—including hierarchical friction that severs clinical responsibility from decision-making authority, educational stratification that renders advanced

training either invisible or threatening to institutional stability, and cultural-economic tension between the altruistic "white angel" ideal and the market logic of cost reduction—create a rigid environment where job demands are structurally non-negotiable and professional agency is systematically eroded. Second, these structural conditions generate psychological depletion that remains clinically hidden because nurses maintain technical performance despite internal collapse; existential exhaustion, moral trauma from systematically compromised care standards, and physiological manifestations such as post-shift trembling, chest tightness, and insomnia accumulate beneath a surface of professional composure that supervisors and standardized instruments mistake for healthy functioning. Third, recovery mechanisms systematically fail when temporal boundaries collapse under mandatory digital surveillance through workplace social media, cultural reputation norms suppress expressions of vulnerability as incompatible with the "angel" image, and access to genuine restoration is stratified by career stage, gender, and educational credentials, leaving junior and male nurses particularly disadvantaged. Integrating these quantitative and qualitative findings, we propose the protective ceiling as a boundary condition of the Job Demands–Resources (JD-R) model: a structural threshold at which personal resources are redirected from a protective buffering pathway to a performance maintenance pathway, producing statistical resilience without clinical protection [4]. Unlike resource depletion, which represents the terminal state of exhaustion, the protective ceiling marks the precise point where buffering efficacy asymptotically plateaus while nominal resource scores remain deceptively high, misleading both administrators and researchers into believing that nurses are adequately protected when they are in fact approaching collapse.

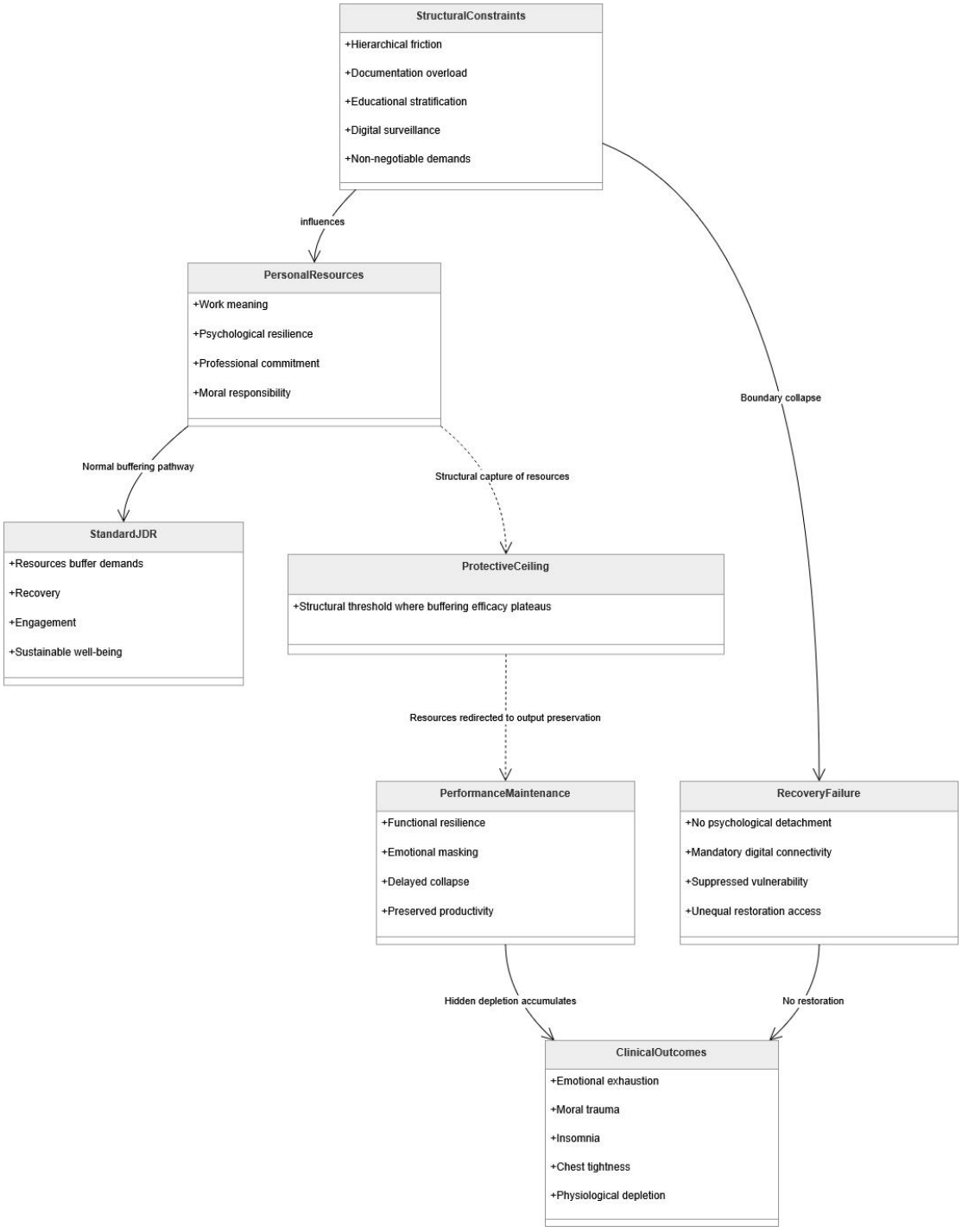

Figure 1 Conceptual Model of Protective Ceiling

Figure 1. The protective ceiling as a boundary condition of the Job Demands–Resources model. When structural demands are non-negotiable and recovery infrastructure is absent, personal resources shift from a protective buffering pathway to a performance maintenance pathway. Solid lines indicate standard JD-R assumptions; dashed lines indicate the constrained transformation observed in this study.

The JD-R model and its recent extensions traditionally posit that personal resources buffer job demands through a linear, restorative pathway, reducing strain, fostering engagement, and enabling positive spiral effects that accumulate over time to build sustainable occupational health [5,22]. Our findings do not invalidate this mechanism;

rather, they specify the structural and cultural conditions under which it fails to translate into clinically meaningful protection. In environments characterized by non-negotiable demands—where nurses cannot challenge physician prescriptions without risking professional retaliation or being dismissed as "bookish" and "unrealistic," cannot reduce documentation burdens because administrative compliance supersedes direct patient care, and cannot disconnect from work-related digital communication during rest periods because institutional surveillance penetrates leisure time through mandatory group messaging and emergency call systems—resources are not merely depleted in the conventional sense; they are structurally reallocated by organizational imperatives. Work meaning, instead of reframing stress as purposeful and manageable, becomes moral fuel for compulsory overtime and emotional labor that sustains institutional functioning. Resilience, instead of enabling psychological detachment and genuine recovery, becomes emotional armor that sustains functional output while concealing internal deterioration and delaying necessary intervention. This reallocation explains the quantitative paradox: bivariate correlations between resources and burnout remain strong and statistically significant because the underlying psychological constructs are still present in nurses' self-perceptions, yet the clinical protective effect evaporates because the structural environment captures these resources for organizational maintenance rather than individual restoration. The protective ceiling therefore advances JD-R theory by introducing a boundary condition governing resource conversion efficiency. Drawing on Conservation of Resources theory [23], we argue that when structural constraints prevent cross-domain resource replenishment, the repeated taxation of one resource category—typically work meaning—to offset simultaneous losses across multiple domains (autonomy, energy, social support, and temporal control) creates a dangerous equilibrium. Nurses retain sufficient resources to sustain functional performance and produce high scores on standardized scales, but insufficient resources to restore psychological integrity or prevent cumulative physiological and moral wear. Consequently, intervention efforts focused exclusively on strengthening individual resources—such as mindfulness training, positive psychology workshops, or resilience coaching—risk intensifying the protective ceiling by enhancing performance capacity without dismantling the structural barriers that convert such capacity into additional, unrewarded labor.

Our findings compel a critical reconceptualization of psychological resilience in nursing workforce research, particularly regarding how existing instruments capture or miscapture adaptive capacity under structural constraint. The Connor-Davidson Resilience Scale (CD-RISC) assesses trait-like resilience as a stable, multidimensional protective factor encompassing personal competence, tolerance of negative affect, acceptance of change, and control [15]. Our quantitative data confirmed its excellent internal consistency (α = .91) and its expected negative correlation with burnout (r = −.666), consistent with prior Chinese healthcare applications. However, qualitative narratives revealed a crucial distinction between performance maintenance under depletion and genuine recovery that trait-based instruments do not adequately differentiate. The former denotes the capacity to maintain professional performance despite accumulating psychological injury—a pattern observed among novice and mid-career nurses who deployed "performative vitality" to mask depletion, utilized

emotional detachment to preserve technical efficiency during shifts, and postponed breakdowns until they were alone in locker rooms, restrooms, or commuting home [24-25]. This pattern is clinically invisible: it produces high CD-RISC scores, low absenteeism, and supervisor praise for reliability while concealing tremors, insomnia, moral self-loathing, and delayed emotional collapse that standardized screening fails to detect. Genuine recovery, by contrast, depends on institutionalized recovery infrastructure—protected time boundaries, non-punitive error cultures, distributed leadership that democratizes decision-making authority, and equitable access to professional development—that enables resource restoration rather than mere endurance [26]. Senior nurses in our sample who possessed accumulated social capital and positional authority (N2, N3) achieved low burnout through strict boundary management, role redundancy, and AB-role rotation systems that guaranteed psychological detachment, whereas frontline nurses without such structural supports (N1, N4, N5, N6) displayed high CD-RISC scores alongside severe exhaustion, failed recovery, and future orientation collapse. This divergence suggests that in collectivistic, hierarchical healthcare systems, trait resilience scales may predominantly capture endurance reinforced by cultural reputation norms that penalize vulnerability and equate help-seeking with professional failure [27]. Future instrument development should therefore incorporate state-based measures assessing recovery quality, physiological wear, moral-trauma burden, and the gap between public performance and private depletion.

Recent scholarship on nursing resilience in Southeast Asia offers a productive theoretical contrast that clarifies the contextual specificity of our findings. Hanh et al. [28] proposed a Transformative Resilience Model among Vietnamese nursing students, articulating how meaning reconstruction, reflective practice, and peer socialization catalyze adaptive growth during professional socialization. In their educational context, resilience emerges as a developmental achievement: students actively recalibrate identity, integrate supervisory feedback, and build cognitive frameworks that transform academic and clinical stress into learning opportunities. Our findings among practicing nurses in a Chinese hierarchical healthcare system reveal a structurally inverted dynamic that challenges the generalizability of transformative models to established clinical environments. Work meaning is not under construction or awaiting discovery; it is fully formed, institutionally embedded through years of socialization and professional oath, and subsequently exploited by organizational demands. The "white angel" cultural ideal and collectivistic face norms create a moral economy in which meaning does not function as a buffer against demands but as a mechanism for extracting additional labor without proportional resource return [29]. Unlike the student population studied by Hanh et al. [28], whose resilience trajectory theoretically moves from fragility toward integration, our participants' trajectory moves from high engagement and high idealism toward concealed breakdown and existential doubt. This distinction carries critical intervention implications. Where transformative models appropriately target meaning-building, reflective capacity, and cognitive reframing, our protective ceiling framework suggests that in rigid institutional environments, the primary therapeutic target is not the nurse's individual cognition but the organization's structural configuration. Interventions must prioritize dismantling hierarchical barriers,

bureaucratic documentation overload, and gendered labor allocation that convert meaning into performance fuel, rather than strengthening the very psychological resources that sustain overwork. Our study therefore extends resilience research from individual adaptation and student development to structural pathology in mature healthcare systems, demonstrating how East Asian institutional hierarchies transform protective personal resources into instruments of self-exploitation.

These theoretical insights inform a three-tier intervention framework designed to breach the protective ceiling and restore sustainable nursing practice. Tier 1 (structural deconstruction) addresses the root cause by reducing non-clinical administrative burdens that consume clinical time, establishing shared governance committees that grant frontline nurses genuine authority in workflow design and clinical decision-making, and enforcing protected nurse-to-patient ratios that render staffing an unnegotiable safety standard rather than a flexible operational cost. Without these structural safeguards, personal resources remain structurally captive to performance maintenance, and subsequent tiers cannot function. Tier 2 (institutional recovery) replaces pseudo-recovery behaviors—such as compulsive digital escapism, ritualized wellness exercises performed under surveillance, and emotional suppression—with genuine resource restoration through mandatory digital disconnection protocols, trauma-informed supervision that validates rather than punishes moral distress, narrative documentation systems that make invisible relational labor visible, and protected "quiet care" periods devoted to humanistic rather than procedural nursing. Tier 3 (mutual support) builds collective resilience through interdisciplinary peer support networks, cross-hierarchical mentorship that transfers boundary-management skills from senior to junior staff, and family education that reframes vulnerability as a professional competency rather than a personal failure. This sequence is conditional and hierarchical, not additive: Tier 2 recovery mechanisms become performative burdens if Tier 1 demands remain structurally non-negotiable, and Tier 3 mutual support collapses into commiseration without agency if Tier 2 restoration infrastructure is absent. Healthcare leaders should therefore shift surveillance from behavioral performance indicators to early-warning markers—including chronic physiological symptoms, moral-trauma indicators, and depersonalization toward patients—that precede visible breakdown and are invisible to conventional audit.

4.1 Limitations

Several methodological limitations bound the interpretation and generalizability of these findings. First, the sampling strategy drew only 70 participants from a single private primary-level hospital, which limits representativeness and prevents meaningful analysis of how burnout trajectories differ across institutional contexts (public tertiary hospitals, rural clinics, or other private facilities). The overrepresentation of male nurses (21.4% vs. national average of 2–3%) and the inclusion of both permanent and visiting staff without stratified analysis further constrain demographic generalizability. Second, the cross-sectional design precludes causal inference and cannot establish temporal precedence; although the JD-R model theoretically posits that resources influence strain outcomes, the observed correlations are equally compatible with reverse causation or reciprocal dynamics, and the protective ceiling may represent either a stable trait or a

progressive career-stage trajectory. Second, the single-site design at a private primary-level hospital limits generalizability to tertiary public institutions, rural clinics, or other cultural contexts where resource availability and hierarchical steepness differ. Third, reliance on self-report instruments—the Meaning in Work Scale, Maslach Burnout Inventory, and Connor-Davidson Resilience Scale—introduces significant common-method bias and social-desirability effects, especially in a collectivistic setting where nurses are pressured to perform vitality and suppress vulnerability. The possibility that high resource scores reflect forced coping (performance maintenance under depletion) rather than genuine resilience cannot be fully ruled out with trait-based self-report measures alone. Fourth, the qualitative phase utilized extreme-case sampling with only seven participants, which is insufficient to fully validate the proposed structural mechanisms or account for variables like clinical specialty, organizational culture, or gender identity that may moderate the resource-burnout relationship. Informational redundancy was achieved for the three emergent themes, but the small sample cannot claim saturation for interactions between themes or for minority perspectives. Fifth, the G*Power analysis indicated that a sample of 84 would be required to detect a medium correlation ($r = 0.30$) with 80% power; our achieved sample of 70 yields approximately 73% power. The correlation analysis should therefore be interpreted as exploratory rather than confirmatory, and the significant results require replication in larger samples. Sixth, the MBI-HSS subscales were analyzed and reported separately, consistent with current psychometric guidance; however, the cross-sectional design and modest sample size preclude multivariate modeling of how the three dimensions differentially relate to work meaning and resilience. Future research should employ longitudinal designs—latent growth curve models, cross-lagged panel analyses, or ecological momentary assessment—to test whether the protective ceiling hardens over time. Multi-site comparisons across public and private sectors, as well as cross-cultural validation in other East Asian healthcare systems, would clarify the model's boundary conditions. Finally, randomized controlled trials comparing structural intervention alone versus combined structural and individual-resource interventions are needed to determine whether dual approaches produce synergistic recovery or inadvertently breed endurance without systemic change.

4.2 Implications

For nursing management and clinical practice. The protective ceiling framework suggests that organizational efforts to bolster individual coping capacities—through wellness programs, stress-management seminars, or resilience-building curricula—will yield limited returns unless structural demands are simultaneously reduced. Administrators should prioritize workflow redesign that curtails non-clinical documentation burdens and establishes protected clinical time. Implementing shared governance structures that grant bedside nurses substantive input into staffing algorithms and patient acuity tools can restore professional agency. Furthermore, managerial surveillance should expand beyond productivity metrics to include indicators of systemic strain, such as mandatory overtime frequency, skipped break patterns, and incident reports of compromised care standards. These operational shifts acknowledge that nurse well-being is a function of institutional architecture rather than

individual fortitude.

For health policy. The findings underscore the need for enforceable regulatory frameworks that mandate safe nurse-to-patient ratios in primary-level private hospitals, where market pressures often erode staffing standards. Professional advancement pathways must be decoupled from credential-based gatekeeping that traps clinically competent nurses in dead-end roles. Policymakers should also legislate digital disconnection rights, ensuring that off-duty periods remain free from institutional communication intrusions. Finally, occupational health guidelines must recognize moral distress and recovery inequity as legitimate workplace hazards warranting standardized intervention, rather than treating them as private psychological concerns.

For future research. This study opens several empirical avenues. First, instrument development should focus on context-sensitive scales that detect resource misallocation—measuring not merely whether nurses endure hardship, but whether organizational structures systematically convert their adaptive capacities into uncompensated labor inputs. Second, longitudinal and multi-site designs are needed to track whether the protective ceiling hardens over career trajectories or fluctuates with situational stressors. Comparative studies across public and private sectors, as well as across collectivistic and individualistic cultural contexts, would clarify the model's boundary conditions. Finally, intervention research should rigorously evaluate whether structural reforms alone can lower burnout without simultaneously diminishing work meaning, thereby testing the sustainability of the proposed three-tier framework.

5. Conclusion

This mixed-methods investigation documents a systematic divergence between statistical resilience and clinical well-being among Chinese frontline nurses. Quantitative profiles from 70 participants and experiential accounts from 7 purposively selected cases converge on a single explanatory construct: the protective ceiling, which captures how rigid institutional configurations redirect personal resources from health-sustaining buffering to performance-sustaining endurance. The evidence indicates that work meaning and psychological resilience remain psychologically real and empirically measurable, yet their protective function is structurally captured by organizational imperatives that sustain output at the expense of restoration. A conditional, three-tier intervention sequence—beginning with structural deconstruction, followed by institutional recovery infrastructure, and culminating in mutual support networks—offers a theoretically grounded pathway toward sustainable practice. However, the efficacy of any intervention tier depends on the prior establishment of Tier 1 safeguards that render job demands negotiable and recovery resources accessible. Without such foundational restructuring, programs targeting individual resilience risk reinforcing the very exploitation they aim to relieve.

Declaration of Conflicting Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Author's Contribution

Rui He contributed to the conception and design of the study, data collection, quantitative and qualitative analysis, manuscript drafting, revision, and final approval of the manuscript.

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Ethical Consideration

The study was approved by the Medical Ethics Committee of the study hospital. Written informed consent was obtained from all participants.

Data Availability Statement

The qualitative interview transcripts contain identifiable personal narratives that could compromise participant confidentiality; therefore, the raw data are not publicly available. De-identified quantitative data are available from the corresponding author upon reasonable request, subject to approval by the study hospital's Medical Ethics Committee.

Declaration of Use of AI in Academic Writing

Nothing to declare.

Agreement to Pay APC

The authors agree to pay APC within ten days if the article is accepted for publication.

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