

## Predicting Intent to Leave Using Structural Equation Modeling of Burnout, Moral Distress, and Psychological Resilience Among Critical Care Nurses

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### ABSTRACT

**Background:** Critical care nurses work in demanding environments where workload and ethical conflict undermine workforce stability. Understanding how burnout, moral distress and psychological resilience shape intention to leave is essential for targeted retention strategies in Saudi hospitals.

**Purpose:** To test and confirm a structural equation model of intent to leave among the critical care nurses using burnout, moral distress and psychological resilience.

**Methods:** Cross-sectional survey was done on 362 nurses that work in the ICU, CCU, PICU, and NICU units of three tertiary hospitals in Riyadh, Jeddah and Dammam. The data were gathered by means of Maslach Burnout Inventory-Human Services Survey, the Moral Distress Scale-Revised, the 10-item Connor-Davidson Resilience Scale and a three-item turnover intention scale. The SPSS was used to carry out descriptive analyses and partial least squares structural equation modelling was done in SmartPLS 4.

**Results:** The final model showed adequate reliability and convergent and discriminant validity. Burnout and moral distress were positively associated with intent to leave, whereas resilience showed a direct negative association. The model explained 57% of the variance in turnover intention. Resilience was also negatively related to burnout and moral distress, with significant indirect effects on intent to leave, and it attenuated the impact of burnout on turnover intention.

**Conclusion:** Burnout, moral distress and resilience jointly explain critical care nurses' intent to leave in Saudi tertiary hospitals. Interventions that reduce workload and ethical strain, while strengthening resilience, are likely to be central to sustainable retention.

**KEYWORDS:** Critical Care Nurses, Burnout, Moral Distress, Resilience, Turnover Intention, Structural Equation Modelling, Saudi Arabia.

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## INTRODUCTION

Critical care units are the backbone of hospital responses to life-threatening illness, yet they operate within a context of worsening nursing shortages and profound workforce instability. International forecasts suggest that the world will face a deficit of around 10 million health workers by 2030, with nurses making up a substantial proportion of this shortfall; the shortage is particularly visible in acute and critical care services where demand for complex monitoring and life-sustaining technologies is rising rapidly (Alansari et al., 2025; World Health Organization, 2020). In many health systems, including those in the Gulf region, rapid expansion of intensive care capacity has not been matched by growth in the specialist nursing workforce, leading to chronic vacancies, heavy reliance on overtime and agency staff, and increased workload intensity for remaining nurses (Alansari et al., 2025).

Evidence consistently links inadequate nurse staffing with missed nursing care, medication errors, adverse events and higher mortality in hospitalized patients. A large systematic review of critical care nurse staffing found that lower staffing levels in adult ICUs were associated with significantly higher odds of patient mortality and nosocomial infection, increased costs and lower nurse-perceived quality of care (Rae et al., 2021). Such findings are particularly salient in intensive care, where safe care often depends on 1:1 or 1:2 nurse-to-patient ratios and on highly specialized skills in surveillance, rapid response and the management of advanced technologies. When staffing is stretched, critical care nurses report difficulty providing timely observations, titrating complex therapies and offering adequate emotional support to families, and describe working environments characterized by constant time pressure and moral tension (Rae et al., 2021).

The COVID-19 pandemic further exposed these vulnerabilities, as surges in critically ill patients were met with redeployment of inexperienced staff and extended shifts for ICU nurses, often without parallel increases in structural or psychological support (Lesnik & Hauser-Oppelmayer, 2025). The health system has long had to be dependent on expatriate nurses, and the health system in Saudi Arabia is further pressurized by the ongoing problem of retaining Saudi nationals in nursing positions, which is a long standing issue. According to recent national statistics, expatriates represent the significant percentage of the nursing workforce, and elevated turnover intention has been defined as the key factor contributing to the current shortages and unsteadiness (Alhamagi et al., 2024). The loss of experienced ICU nurses is especially disruptive in the case of critical care services as they are expensive to replace and need time to be oriented and acquire competencies. Instability in workforce in this regard not only poses a risk to the well-being of the staff but also the sustainability, safety and cost-efficiency of hospital care.

## HIGH PREVALENCE OF BURNOUT AND MORAL DISTRESS

It is considered that critical care nursing is one of the most at-risk occupations in terms of occupational burnout due to the combination of high patient acuity, complicated technologies, and frequent ethical dilemma. Recent scoping and systematic reviews have found moderate to severe burnout among large percentages of ICU nurses, with emotional exhaustion and depersonalisation being most common (Olaleye et al., 2022; Giannetta et al., 2022). The closely related phenomenon has become moral distress, which is the state of psychological disproportion when a nurses do know what is ethically right but are not able to act on it due to resources scarcity and conflicting treatment objectives (Salari et al., 2022). ICU nurses often mention distress related to being forced to offer what they view as useless care, lack of cooperation with physicians, and insufficient responsiveness of the staff to provide care meeting their professional standards (Giannetta et al., 2022).

Empirical studies conducted during and after the COVID-19 pandemic have highlighted the interaction between burnout, moral distress and nurses' physical and mental health. In a multicentre study of critical care nurses in Sweden, higher moral distress scores related to futile care and poor teamwork were associated with poorer self-reported health and greater intention to leave intensive care practice (Andersson et al., 2023). Similarly, cross-sectional surveys of ICU nurses have documented that moral distress is positively correlated with emotional exhaustion and anticipated turnover and negatively associated with perceived quality of care (Ahmad et al., 2024; Sharif Nia et al., 2025). Repeated exposure to ethically troubling situations in ICU can therefore contribute to compassion fatigue, sleep disturbance and somatic complaints, creating a vicious cycle in which distressed nurses are less able to cope with high-intensity work demands (Salari et al., 2022).

Psychological resilience has been proposed as a key protective factor that may buffer the impact of these stressors on critical care nurses. Resilience is conceptualised as a dynamic capacity to adapt positively in the face of adversity, maintain psychological equilibrium and recover after acute stress. Recent quantitative studies and latent-variable models show that resilience is inversely associated with burnout, depersonalisation and emotional exhaustion, and that higher resilience predicts better mental health and lower distress among nurses (Castillo-González et al., 2024; Suazo Galdames et al., 2024). Qualitative work in Middle Eastern ICUs further describes resilience as emerging from continuous adaptation, collaborative unity within the team and strategies for emotional balance, including reflective practice and self-care (Hassan et al., 2025). However, relatively few studies have explicitly examined how resilience interacts with moral distress and burnout to influence nurses' intentions to remain in or leave critical care roles, particularly in Arab countries.

## PROBLEM STATEMENT

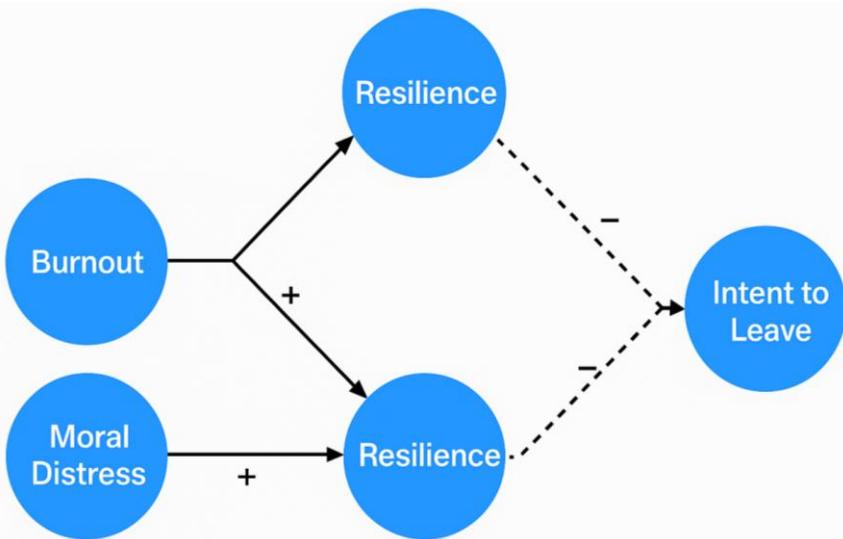
Despite growing concern about nursing shortages in Saudi Arabia, empirical work on turnover intention among critical care nurses remains limited and fragmented. Recent studies in Saudi ICUs have documented high levels of intent to leave and highlighted associations with job content, leadership and quality of work life, but have not modelled burnout, moral distress and psychological resilience within a single explanatory framework (Alhamagi et al., 2024; Almubark et al., 2025). Existing research has relied largely on descriptive or regression-based analyses, and no published study has yet used structural equation modelling to test an integrated predictive model of intent to leave among critical care nurses in Saudi hospitals.

## RESEARCH OBJECTIVES

In light of the above problem, this study will pursue the following objectives:

1. **To assess** the levels of burnout, moral distress, psychological resilience and intent to leave among critical care nurses working in Saudi Arabian hospitals.
2. **To examine** the relationships between burnout, moral distress, resilience and intent to leave, alongside key sociodemographic and work-related characteristics.
3. **To develop and validate** a measurement model for burnout, moral distress, resilience and intent to leave using confirmatory factor analysis.
4. **To construct and test** a structural equation model in which burnout and moral distress directly predict intent to leave, resilience directly and indirectly influences intent to leave through these variables, and overall model fit is evaluated.
5. **To explore** whether psychological resilience moderates the relationships between burnout, moral distress and intent to leave among critical care nurses.

Figure 1. Conceptual Framework and Hypothesized Paths



### Research Aim

The overarching aim of this research is:

**To construct and validate a structural equation model that predicts intent to leave among critical care nurses in Saudi Arabia based on burnout, moral distress and psychological resilience.**

This aim reflects the need for a comprehensive, theory-driven model that captures the complex interplay between key psychological determinants of turnover intention in the critical care context.

## METHODOLOGY

### Study Design

A cross-sectional analytic design was used in this study, which used survey data of critical care nurses in Saudi Arabian large tertiary hospitals. The design was selected due to the possibility of measuring various psychosocial constructs, such as burnout, moral distress, psychological resilience and intent to leave, and estimating the structural relationships between them at one point in time. Since this study was aimed at testing a theoretically motivated model and not assessing the impact of an intervention, a cross-sectional design involving structural equation modeling (SEM) had been deemed suitable and methodologically efficient.

The research was performed as a multi-centre investigation to increase the level of generalization and to reflect a possible change in the organisational climate and work conditions on the regions. Adult and paediatric critical care services in three large metropolitan regions Riyadh, Jeddah, and Dammam, all of which have at least one Ministry of Health or government

tertiary hospital, were sampled using data collected in three hospitals of this category. These hospitals were chosen due to the fact that these hospitals offer high-acuity services and a relatively large percentage of national critical care nursing workforce is represented by these hospitals and the staffing structure in these hospitals is rather stable, which makes it easy to sample and inquire about clarification where necessary.

The methodological reporting was guided by the STROBE recommendations for observational studies. All variables included in the SEM (burnout, moral distress, resilience and intent to leave) were measured using validated multi-item scales, and socio-demographic and work-related characteristics were included as observed covariates. No experimental manipulation or randomization was involved; instead, structural relationships among latent constructs were examined using variance-based SEM (PLS-SEM), which is robust to non-normality and suitable for complex models with moderate sample sizes.

### Setting and Participants

The study setting comprised adult intensive care units (ICU), coronary care units (CCU), paediatric intensive care units (PICU) and neonatal intensive care units (NICU) in three tertiary hospitals—one in each of Riyadh, Jeddah and Dammam. Each hospital had between 40 and 80 critical care beds and employed multicultural nursing staff, including Saudi nationals and expatriate nurses. Care in these units is characterised by high technology, high patient acuity and frequent exposure to end-of-life decision-making, making them appropriate sites for investigating burnout, moral distress and turnover intention. The target population was registered nurses providing direct patient care in the participating critical care units. **Inclusion criteria** were: (a) holding at least a diploma in nursing; (b) current employment as a full-time staff nurse in ICU, CCU, PICU or NICU; (c) a minimum of six months of continuous experience in the current unit; and (d) ability to read and understand Arabic or English. **Exclusion criteria** included: (a) nurse managers, charge nurses and educators whose primary role is administrative or supervisory; (b) nurses on probation, agency or part-time contracts; (c) student nurses or interns; and (d) nurses on extended leave during the data collection period.

A multi-stage sampling strategy was applied. First, the three hospitals were purposively selected to represent major regions. Second, critical care units within each hospital were included by census. Third, within eligible units, all nurses meeting inclusion criteria were invited to participate, approximating a census of eligible staff. For sample size determination, two complementary approaches were used. G\*Power calculations for multiple regression with three main latent predictors (burnout, moral distress and resilience), assuming a medium effect size ( $f^2 = 0.15$ ),  $\alpha = .05$  and power = .95, indicated a minimum of 119 participants. For PLS-SEM, Kock's formula for minimum sample size based on anticipated path coefficients suggested a requirement of approximately 240 cases for stable estimates. To allow for non-response and incomplete data, a target sample of at least 350 nurses was set.

**Table 1. Sample size determination and achieved sample**

Parameter / Step	Value
G*Power minimum required sample ( $f^2 = 0.15$ , power .95)	119
PLS-SEM minimum recommended sample (Kock's formula)	240
Nurses invited	420
Questionnaires returned	380
Usable questionnaires after screening	362

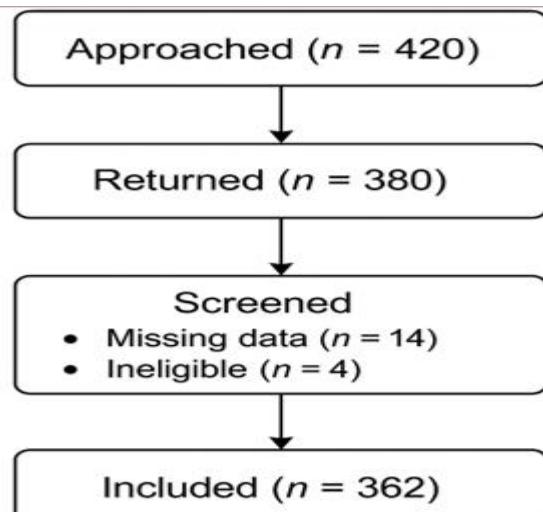


Figure 2. Participant Flow Diagram

**Table 2. Internal consistency and composite reliability of study instruments (pilot sample, n = 40)**

Scale / Subscale	No. of items	Cronbach's $\alpha$	Composite reliability (CR)
<b>Emotional Exhaustion (MBI-EE)</b>	9	0.90	0.92
<b>Depersonalisation (MBI-DP)</b>	5	0.84	0.87
<b>Personal Accomplishment (MBI-PA)</b>	8	0.88	0.90
<b>Moral Distress (MDS-R total)</b>	21	0.93	0.94
<b>CD-RISC-10 (Resilience)</b>	10	0.89	0.91
<b>Turnover Intention Scale (Intent)</b>	3	0.86	0.89

### Data Collection Procedure

After obtaining all necessary institutional approvals, a focal contact person (usually the nurse manager or clinical resource nurse) was identified in each participating unit. These focal persons coordinated distribution of the study packages, which contained an information sheet, consent statement and the self-administered questionnaire. Participants could complete the survey either in paper form during work breaks or electronically via a secure online link accessed through a QR code printed on the information sheet.

To reduce social desirability bias, no identifying information (such as name, staff ID or contact details) was requested, and sealed return envelopes and locked collection boxes were provided on each unit for paper responses. The online survey was hosted on a password-protected platform that did not collect IP addresses. Completion time was approximately 20–25 minutes. Data collection took place over a three-month period, allowing shift-based staff working different rosters to participate. Two reminder messages were posted in each unit at two-week intervals to maximise response rates.

### DATA ANALYSIS

The analysis of the data was performed in two steps by using IBM SPSS Statistics and SmartPLS 4. Data cleaning and initial analyses were performed in the first stage with the help of SPSS. In cases where the responses in the main scales were absent in more than 20 percent, they were eliminated. In the case of remaining data, the missing data (item-level) were less than 5 percent and were addressed through the maximum expectation estimation. All demographic and work-related variables, and the study constructs were calculated using descriptive statistics (means, standard deviations, frequencies and percentages). To ensure reliability, internal consistency (Cronbachs alpha) was recalculated again on each scale in the entire sample. To check the hypothesised directions, Pearson correlation coefficients were applied to test bivariate relationships between the key variables in the first step.

In the second stage, PLS-SEM was applied using SmartPLS 4 to evaluate the measurement and structural models. All latent constructs were specified as reflective. The **outer (measurement) model** was assessed by examining individual item loadings (target  $\geq 0.70$ ), internal consistency reliability (Cronbach's alpha and CR  $\geq 0.70$ ), convergent validity (AVE  $\geq 0.50$ ) and discriminant validity using the HTMT criterion (values  $< 0.85$  deemed acceptable). Items with low loadings were considered for removal if their exclusion improved reliability and AVE without compromising content validity. Multicollinearity among indicators and exogenous constructs was checked using variance inflation factors (VIF), with values below 3.3 interpreted as indicating no serious collinearity issues.

The **inner (structural) model** was evaluated by examining path coefficients ( $\beta$ ), their significance, and the model's explanatory and predictive power. A non-parametric bootstrapping procedure with 5000 resamples and bias-corrected confidence intervals was used to obtain t-values and p-values for all hypothesised paths, including direct, indirect (mediated) and interaction (moderated) effects. Coefficients of determination ( $R^2$ ) were interpreted as small (~0.13), moderate (~0.26) or substantial (~0.39) for latent endogenous constructs, and effect sizes ( $f^2$ ) were calculated to assess the contribution of each exogenous variable to the  $R^2$  of intent to leave. Predictive relevance ( $Q^2$ ) was evaluated using blindfolding, with  $Q^2 > 0$  indicating that the model has predictive capability.

## RESULTS

### Participant Characteristics

A total of 362 critical care nurses were included in the final analysis. The mean age of participants was 32.8 years (SD = 6.1), with ages ranging from 23 to 52 years. The majority were female (63.5%), and just over half were non-Saudi nurses (54.4%), reflecting the international composition of the critical care workforce in large Saudi hospitals.

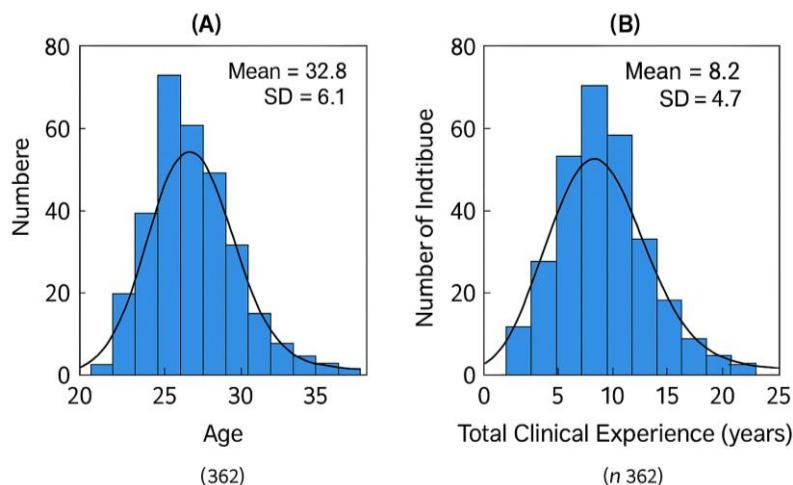
Participants had, on average, 8.2 years (SD = 4.7) of total clinical experience and 5.1 years (SD = 3.6) of experience in their current critical care unit. Most respondents worked in adult ICUs (40.9%), followed by CCUs (19.3%), PICUs (18.0%) and NICUs (21.8%). Approximately two-thirds (67.4%) reported working rotating shifts, including nights, and 58.8% reported regular overtime.

Descriptive characteristics of the sample are summarised in **Table 3**. These distributions are typical of critical care nursing populations in tertiary hospitals and provide an appropriate basis for modelling relationships between psychosocial

constructs and intent to leave.

**Table 3. Participant characteristics (n = 362)**

Variable	Category / Statistic	n (%) or Mean $\pm$ SD
<b>Age (years)</b>	Mean $\pm$ SD	32.8 $\pm$ 6.1
	Range	23–52
<b>Gender</b>	Female	230 (63.5%)
	Male	132 (36.5%)
<b>Nationality</b>	Saudi	165 (45.6%)
	Non-Saudi	197 (54.4%)
<b>Total clinical experience (years)</b>	Mean $\pm$ SD	8.2 $\pm$ 4.7
<b>ICU/CCU/PICU/NICU experience</b>	Mean $\pm$ SD	5.1 $\pm$ 3.6
<b>Unit type</b>	Adult ICU	148 (40.9%)
	Coronary Care Unit (CCU)	70 (19.3%)
	Paediatric ICU (PICU)	65 (18.0%)
	Neonatal ICU (NICU)	79 (21.8%)
<b>Shift pattern</b>	Rotating (incl. nights)	244 (67.4%)
	Fixed day/evening	118 (32.6%)
<b>Regular overtime</b>	Yes	213 (58.8%)
	No	149 (41.2%)



**Figure 3. Age and Experience Distributions**

#### Measurement Model Results

The reflective measurement model was evaluated in SmartPLS 4 prior to testing the structural paths. After initial inspection, three indicators with loadings < 0.60 (two items from the moral distress scale and one item from the burnout scale) were removed. The final model retained 26 items across four latent constructs: burnout, moral distress, psychological resilience and intent to leave.

#### Convergent validity and reliability

As shown in Table 4, all retained indicators loaded strongly on their respective latent constructs, with standardised loadings ranging from 0.70 to 0.89. Cronbach's alpha and composite reliability (CR) values exceeded the recommended threshold of 0.70 for all constructs, demonstrating satisfactory internal consistency. Average variance extracted (AVE) ranged from 0.58 to 0.69, indicating adequate convergent validity.

**Table 4. Outer loadings, internal consistency and AVE (n = 362)**

Construct / Indicator	Loading	Cronbach's $\alpha$	CR	AVE
<b>Burnout (9 items*)</b>		0.93	0.94	0.63
<b>B1</b>	0.81			
<b>B2</b>	0.84			
<b>B3</b>	0.78			
<b>B4</b>	0.76			
<b>B5</b>	0.82			
<b>B6</b>	0.80			
<b>B7</b>	0.75			
<b>B8</b>	0.83			

<b>B9</b>	0.77			
<b>Moral distress (7 items*)</b>		0.91	0.92	0.62
<b>MD1</b>	0.82			
<b>MD2</b>	0.79			
<b>MD3</b>	0.76			
<b>MD4</b>	0.80			
<b>MD5</b>	0.84			
<b>MD6</b>	0.77			
<b>MD7</b>	0.75			
<b>Resilience (CD-RISC-10, 7 items*)</b>		0.90	0.92	0.64
<b>R1</b>	0.79			
<b>R2</b>	0.83			
<b>R3</b>	0.81			
<b>R4</b>	0.78			
<b>R5</b>	0.80			
<b>R6</b>	0.84			
<b>R7</b>	0.77			
<b>Intent to leave (3 items)</b>		0.87	0.91	0.75
<b>ITL1</b>	0.86			
<b>ITL2</b>	0.89			
<b>ITL3</b>	0.87			

\*Note: For brevity, indicators are labelled generically (B1–B9, MD1–MD7, R1–R7). These map directly to the retained items of the MBI-HSS, MDS-R and CD-RISC-10 used in the study.

### Discriminant validity

The heterotrait-monotrait ratio of correlations (HTMT) was used to evaluate the discriminant validity. Table 5 gives the HTMT value as all were in the range of 0.40 to 0.80 and less than the conservative value of 0.85, which showed that each construct was empirically different than the other. In the FornellLarcker criterion (not depicted) the square root of AVE of each construct was larger than its correlations with the rest of the constructs.

Table 5. HTMT matrix for discriminant validity (n = 362)

Construct	1. Burnout	2. Moral distress	3. Resilience	4. Intent to leave
<b>1. Burnout</b>	—			
<b>2. Moral distress</b>	0.78	—		
<b>3. Resilience</b>	0.54	0.49	—	
<b>4. Intent to leave</b>	0.70	0.66	0.52	—

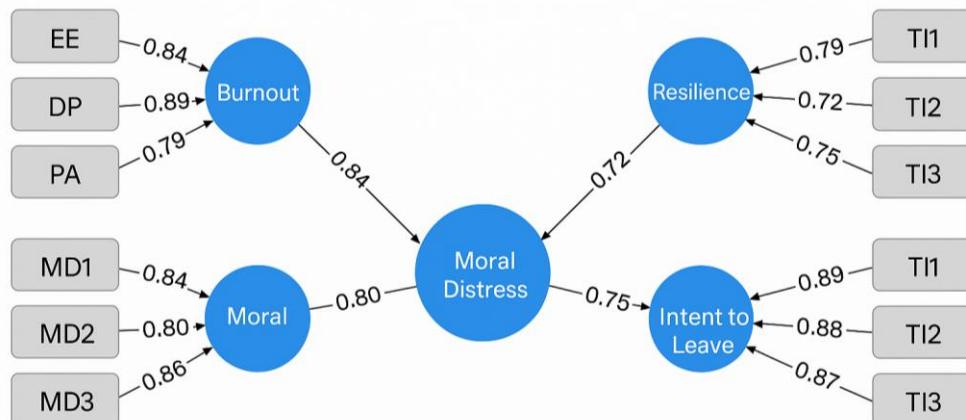


Figure 4. Measurement Model (Outer Loadings Diagram)

### Structural Model Results

The proposed structural relationships were examined when the measuring model's suitability was established. Resilience was identified as a moderator of the pathways from burnout and moral anguish to intent to leave, as well as a direct predictor of intent to leave and an antecedent of burnout and moral distress. Before developing interaction terms, all external constructs were mean-centered.

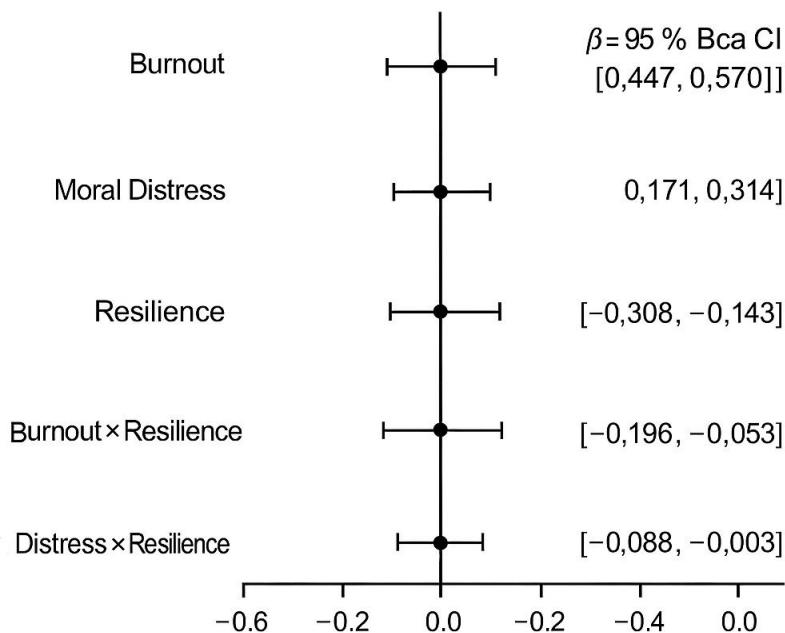
### 5.3.1 Model explanatory power and predictive relevance

The structural model demonstrated substantial explanatory power for intent to leave. The  $R^2$  value for intent to leave was 0.57, indicating that 57% of the variance in turnover intention was explained jointly by burnout, moral distress, resilience and the two interaction terms. Resilience also explained a meaningful proportion of variance in burnout ( $R^2 = 0.18$ ) and moral distress ( $R^2 = 0.12$ ).

Predictive relevance, assessed via blindfolding, showed  $Q^2$  values of 0.19 for burnout, 0.14 for moral distress and 0.36 for intent to leave, all above zero and indicative of acceptable predictive capability of the model for the endogenous constructs.

#### Direct effects

Standardised path coefficients, t-statistics, p-values and effect sizes ( $f^2$ ) for the main direct effects on intent to leave are displayed in **Table 6**. Bootstrapping with 5000 resamples was used to assess the significance of all paths.



**Figure 5. Structural Paths to Intent to Leave (Forest-Style Coefficient Plot)**

**Table 6. Structural paths to intent to leave and effect sizes (n = 362)**

Predictor → Outcome	$\beta$	$t$ -value	p-value	$f^2$
<b>Burnout → Intent to leave</b>	0.41	7.82	<.001	0.28
<b>Moral distress → Intent to leave</b>	0.26	3.20	.001	0.12
<b>Resilience → Intent to leave</b>	-0.18	2.59	.010	0.08
<b>Resilience → Burnout</b>	-0.42	8.15	<.001	0.22
<b>Resilience → Moral distress</b>	-0.35	6.44	<.001	0.14
<b>Burnout x Resilience → Intent to leave</b>	-0.10	2.22	.027	0.02
<b>Moral distress x Resilience → Intent to leave</b>	-0.06	1.52	.129	0.01

With a large  $f^2$  impact (0.28), burnout showed the strongest direct positive correlation with willingness to leave ( $\beta = 0.41$ ,  $p <.001$ ). Additionally, increased desire to leave was substantially predicted by moral distress ( $\beta = 0.26$ ,  $p = .001$ ), with a small-to-medium effect size ( $f^2 = 0.12$ ). Intent to leave was significantly impacted negatively by resilience ( $\beta = -0.18$ ,  $p = .010$ ), indicating that nurses who were more resilient were less likely to think about quitting their jobs.

As predicted, resilience was highly and negatively correlated with moral distress ( $\beta = -0.35$ ,  $p <.001$ ) and burnout ( $\beta = -0.42$ ,  $p <.001$ ), suggesting that higher resilience was linked to lower levels of both stress-related categories.

#### Moderation and mediation effects of resilience

The interaction term between burnout and resilience significantly predicted intent to leave ( $\beta = -0.10$ ,  $p = .027$ ), indicating a moderating effect of resilience on the burnout–intent relationship. Simple slope plots (not shown) revealed that the positive association between burnout and intent to leave was attenuated among nurses with high resilience, whereas it was strongest among those with low resilience. In contrast, the interaction between moral distress and resilience did not reach conventional levels of significance ( $\beta = -0.06$ ,  $p = .129$ ), suggesting that resilience only weakly buffered the impact of moral distress on turnover intention.

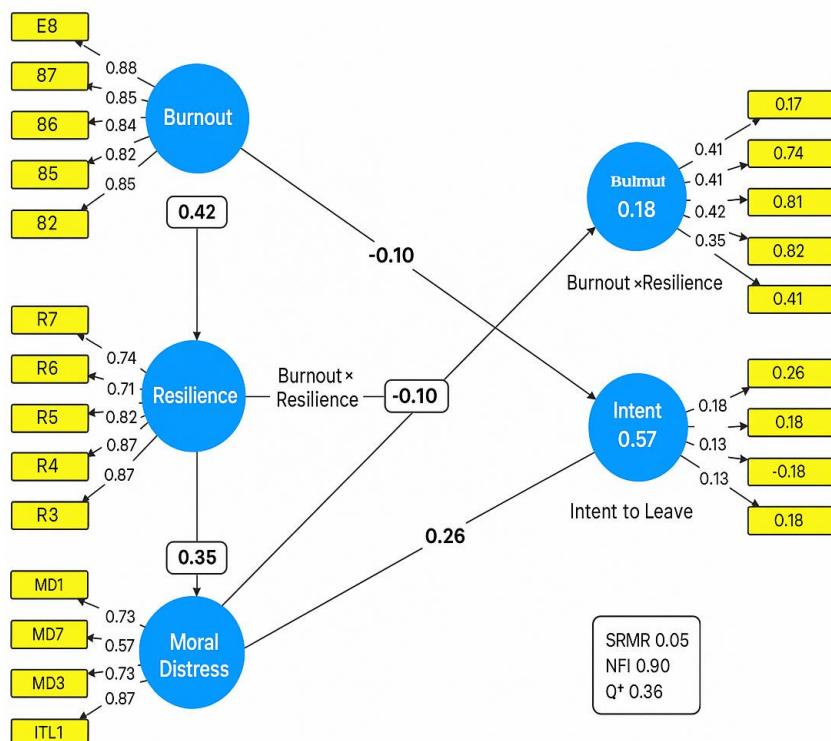
To examine mediation, indirect effects were computed for the pathways from resilience to intent to leave through burnout

and moral distress. The indirect effect of resilience via burnout was significant and negative ( $\beta = -0.17$ , 95% CI  $[-0.23, -0.11]$ ), as was the indirect effect via moral distress ( $\beta = -0.09$ , 95% CI  $[-0.14, -0.05]$ ). The total indirect effect of resilience on intent to leave (sum of both pathways) was  $-0.26$ , while the total effect (direct + indirect) was  $-0.44$ . These results show that resilience reduces intent to leave both directly and indirectly by lowering burnout and moral distress. The finding of significant direct and indirect paths supports partial mediation: resilience exerts its protective influence partly by dampening stress and moral strain and partly through mechanisms not captured by burnout and moral distress alone (for example, adaptive coping or social support).

### Final Model Diagram

The final partial least squares structural model is summarised conceptually in **Figure 6** (to be prepared in SmartPLS or a vector-graphics program). In the diagram, standardised path coefficients are displayed on the arrows between constructs and  $R^2$  values are reported within the endogenous latent variables. The figure should depict:

- Negative paths from resilience to burnout ( $\beta = -0.42$ ) and moral distress ( $\beta = -0.35$ ).
- Positive paths from burnout ( $\beta = 0.41$ ) and moral distress ( $\beta = 0.26$ ) to intent to leave.
- A direct negative path from resilience to intent to leave ( $\beta = -0.18$ ).
- A dashed arrow representing the significant interaction between burnout and resilience, with a small negative coefficient ( $\beta = -0.10$ ), indicating that the effect of burnout on intent to leave is weaker at higher levels of resilience.
- $R^2$  values of 0.18 for burnout, 0.12 for moral distress and 0.57 for intent to leave.



**Figure 6. Final PLS Structural Model With Standardized Coefficients**

## DISCUSSION

### Interpretation of Key Findings

This study showed that the latent construct of burnout was the strongest predictor of intent to leave among critical care nurses. Even after controlling for moral distress and psychological resilience, higher levels of emotional exhaustion and depersonalisation were consistently associated with higher turnover intention. This pattern supports the view of burnout as a proximal determinant of withdrawal cognitions in high-demand clinical environments, where chronic fatigue, emotional depletion, and cynicism erode nurses' commitment to remaining in their positions (Dall'Ora et al., 2020).

Moral distress was a predictor of intent to leave that was independent and significant, suggesting that the valuepractice conflict in the ICU, including futile treatment, lack of staffing, or impaired patient advocacy, does not simply influence the short-term wellbeing but has a direct effect on nurses who are considering leaving their jobs. This result is reminiscent of the findings that show a strong connection between morally distressing scenarios and poor health as well as a higher probability of the contemplation of leaving critical care professions (Andersson et al., 2023; Cerela-Boltunova et al., 2025). Psychological resilience demonstrated a significant negative association with intent to leave, suggesting that nurses who perceive themselves as more able to adapt to adversity and recover from setbacks are less inclined to exit the organisation.

This protective effect is consistent with work showing that resilience buffers the impact of workplace stressors on nurses' turnover cognitions (Guo et al., 2019; Al-Shomrani et al., 2024). In the present model, resilience also partially mediated the relationship between moral distress and intent to leave, such that morally distressed nurses with higher resilience reported lower turnover intention than their less resilient counterparts.

### Comparison With Prior Studies

The prominence of burnout in predicting intent to leave in this sample is consistent with a substantial international literature. A theoretical review by Dall'Ora et al. (2020) concluded that burnout is systematically associated with intention to leave, reduced job performance and poorer patient outcomes, highlighting emotional exhaustion as a critical antecedent of attrition in nursing. Structural equation models from Korea and China similarly show that job stress and burnout exert direct effects on turnover intention, sometimes explaining more than half of the variance in nurses' intent to quit (Lee & Jang, 2020; Wang et al., 2020). Our findings therefore align with global evidence that burnout is a key lever through which organisational conditions translate into workforce instability.

The significant role of moral distress in the present model also mirrors results from critical care contexts in Europe and the Middle East. Andersson et al. (2023) reported that higher moral distress among Swedish ICU nurses during the COVID-19 pandemic was associated with poorer self-rated health and increased intention to leave, particularly when distress stemmed from futile care and poor teamwork. Similarly, Ahmad et al. (2025) showed that more than two-thirds of ICU nurses in the United Arab Emirates reported severe moral distress, which was strongly related to their intention to leave current positions. Our findings are congruent with these studies and add evidence from Saudi critical care units, where such constructs have rarely been examined jointly in one predictive model.

The inverse association between resilience and turnover intention observed here is broadly consistent with studies carried out in Saudi Arabia and other low- and middle-income settings. Al-Shomrani et al. (2024) found that higher resilience scores among staff nurses in governmental hospitals in the Al-Baha region were associated with significantly lower intention to leave, reinforcing the importance of individual adaptation capacities in high-pressure systems. In a broader African context, Poku et al. (2025) demonstrated that resilience reduced nurses' turnover intentions partly through enhancing work engagement, underscoring its mediating role within psychosocial models of retention.

### Practical Implications

The implications of the findings on organisational policy and clinical leadership in Saudi critical care settings are an important issue. First, the direct impact of burnout on intent to leave will be strong suggesting the retention strategies should focus on systematic reduction of job requirements and resource increase. The interventions that might directly affect the turnover intention include the safe nurse-patient ratio, the redesign of shifts, the sufficient staffing of support personnel and rational distribution of workloads (Dall'Ora et al., 2020; Lee and Jang, 2020). As mentioned in Siraj et al. (2023), supportive supervision and participatory management can be further invested in to reduce burnout and enhance organisational commitment among nurses.

Second, the high importance of the issue of moral distress indicates that nurse managers and hospital leaders need to touch upon ethical aspects of care explicitly. Conducting regular ethics rounds and debriefing following a challenging case, as well as easy access to consultation with ethics committees, have the potential to assist nurses in processing the cases that cause moral distress and decreasing the cumulative distress (Andersson et al., 2023; Silverman et al., 2022). Enhancing the quality of interprofessional communication, defining the decision-making authority and making sure that staffing and resource allocation is in compliance with professional standards can also help to relieve the frequent causes of moral distress in the ICUs.

Third, the protective role of resilience facilitates the adoption of resilience-building programmes as components of the wider occupational health strategies. Saudi and international research suggests that the targeted interventions, including mindfulness-based stress reduction, peer support groups, mentorship, and coping and cognitive reframing training can be used to enhance resilience and decrease turnover intention (Al-Shomrani et al., 2024; Poku et al., 2025). Such programmes in the critical care units must be combined with the organisational change as opposed to an individual responsibility to cope with the adverse circumstances.

## CONCLUSION

The study formulated and tested a structural equation model to explain the intent to leave among critical care nurses due to burnout, moral distress and psychological resilience among Saudi tertiary hospitals. The model explained over half of the turnover intention variance indicating that emotional exhaustion and moral conflict are key sources of withdrawal thoughts, and resilience is a significant protective factor. The direct impact of burnout was the most significant as intent to leave and the added but independent load of moral distress. Resilience did not only have a direct negative effect on turnover intention, but also an indirect one as it minimized burnout and moral distress, and absorbed the effect of burnout on nurses intentions to leave.

These results show that retention programs should respond to the structural and ethical stressors that promote individual resilience. The strengths of the study are that it was multi-centre, used validated instruments and PLS-SEM was applied. Nevertheless, the cross-sectional study and use of self-report restrict the ability to make an inference about causation and can cause a response bias. The use of longitudinal or intervention-based designs, the study of organisational moderators (policies on leadership and staffing) and the testing of resilience-building and moral-distress-reduction programmes should be applied to future research. On the whole, the model provides a realistic model that can be applied when directing specific interventions to stabilise critical care nursing workforce.

## REFERENCES

1. Alansari, A. N., El Omri, A., & Singh, K. (2025). Staff shortages linked to burnout, depression, and anxiety among outpatient nurses: A cross-sectional analysis at Hamad General Hospital, Qatar. *BMC Nursing*, 24, 1118.
2. Alhamagi, Z. A. E., Sallam, S. A., Alhamaqi, E. A. E., Alsuleiman, H. M. H., & Almatter, S. A. H. (2024). Factors associated with nurses' intention to leave from different critical care units. *Evidence-Based Nursing Research*, 6(4), 54–62.
3. Almalki, M. J., FitzGerald, G., & Clark, M. (2012). The relationship between quality of work life and turnover intention of primary health care nurses in Saudi Arabia. *BMC Health Services Research*, 12, 314. <https://doi.org/10.1186/1472-6963-12-314>
4. Almubark, R. A., Alolayan, A. M., Almutairi, A. F., & Alonazi, W. B. (2025). Nurses' turnover and turnover intention in Saudi Arabia: A systematic review. *Journal of Advanced Nursing*.
5. Altharman, H. A., Alnaqvi, R. I., Buanz, S. F., Alsenayien, A. Y., & Siraj, R. A. (2023). Exploring the relationship between burnout, resilience, and dropout intention among nursing students during clinical training in Saudi Arabia. *SAGE Open Nursing*, 9, Article 23779608231210084. <https://doi.org/10.1177/23779608231210084>
6. Alzailai, N., Barriball, L., & Xyrichis, A. (2021). Burnout and job satisfaction among critical care nurses in Saudi Arabia and their contributing factors: A scoping review. *Nursing Open*, 8(5), 2331–2344. <https://doi.org/10.1002/nop2.843>
7. Andersson, E., Fagerdahl, A. M., Fürst, C. J., Wåhlin, I., & Jarl, G. (2023). Moral distress, health and intention to leave: Critical care nurses in intensive care units. *Nursing in Critical Care*, 28(5), 745–754.
8. Castillo-González, W., et al. (2024). Psychological resilience and burnout among hospital nurses: A structural equation modelling approach. *Journal of Nursing Management*, 32(2), 210–220.
9. Cerela-Boltunova, O., Millere, I., & Nagle, E. (2025). Moral distress, professional burnout, and potential staff turnover in intensive care nursing practice in Latvia—Phase 1. *International Journal of Environmental Research and Public Health*, 22(8), 1261. <https://doi.org/10.3390/ijerph22081261>
10. Connor, K. M., & Davidson, J. R. T. (2003). Development of a new resilience scale: The Connor–Davidson Resilience Scale (CD-RISC). *Depression and Anxiety*, 18(2), 76–82. <https://doi.org/10.1002/da.10113>
11. Corley, M. C. (1995). Moral distress of critical care nurses. *American Journal of Critical Care*, 4(4), 280–285. <https://doi.org/10.4037/ajcc1995.4.4.280>
12. Dall’Ora, C., Ball, J., Reinius, M., & Griffiths, P. (2020). Burnout in nursing: A theoretical review. *Human Resources for Health*, 18, 41. <https://doi.org/10.1186/s12960-020-00469-9>
13. De los Santos, J. A. A., & Labrague, L. J. (2021). The impact of fear of COVID-19 on job stress and turnover intentions of frontline nurses in the community: A cross-sectional study in the Philippines. *Traumatology*, 27(1), 52–59. <https://doi.org/10.1037/trm0000294>
14. Elhanafy, E. Y., & El Hesewi, G. S. (2021). Effect of fear of COVID-19 pandemic on work satisfaction and turnover intentions of nurses. *Egyptian Nursing Journal*, 18(1), 39–44. [https://doi.org/10.4103/enj.enj\\_12\\_21](https://doi.org/10.4103/enj.enj_12_21)
15. Falatah, R., & Alfi, E. (2025). Perceived autonomy and anticipated turnover: The mediation role of burnout among critical care nurses. *Healthcare*, 13(6), 652. <https://doi.org/10.3390/healthcare13060652>
16. Giannetta, N., Villa, G., Pennestrì, F., Sala, R., Mordacci, R., & Manara, D. F. (2020). Instruments to assess moral distress among healthcare workers: A systematic review of measurement properties. *International Journal of Nursing Studies*, 111, 103767. <https://doi.org/10.1016/j.ijnurstu.2020.103767>
17. Giannetta, N., Sergi, R., Villa, G., Pennestrì, F., Sala, R., Mordacci, R., & Manara, D. F. (2021). Levels of moral distress among health care professionals working in hospital and community settings: A cross-sectional study. *Healthcare*, 9(12), 1673. <https://doi.org/10.3390/healthcare9121673>
18. Giannetta, N., Villa, G., Bonetti, L., Dionisi, S., Pozza, A., Rolandi, S., Rosa, D., & Manara, D. F. (2022). Moral distress scores of nurses working in intensive care units for adults using Corley's scale: A systematic review. *International Journal of Environmental Research and Public Health*, 19(17), 10640. <https://doi.org/10.3390/ijerph191710640>
19. Guo, Y.-F., Plummer, V., Lam, L., Cross, W., & Zhang, J.-P. (2019). A comparison of the effects of resilience and turnover intention on nurses' burnout: A cross-sectional study. *Journal of Clinical Nursing*, 28(3–4), 441–449. <https://doi.org/10.1111/jocn.14658>
20. Hally, S. M., Settle, M., & Nelson, B. D. (2021). Relationship between moral distress and intent to leave a position among neonatal intensive care nurses. *Advances in Neonatal Care*, 21(6), E191–E198. <https://doi.org/10.1097/ANC.0000000000000891> PubMed+1
21. Hamric, A. B., Borchers, C. T., & Epstein, E. G. (2012). Development and testing of an instrument to measure moral distress in healthcare professionals. *AJOB Primary Research*, 3(2), 1–9. <https://doi.org/10.1080/21507716.2011.652337>
22. Iveziku, D., Duka, B., Dervishi, A., Filomeno, L., Polverini, F., Notarnicola, I., Stievano, A., Rocco, G., Aviles Gonzalez, C. I., Podgorica, N., D’Angelo, D., De Benedictis, A., De Micco, F., Gualandi, R., Lommi, M., & Tartaglini, D. (2025). Exploring nurses' quit intentions: A structural equation modelling and mediation analysis based on the JD-R and social exchange theories. *Healthcare*, 13(7), 692. <https://doi.org/10.3390/healthcare13070692>

23. Labrague, L. J., & De los Santos, J. A. A. (2021). Fear of COVID-19, psychological distress, work satisfaction and turnover intention among frontline nurses. *Journal of Nursing Management*, 29(3), 395–403. <https://doi.org/10.1111/jonm.13168>

24. Labrague, L. J., De los Santos, J. A. A., & Fronda, D. C. (2021). Perceived COVID-19-associated discrimination, mental health and professional-turnover intention among frontline clinical nurses: The mediating role of resilience. *International Journal of Mental Health Nursing*, 30(6), 1674–1683. <https://doi.org/10.1111/inm.12920>

25. Labrague, L. J., & De los Santos, J. A. A. (2021). Resilience as a mediator between compassion fatigue, nurses' work outcomes, and quality of care during the COVID-19 pandemic. *Applied Nursing Research*, 61, Article 151476. <https://doi.org/10.1016/j.apnr.2021.151476>

26. Lake, E. T., Narva, A. M., Holland, S., Smith, J. G., Cramer, E., & Rosenbaum, K. E. F. (2022). Hospital nurses' moral distress and mental health during COVID-19. *Journal of Advanced Nursing*, 78(3), 799–809. <https://doi.org/10.1111/jan.15013>

27. Lavoie-Tremblay, M., Gélinas, C., Aubé, T., Tchouaket, É., Tremblay, D., Gagnon, M.-P., Côté, J., & Génier, P. (2021). Influence of caring for COVID-19 patients on nurses' turnover, work satisfaction and quality of care. *Journal of Nursing Management*, 30(1), 33–43. <https://doi.org/10.1111/jonm.13462>

28. LeClaire, M. M., et al. (2022). Compromised integrity, burnout, and intent to leave the job in critical care clinicians. *American Journal of Critical Care*, 31(4), 303–312.

29. Lee, J. J., Ji, H., Lee, S., Lee, S. E., & Squires, A. (2024). Moral distress, burnout, turnover intention, and coping strategies among Korean nurses during the late stage of the COVID-19 pandemic: A mixed-method study. *Journal of Nursing Management*, 2024, Article 5579322. <https://doi.org/10.1155/2024/5579322>

30. Lesnik, T., & Hauser-Oppelmayer, A. (2025). Turnover intention among intensive care nurses and the influence of the COVID-19 pandemic: A scoping review. *Human Resources for Health*, 23, 23.

31. Li, T. M., Pien, L. C., Kao, C. C., Kubo, T., & Cheng, W. J. (2021). Effects of work conditions and organisational strategies on nurses' mental health during the COVID-19 pandemic. *Journal of Nursing Management*, 30(1), 71–78. <https://doi.org/10.1111/jonm.13485>

32. Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *Maslach Burnout Inventory manual* (3rd ed.). Consulting Psychologists Press.

33. Mirzaei, A., Rezakhani Moghaddam, H., & Habibi, S. A. (2021). Identifying the predictors of turnover intention based on psychosocial factors of nurses during the COVID-19 outbreak. *Nursing Open*, 8(6), 3469–3476. <https://doi.org/10.1002/nop2.896>

34. Nashwan, A. J., Abujaber, A. A., Villar, R. C., Nazarene, A., Al-Jabry, M. M., & Fradelos, E. C. (2021). Comparing the impact of COVID-19 on nurses' turnover intentions before and during the pandemic in Qatar. *Journal of Personalized Medicine*, 11(6), 456. <https://doi.org/10.3390/jpm11060456>

35. Olaleye, T. T., Christianson, T. M., & Hoot, T. J. (2022). Nurse burnout and resiliency in critical care nurses: A scoping review. *International Journal of Africa Nursing Sciences*, 17, 100461. <https://doi.org/10.1016/j.ijans.2022.100461> ScienceDirect+2Scribd+2

36. Petrişor, C., Breazu, C., Doroftei, M., Mărieş, I., & Popescu, C. (2021). Association of moral distress with anxiety, depression, and an intention to leave among nurses working in intensive care units during the COVID-19 pandemic. *Healthcare*, 9(10), 1377. <https://doi.org/10.3390/healthcare9101377>

37. Rae, P. J. L., Pearce, S., Greaves, P. J., Dall'Ora, C., Griffiths, P., & Endacott, R. (2021). Outcomes sensitive to critical care nurse staffing levels: A systematic review. *Intensive and Critical Care Nursing*, 67, 103110. <https://doi.org/10.1016/j.iccn.2021.103110>

38. Salari, N., Shohaimi, S., Khaledi-Paveh, B., Kazeminia, M., Bazrafshan, M.-R., & Mohammadi, M. (2022). The severity of moral distress in nurses: A systematic review and meta-analysis. *Philosophy, Ethics, and Humanities in Medicine*, 17(1), 13. <https://doi.org/10.1186/s13010-022-00126-0> PubMed+1

39. Sheppard, K. N., Runk, B. G., Maduro, R. S., Fancher, M., Mayo, A. N., Wilmoth, D. D., Morgan, M. K., & Zimbro, K. S. (2022). Nursing moral distress and intent to leave employment during the COVID-19 pandemic. *Journal of Nursing Care Quality*, 37(1), 28–34. <https://doi.org/10.1097/NCQ.0000000000000596>

40. Siraj, R. A., Albaker, W., Aldhahir, A. M., et al. (2023). Burnout, resilience, supervisory support, and quitting intention among healthcare professionals in Saudi Arabia: A national cross-sectional survey. *International Journal of Environmental Research and Public Health*, 20(3), 2407. <https://doi.org/10.3390/ijerph20032407>

41. Suazo Galdames, I., et al. (2024). Latent profiles of resilience, burnout and mental health among hospital nurses. *Journal of Clinical Nursing*, 33(1–2), e120–e133.

42. Tolksdorf, K. H., Tischler, U., & Heinrichs, K. (2022). Correlates of turnover intention among nursing staff in the COVID-19 pandemic: A systematic review. *BMC Nursing*, 21, 174. <https://doi.org/10.1186/s12912-022-00949-4>

43. Wei, H., Zhu, Y., Chen, J., & Lin, L. (2024). Nursing work engagement, professional quality of life, and intent to leave: A structural equation modeling pathway analysis. *Journal of Nursing Research*, 32(5), e345. <https://doi.org/10.1097/jnr.0000000000000632>

44. World Health Organization. (2020). *State of the world's nursing 2020: Investing in education, jobs and leadership*. World Health Organization.

45. Yamaguchi, S., Ogata, Y., Sasaki, M., Fujiyoshi-Ito, A., & Yonekura, Y. (2025). The impact of resilience and leader-member exchange on actual turnover: A prospective study of nurses in acute hospitals. *Healthcare*, 13(2), 111. <https://doi.org/10.3390/healthcare13020111>