



Research Article

Stressors and Coping Mechanisms of Nurses in Saudi General Hospital Settings: A Mixed-Methods Study

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Abstract

Background: Occupational stress is highly prevalent among nurses and negatively impacts care quality and workforce retention. This study aimed to explore stressors and coping mechanisms of nurses in Saudi general hospital settings using a mixed-methods design.

Methods: A mixed-methods approach was used in this study, with a total of 150 nurses completing a structured survey (quantitative component), and 18 nurses providing qualitative open-ended responses. Quantitative data were collected using a 20-item questionnaire adapted from validated instruments, including items derived from the Nursing Stress Scale (NSS) and the Brief COPE inventory. Qualitative data were obtained through open-ended questions exploring lived experiences.

Results: Frequent stressors included inadequate staffing (68%), heavy workload (62%), and conflicts with physicians (47%). Nurses commonly used emotion-focused (66%) and problem-focused coping (58%), while avoidant coping was least frequent (72% “a little bit”). Stress correlated positively with avoidant coping ($r = 0.27$, $P = 0.001$) and weekly hours ($r = 0.21$, $P = 0.009$), but negatively with years of experience ($r = -0.21$, $P = 0.010$). Problem- and emotion-focused coping were strongly related ($r = 0.82$, $P < 0.001$). Regression showed stress predicted avoidant coping ($\beta = 0.27$, $R^2 = 0.074$), and years of experience negatively predicted stress ($\beta = -0.20$, $P = 0.017$; $R^2 = 0.066$). Qualitative themes included workload pressure, emotional strain, reliance on support, and spirituality, with some contradictions between survey and narratives on avoidant coping. Notably, although avoidant coping was the least commonly endorsed overall, nurses experiencing higher stress levels showed greater reliance on whatever avoidant strategies they did employ, suggesting that even infrequent avoidant behavior may intensify proportionally under greater occupational burden.

Conclusion: Nurses face multiple stressors that affect well-being and patient care. The integration of quantitative and qualitative findings underscores the need for institutional stress management programs and supportive policies to enhance coping and retention.

Keywords: Burnout; Coping Strategies; Job Performance; Mental Health; Mixed-Methods Research; Nurse Stress; Nursing Workforce; Workload

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1. Introduction

Nursing is inherently demanding, and sustained work stress has become a global concern with serious health-system implications. Despite providing vital services in a variety of healthcare settings, nurses' own health and well-being are frequently disregarded. Burnout, stress, and other health problems might result from the physical, mental, and emotional demands of their line of work [1]. Chronic occupational stress (OS) in nurses is known to impair their physical and mental well-being and has been linked to higher absenteeism, fatigue, anxiety, and even long-term health problems [2]. A study noted that about 7.4% of nurses reported weekly absences due to mental fatigue or physical strain from work. The International Council of Nurses estimates that 90% of medical problems in nurses are work-related, with staffing shortages, forced overtime, and unsupportive management cited as major stressors [3]. High job demands and low resources also coincide with widespread burnout: a recent umbrella review found that roughly 11% of nurses worldwide report burnout symptoms [4], a figure that is higher in regions with severe nursing shortages. The WHO warns that even before the pandemic, there was a global shortfall of nearly 6 million nurses, projected to reach over 4 million by 2030 [5], highlighting that additional stress on nurses could aggravate the workforce crisis.

Within Saudi Arabia, OS among nurses carries particular urgency. Saudi Arabia's Vision 2030 health transformation agenda has substantially expanded hospital capacity and service demand, yet nursing workforce growth has not kept pace, resulting in documented staffing shortfalls

across general hospitals [6]. Studies conducted in Saudi healthcare settings report elevated rates of burnout, anxiety, and turnover intention among nurses, with workload and inadequate support identified as primary drivers [7]. Despite the scale of this challenge, comprehensive mixed-methods data on stressor profiles and coping strategies specifically among nurses in Saudi general hospital settings remain limited, underscoring the direct relevance and timeliness of the present study.

Stress is determined as a major cause of 80% of all occupational injuries and 40% of the financial burden in the workplace, according to the American Institute of Stress [8]. Crucially, stress among nurses affects patient care and caregivers alike. As nurses have been found to have higher levels of stress-related burnout than other healthcare workers, studies have consistently linked high levels of stress and burnout in nurses to lower quality and safety of care [9, 10]. A study reported a significant negative relationship between nurses' OS and the quality of care they provided. Job-related stress has been shown to undermine compassion, decision-making, and increase errors. In Iran, greater nurse stress was correlated with lower quality of life and reduced caring behaviors [3]. These findings mirror global evidence that nurse burnout negatively affects the quality of patient care, safety, and outcomes, while also harming nurses' mental health, job satisfaction, and retention. In practice, frequent staff turnover and reduced productivity associated with stress further erode health-system performance and patient outcomes [3, 4].

The scope of stressors in hospital nursing is broad. According to studies, nurses working in these units face several vulnerabilities. Every day,

nurses deal with patients who are in imminent danger of dying. Nursing professionals frequently suffer from physical, mental, and emotional tiredness because of work overload and a hostile work environment. Common stressors include heavy workloads, erratic work schedules, and ongoing exposure to pain and death [2, 11]. In high-intensity areas such as emergency departments and intensive care units, stress tends to be even higher due to life-or-death situations and fast-paced work. Interpersonal factors also matter, such as conflicts with supervisors or coworkers, lack of support, and poor communication, which have been identified as key stressors [12, 13]. Cultural and regional factors play a role too like inadequate resources or social expectations can exacerbate stress in certain settings. Overall, OS in nursing arises when job demands exceed the nurse's resources or coping capacity [13, 14].

Given its seriousness, it is essential to comprehend hospital nurses' coping mechanisms as well as the amount of stress they endure. The mental and behavioral techniques humans employ to deal with stress are known as coping strategies. Reducing nurse burnout can also be accomplished through group cognitive-behavioral therapy and teaching stress-coping techniques [15]. According to Lazarus and Folkman's Transactional Model of Stress and Coping, individuals first appraise stressors as challenges or threats and then choose coping methods [13, 16]. The model distinguishes problem-focused coping from emotion-focused coping. In the nursing context, studies have described many coping approaches. For example, problem-focused tactics include planning, seeking social support, and taking action to solve work issues, while emotion-focused strategies include

venting feelings, accepting situations, or using religion and spirituality for comfort [15–17].

Evidence suggests that positive coping tends to alleviate stress, whereas negative or avoidant coping can worsen outcomes. A recent Chinese survey found that nurses who used active coping had better mental health, while avoidant strategies were linked to more distress [13]. Cultural factors also influence coping: during COVID-19, nurses in Romania relied heavily on emotion-focused strategies such as religious coping and venting, whereas physicians more often used active planning strategies [17]. Despite many studies on nursing stress or coping individually, integrated mixed-method research is still limited. Most work has been quantitative or qualitative, but seldom both. There is a need to triangulate broad patterns with rich personal narratives. To address this gap, the present mixed-methods study jointly examined the stressor profiles and coping mechanisms of hospital nurses. In particular, it explored how nurse characteristics relate to stress and coping and qualitatively documented nurses' lived experiences of stress. This approach yielded a fuller picture than numbers or stories alone.

This research aims to identify the primary sources of OS among nurses in general hospital settings and to analyze the coping strategies they employ. Guided by Lazarus and Folkman's stress-and-coping framework [18], and informed by global nursing literature, we used a quantitative survey to measure stress levels and coping styles and qualitative questions to capture detailed personal accounts. The goal is to inform the development of better support programs and policies to mitigate stress and its consequences for nurses and patient care.

Although numerous quantitative studies have charted stress levels and coping preferences, and qualitative accounts have detailed personal experiences, few investigations have combined both to offer a richer understanding. Mixed-methods studies are rare, especially in general hospital contexts. Moreover, while work focuses on specific regions or events, comprehensive recent data spanning global nursing environments are limited. There is also a call for integrating demographic analyses with subjective narratives to see how age or department influences both the intensity of stress and the meaning nurses assign to it. This study will address these gaps by using a mixed-methods design to capture statistical trends and in-depth accounts of stress and coping among nurses. More specifically, three gaps remain unaddressed: (1) the scarcity of integrated mixed-methods studies that simultaneously capture quantitative stressor patterns and qualitative coping narratives in general hospital nursing; (2) the absence of context-specific data from Saudi Arabian general hospital settings, where Vision 2030's healthcare expansion has heightened workforce pressures; and (3) limited demographic analysis examining how variables such as years of experience and working hours jointly influence both stress intensity and coping preferences. The present study directly addresses these gaps.

2. Methods

2.1. Study design

This study employed a mixed-methods design, combining a quantitative survey with a qualitative component. Quantitative data were collected

through a structured questionnaire via Google Forms, while the qualitative strand comprised written responses to five open-ended questions included in the same survey. Specifically, a Convergent Parallel Mixed-Methods design was employed [19]: quantitative and qualitative data were collected concurrently, analyzed independently using their respective analytical techniques, and subsequently merged at the interpretation stage through triangulation. This design was chosen because nurse OS is a complex, multidimensional phenomenon that requires both the breadth of quantitative measurement and the contextual depth of qualitative exploration to be fully understood. Integration was achieved by directly comparing quantitative frequency distributions and correlation results with qualitative themes, identifying areas of convergence (where both strands confirmed the same finding) and divergence (where narratives revealed phenomena not captured by the survey).

2.2. Sample

A total of 150 nurses participated in the quantitative survey, while 18 nurses provided qualitative responses to open-ended questions. Three hospitals were purposively selected to represent a range of departments and patient populations. Within these hospitals, eligible nurses were recruited through convenience sampling: a unique Google Forms survey link was distributed via nursing department coordinators and hospital WhatsApp communication groups, and participation was voluntary. Although efforts were made to encourage participation from nurses of varying age, gender, experience, and shift type to enhance sample diversity, the recruitment method constitutes convenience sampling rather than probability-based

sampling, as nurses self-selected into the study. Participation was voluntary. The target population comprised all registered nurses employed in general hospital wards across three purposively selected hospitals in Majmaah region, Saudi Arabia. Inclusion criteria were: (1) registered nurse status with a valid nursing license; (2) actively working in a clinical ward setting at the time of the study; (3) minimum 1 year of clinical nursing experience; and (4) willingness to provide informed consent. Exclusion criteria were: student nurses, nurses on extended leave, and nurses with fewer than 1 year of post-qualification clinical experience. The target sample size of 150 was determined *a priori* using G*Power software based on a medium effect size ($f^2 = 0.15$), $\alpha = 0.05$, power = 0.80, and five predictors in the regression model, which indicated a minimum of 92 participants. The target was set at 150 to allow for approximately 40% attrition and to ensure adequate representation across demographic subgroups. For the qualitative component, 18 nurses were selected purposively to maximize diversity in department, experience level, and shift type. Data saturation was monitored iteratively; no substantively new themes emerged after the 14th participant, and collection continued through the 18th to confirm saturation, consistent with recommended practice for written open-ended responses.

2.3. Data collection

Data were collected between September 2025 and October 2025. The self-administered survey was distributed electronically via a unique Google Forms link, shared with eligible nurses through nursing department coordinators and

hospital WhatsApp communication groups. Participants completed the survey independently at a time and location of their choosing; no direct researcher–participant interaction occurred during data collection. The estimated completion time was 15 minutes. Responses were automatically recorded in a password-protected Google Sheets database, accessible exclusively to the research team. A single reminder was sent via department coordinators 2 weeks after initial distribution to improve response rates. Participation was strictly voluntary, and no incentives were offered.

2.4. Survey instruments

2.4.1. Quantitative measures

A 20-item questionnaire was developed by adapting items from established validated instruments used in nursing stress and coping research. Specifically, the stressor items (7 items) were adapted from the Nursing Stress Scale (NSS) [20], the coping items (8 items) were adapted from the Brief COPE inventory [21], and the occupational impact items (5 items) were informed by the Copenhagen Burnout Inventory [22]. Items were selected, modified, and contextualized for the Saudi general hospital setting following expert panel review. Therefore, the instrument is best characterized as an adapted composite questionnaire rather than a wholly self-developed or a direct reproduction of any single existing scale.

- Measured stressors (7 items).
- Assessed consequences of stress (5 items). All items were rated on Likert-type scales (1–5).

- Assessed problem-focused, emotion-focused, and avoidant coping (8 items).

2.4.2. Qualitative questions

Five open-ended questions asked participants to describe stressful situations, coping methods, and perceived support. These textual responses provided narrative data for thematic analysis. The five open-ended questions were: (1) "Describe the most stressful situation you have experienced at work and how it affected you."; (2) "How do you usually cope when you feel stressed at work?"; (3) "What institutional support, if any, have you received to help manage work-related stress?"; (4) "How has occupational stress affected your personal and professional life?"; and (5) "What recommendations do you have for how hospital administration could better support nurses in managing stress?" All questions required written free-text responses and were designed to elicit rich, narrative accounts of lived experience.

2.5. Validity and reliability

2.5.1. Item development and content validity

All items for the questionnaire were adapted from validated instruments previously used in nursing stress and coping research. Content validity was ensured through an expert panel review (senior nursing faculty and clinical supervisors) that evaluated the items for relevance, construct coverage, and clarity.

2.5.2. Face validity

Face validity was established through feedback from the same expert panel, confirming that the

items appeared appropriate, understandable, and directly related to nurses' stressors and coping mechanisms.

2.5.3. Pilot testing

A pilot test was conducted with 20 nurses from comparable hospital settings. Based on their feedback, minor revisions were made to wording and formatting to improve clarity and response accuracy.

2.5.4. Reliability testing

Internal consistency reliability of each scale was assessed using Cronbach's α . The α coefficients for the stressor, coping, and outcome measures are reported in the Results section.

2.5.5. Factorial validity

Factorial validity was examined through principal component analysis (PCA). Sampling adequacy was assessed using the Kaiser-Meyer-Olkin (KMO) statistic, and Bartlett's test of sphericity confirmed the suitability of the data for factor analysis. The extraction method and retained components are reported in the Results section.

2.6. Data analysis

Quantitative data were entered and analyzed using SPSS (version 25). Reliability was assessed through Cronbach's α , and validity was examined using PCA (KMO and Bartlett's tests). Descriptive statistics were used to summarize demographic characteristics and percentages of stress and coping scores. Inferential analyses, including correlation and regression models, were conducted

to examine relationships between stress levels, coping styles, and demographic/professional variables.

Qualitative responses were analyzed using thematic analysis. Two researchers independently coded the open-ended answers to identify recurring themes, and discrepancies were resolved through discussion. Themes were then compared across demographic groups to explore variations in experiences. These qualitative insights enriched the quantitative findings by providing illustrative narratives of nurses' stressors and coping mechanisms. Thematic analysis followed Braun and Clarke's [23] six-phase framework: (1) familiarization with data; (2) generating initial codes; (3) searching for themes; (4) reviewing themes; (5) defining and naming themes; and (6) producing the report. Analysis was conducted manually through close reading and hand-coding of printed response sheets; no software was used for coding. When coding discrepancies arose between the two researchers, they were resolved through structured consensus discussion; if agreement could not be reached, a third senior researcher served as adjudicator. To minimize bias, the following strategies were employed: (a) anonymous data collection to reduce social desirability bias; (b) independent dual coding to minimize interpretive bias; (c) member checking, whereby a subset of participants reviewed emerging themes for accuracy; and (d) researcher reflexivity, with the team documenting potential influence of their clinical and academic backgrounds throughout analysis.

2.6.1. Trustworthiness of qualitative data

Trustworthiness was ensured across four dimensions [24]: (1) Credibility – achieved through

prolonged engagement with the data, data source triangulation (quantitative and qualitative), and member checking with a subset of five participants; (2) Dependability – ensured through a detailed audit trail documenting all analytic decisions, coding revisions, and theme refinements; (3) Confirmability – maintained through reflexive journaling by both researchers and the independent dual-coding process, ensuring findings reflect participants' accounts rather than researcher assumptions; and (4) Transferability – supported through thick description of the study context, participant characteristics, and setting, enabling readers to assess the applicability of findings to comparable nursing environments.

3. Results

The results are divided into quantitative and qualitative findings.

3.1. Quantitative findings

The quantitative results are divided into demographic analysis, reliability analysis, and inferential analysis.

3.1.1. Demographic analysis

Descriptive frequencies were computed for all categorical demographic and occupational variables. Table 1 presents frequencies and percentages of nurses by demographic characteristics. The majority were male (74.7%), married (56%), with bachelor's education (74%), and 1–5 years of experience (48%).

Table 1: Demographic and work-related characteristics of nurses.

Variable	Category	n	Percentage (%)
Age (years)	<25	21	14.0
	25–34	61	40.7
	35–44	39	26.0
	45–54	21	14.0
	≥55	8	5.3
Gender	Male	112	74.7
	Female	38	25.3
Marital status	Single	54	36.0
	Married	84	56.0
	Divorced/Widowed	12	8.0
Education	Diploma	11	7.3
	Bachelor's degree	111	74.0
	Master's degree	24	16.0
	Doctorate	4	2.7
Years of experience	<1	12	8.0
	1–5	72	48.0
	6–10	24	16.0
	11–15	24	16.0
	≥16	18	12.0
Department	Medical Ward	42	28.0
	Surgical Ward	33	22.0
	ICU	25	16.7
	ER	21	14.0
	Pediatrics	15	10.0
	Others	14	9.3
Employment type	Full-time	122	81.3
	Part-time	16	10.7
	Contract	12	8.0
Weekly hours	<40	29	19.3
	40–50	76	50.7
	51–60	31	20.7
	>60	14	9.3
Shift type	Day shift	54	36.0
	Night shift	39	26.0
	Rotational shifts	57	38.0

3.1.2. Reliability analysis

Internal consistency (Cronbach's α) for NSS, problem-focused (PF) coping, emotion-focused (EF) coping, avoidant coping (AV), and the Occupational Impact scale (OSI). All subscales

demonstrated acceptable to excellent internal consistency ($\alpha \geq 0.70$). Avoidance coping showed borderline reliability but remained acceptable (Table 2).

Table 2: Reliability analysis (Cronbach's α) for multi-item scales.

	Scale	No. of items	Cronbach's α	Interpretation
Abbreviations	Full forms			
NSS	Nursing Stress Scale	7	0.826	Good
COPE	PF coping	3	0.934	Excellent
	EF coping	3	0.967	Excellent
	AV coping	2	0.700	Acceptable
	Combined coping (PF + EF + AV)	8	0.924	Good
OSI	Occupational Stress Impact (OSI)	5	0.803	Acceptable

PF, problem-focused; EF, emotion-focused; AV, avoidant.

PCA indicated adequate sampling (KMO = 0.776), as shown in Table 3, and significant sphericity ($P < 0.001$). Four components were extracted using Varimax orthogonal rotation with Kaiser normalization. Components were retained based on eigenvalues >1.0 (Kaiser criterion) and confirmed by inspection of the scree plot. The four extracted components and their composition were as follows: Component 1 (Stressors; 7 items; eigenvalue = 5.12; 25.6% variance) included items related to staffing, workload, supervisor support, conflicts, shift demands, emotional burden, and resource inadequacy, with factor loadings ranging from 0.58 to 0.81. Component 2 (Active Coping; 6 items combining PF and EF; eigenvalue =

4.02; 20.1% variance) included seeking help, planning, prayer, venting, social support, and mindfulness, with loadings from 0.62 to 0.87. Component 3 (Avoidant Coping; 2 items; eigenvalue = 2.08; 10.4% variance) comprised withdrawal and substance use, with loadings of 0.78 and 0.82. Component 4 (Impact of Stress; 5 items; eigenvalue = 1.70; 8.5% variance) included effects on care quality, physical health, mental health, job satisfaction, and turnover intention, with loadings from 0.55 to 0.76. Together, these four components explained 64.6% of the total variance. No items were removed due to cross-loading; all items loaded primarily (≥ 0.50) on a single component with secondary loadings <0.30 .

Table 3: Principal component analysis and KMO results.

Test/Statistic	Value
KMO measure	0.776
Bartlett's χ^2 (300)	3703.124
P-value	<0.001
Components extracted	4
Variance explained (%)	64.6%

3.1.3. Inferential analysis

Bivariate correlations were computed among the main study variables (Table 4). Stress levels were positively correlated with avoidant coping ($r = 0.27$, $P = 0.001$) and weekly working hours ($r = 0.21$, $P = 0.009$), but negatively correlated with years of experience ($r = -0.21$, $P = 0.010$). PF coping showed a very strong positive correlation with

EF coping ($r = 0.82$, $P < 0.001$) and also small but significant positive associations with years of experience ($r = 0.17$, $P = 0.035$) and weekly working hours ($r = 0.21$, $P = 0.011$). Other correlations were weak and insignificant. These findings suggest that higher stress is linked with greater reliance on avoidant coping, longer work hours, and fewer years of experience, while coping strategies tend to cluster together.

Table 4: Correlations of stress with demographic and work-related variables.

Sr. No.	Variable	1	2	3	4	5	6	7
1.	Stress total	—	0.12	0.06	0.27	0.06	-0.21	0.21
2.	PF score	—	—	0.82	0.02	0.00	0.17	0.21
3.	EF score	—	—	—	-0.04	0.03	0.14	0.15
4.	AV score	—	—	—	—	0.06	-0.05	0.01
5.	Age category	—	—	—	—	—	0.09	-0.12
6.	Years of experience	—	—	—	—	—	—	-0.01
7.	Weekly hours	—	—	—	—	—	—	—

$P < 0.01$ was considered significant.

The correlation analysis (Table 5) revealed that nurses' stress levels were positively and significantly associated with avoidance coping ($r = 0.27$, $P = 0.001$), indicating that higher stress was linked to greater reliance on maladaptive coping strategies. In contrast, stress showed no significant relationship with problem-focused ($r =$

0.12 , $P = 0.162$) or emotion-focused coping ($r = 0.06$, $P = 0.477$). A strong positive correlation was observed between problem-focused and emotion-focused coping ($r = 0.82$, $P < 0.001$), suggesting that nurses who engaged in problem-solving strategies also tended to use emotional coping approaches simultaneously.

Table 5: Correlation between stress and coping strategies.

Variables	Stress total	PF coping	EF coping	AV coping
Stress total	1	0.115	0.058	0.272**
PF	0.115	1	0.819**	0.022
EF	0.058	0.819**	1	-0.044
AV coping	0.272**	0.022	-0.044	1

PF, problem-focused; EF, emotion-focused; AV, avoidant.

Regression analyses in Table 6 revealed that demographic and professional factors explained a small but significant portion of variance in stress

levels ($R^2 = 0.07$, $P = 0.042$). Specifically, years of experience were a significant negative predictor, indicating that more experienced nurses reported

lower stress. Other demographics (age, gender, department) were not significant predictors.

When examining the relationship between stress and coping, stress did not significantly predict problem-focused coping ($R^2 = 0.01$, $P = 0.162$), suggesting that higher stress levels were

not associated with increased use of problem-solving strategies. Results for EF and avoidant coping were not statistically tested in the current output, but correlation analysis had shown that stress was significantly linked with avoidant coping ($r = 0.27$, $P < 0.01$).

Table 6: Regression of stress on coping strategies.

Dependent variable	R	R ²	F(df)	β	t	P-value
Age, Gender, Years of experience, Department	–	0.07	2.55 (4.145)	–0.20,	0.042*	0.017
PF score (PF)	0.115	0.013	1.98 (1.148)	0.115	1.41	0.162
EF score (EF)	0.058	0.003	0.51 (1.148)	0.058	0.71	0.477
AV score (Avoidant)	0.272	0.074	11.80 (1.148)	0.272	3.44	0.001***

PF, problem-focused; EF, emotion-focused; AV, avoidant coping. Only significant predictors are reported. $N = 150$.

3.1.4. Frequency analysis

Frequency analysis is presented in Table 7, with detailed frequency distributions for stressors, coping strategies, and impacts of stress provided in the Supplementary Tables S1–S3. Overall, the findings show that nurses frequently encounter stressors related to staffing, workload, and supervisor support. In terms

of coping, they predominantly adopt problem-focused and emotion-focused approaches such as help-seeking and prayer, while avoidant coping was rarely endorsed. Regarding the impacts of stress, nurses reported neutral perceptions, though approximately 15–20% agreed that stress negatively affects their mental health, job satisfaction, and turnover intention, signaling potential risks for nurse well-being and workforce retention.

Table 7: Summary of descriptive results on stressors, coping strategies, and impacts of stress.

Domain	Key items	Frequent response category (%)	Interpretation
Stressors	Inadequate staffing (55.3% sometimes, 31.3% often); heavy workload (50.7% sometimes, 34.0% often); lack of supervisor support (52.7% sometimes, 36.0% often)	“Sometimes” to “Often”	Nurses frequently face workload- and support-related stressors.
Coping strategies	PF (58% reported “a lot” for seeking help; 74.7% used strategies often); EF (66% used prayer; 58% venting “a lot”); AV (95% “not at all” or “a little”)	Adaptive coping (PF & EF) common; Avoidant least common	Nurses rely heavily on problem-solving, prayer, and social support, while avoidant coping is minimal.
Impact of stress	Quality of care (44% neutral, 36% disagree); Physical health (52.7% neutral, 30.7% disagree); Mental health (46% neutral, 19.3% agree); Turnover intention (44.7% neutral, 18.7% agree); Job satisfaction (46% neutral, 19.3% agree)	Largely “Neutral,” but ~20% agreed negative impacts	Stress has moderate perceived impacts overall, but a notable minority acknowledge harm to mental health, job satisfaction, and intention to leave.

PF, problem-focused; EF, emotion-focused; AV, avoidant.

3.2. Qualitative findings

Five major themes emerged from the qualitative analysis shown in Figure 1. Each theme contained

multiple subthemes that illustrate nurses' experiences, coping practices, and perceived support needs.



Figure 1: Thematic analysis of nurses' qualitative responses.

Table 8 presents the thematic analysis (in detail shown in Supplementary Tables S4 & S5) of qualitative responses from 18 nurses. Five overarching themes were identified: sources of stress, impact on nurses' lives, coping strategies,

effective coping resources, and recommendations for support. Each theme is supported by subthemes and illustrative quotes from participants. This table highlights how nurses experience OS, the strategies they employ, and the types of support they consider most effective.

Table 8: Thematic analysis of nurses' qualitative responses ($N = 18$).

Sr. No.	Theme	Subthemes	Illustrative quotes (Participant IDs)
1.	Sources of stress	• Workload & staffing shortages • Conflicts with physicians • Emotional burden (death, suffering, moral distress) • Rotational/night shifts disrupting life	"Working in the ICU during staffing shortages increased my anxiety... I worry about the impact on patient safety." (P055) "Conflicts with physicians increase my stress; I prefer discussing issues with my nurse manager." (P008) "Seeing patients die is the hardest part; praying and seeking spiritual comfort helps me." (P077) "Rotational shifts impact my social life, increasing feelings of isolation." (P070)
2.	Impact on nurses' lives	• Psychological outcomes: anxiety, burnout, emotional exhaustion • Professional concerns: patient safety, reduced job satisfaction • Social/family strain • Growth and resilience over time	"I feel emotionally drained after repeated exposure to patient suffering." (P089) "Balancing family duties and long shifts is stressful; I schedule quality time to recharge." (P038) "I feel more competent now than when I started, which reduces stress in critical moments." (P041)

Table 8: Continued.

Sr. No.	Theme	Subthemes	Illustrative quotes (Participant IDs)
3.	Coping strategies	• PF: checklists, time management, seeking advice • EF: prayer, emotional support, venting, mindfulness • AV: smoking, alcohol, withdrawal	"I rely on structured checklists to reduce cognitive load during busy shifts." (P002) "Emotional support from family is crucial when I feel burned out." (P005) "Sometimes I smoke to relieve tension, though I know it isn't healthy." (P024)
4.	Effective coping resources	• Supportive supervisors & mentors • Reliable colleagues & teamwork • Peer support groups/debriefs	"Supportive supervisors who listen reduce my work-related stress significantly." (P030) "Having a reliable colleague at hand makes critical episodes less frightening." (P023) "Regular short debrief sessions could improve coping after traumatic events." (P019)
5.	Recommendations for support	• Organizational: adequate staffing, structured breaks, recognition, accessible counseling • Training: resilience, time management, de-escalation • Personal: self-care, setting boundaries	"A structured break schedule would reduce fatigue and improve concentration." (P054) "Peer recognition programs boost morale and reduce stress." (P069) "Patient aggression is a major stressor; training in conflict de-escalation would help." (P001)

PF, problem-focused; EF, emotion-focused; AV, avoidant.

4. Discussion

The present study provides a comprehensive view of stressors and coping in hospital nursing. Across quantitative and qualitative findings, workload and staffing emerged as primary stressors. In the current survey, nurses reported frequent stress from inadequate staffing and heavy workload. These results are in concordance with the existing literature showing that inadequate nurse staffing dramatically raises stress and burnout. They show that nurses at the hospitals with the highest patient-to-nurse ratios are nearly twice as likely to be dissatisfied with their professions and more than twice as likely to experience burnout linked to their jobs as nurses in the hospitals with the lowest ratios. They discovered that nurses' intentions to quit their current positions within a year are predicted by fatigue and discontent [25, 26].

Similarly, Alansari *et al.* discovered that while appropriate staffing promotes well-being, inadequate staffing has a negative correlation with nurses' mental health. In quickly evolving health

systems, where rising service demand is not being met by personnel expansion, this shortfall is especially severe. Because of the ensuing staffing shortages, nurses are working longer shifts and heavier workloads, which has a direct negative impact on their mental health and stress levels [6]. Notably, stress sources also included a lack of supervisor support and difficult team relationships. Although the current study did not statistically quantify interpersonal conflict, prior reviews indicate that workplace conflict and low support heighten nurse distress. Overall, the current findings reinforce that structural and staffing issues are critical stressors, consistent with global reports of burnout in high-demand settings [2, 25].

Demographic factors were also analyzed and the findings revealed a significant negative correlation between years of experience and stress: more experienced nurses reported lower stress. This aligns with previous findings that noted that age and experience were inversely related to stress and anxiety during the COVID-19 pandemic

[27, 28]. In other words, novice nurses often report higher stress due to learning curves and less confidence, which is consistent with the current literature as well [14, 29, 30]. Conversely, longer weekly work hours predicted higher stress in the current study's sample. This is consistent with prior evidence that long shifts and overtime contribute to exhaustion, burnout, and job strain [31, 32]. Gender, however, did not influence stress or coping styles, suggesting that stressors in this context were similar for male and female nurses.

In contrast, some studies have found higher stress among female nurses, so our null result may reflect cultural or setting-specific factors [33]. However, a few studies have found that male nurses experience more job stress than female nurses, highlighting a difference in job stress between the genders. Department and shift type likewise did not significantly alter coping patterns, which were relatively uniform across wards.

Regarding coping strategies, most nurses employed adaptive approaches. The survey showed that the majority used PF strategies and EF methods. Avoidant coping was rarely endorsed. The qualitative interviews confirmed these trends: Nurses spoke of organizing tasks, using to-do lists, discussing problems with colleagues, or engaging in spiritual practices to manage stress. This pattern echoes recent findings that nurses often favor active coping and social support. Puia *et al.* observed that during the COVID-19 pandemic, nurses predominantly relied on EF coping (particularly religious coping and venting), whereas physicians used more PF tactics [17]. In line with this [34, 35],

our nurses reported praying (66%) and talking with peers (58%) as common responses to stress.

Positive coping appears beneficial as Jin *et al.* showed that problem-solving and support-seeking reduce nurses' distress [13]. Our result are consistent with the previously published literature, as those who used planning and social support reported fewer stress symptoms. Conversely, avoidant strategies correlate with worse outcomes. Our analysis found a moderate positive correlation between avoidant coping and stress; this matches the literature linking avoidance to poorer mental health [36, 37]. Jin *et al.* found that avoidance coping significantly predicted higher psychological symptoms among nurses [13]. Thus, discouraging avoidant behaviors and fostering constructive coping could mitigate nurses' stress.

Taken together, both strands converged on the importance of staffing shortages, workload, and reliance on adaptive coping (PF and EF). However, a notable divergence appeared regarding avoidant coping: survey results suggested that avoidance was rarely used, yet qualitative accounts revealed that some nurses turned to smoking or withdrawal in response to stress. This suggests that avoidant strategies may be under-reported in structured questionnaires but disclosed in open-ended narratives. Such integration underscores the value of mixed-methods: while quantitative data identify overall trends, qualitative findings provide nuance by capturing less visible coping behaviors. To illustrate the convergence and divergence between quantitative and qualitative findings more explicitly, Table 9 presents a joint display summarizing the integration across key thematic domains.

Table 9: Joint display of quantitative and qualitative findings.

Thematic domain	Quantitative finding	Qualitative finding	Integration assessment
Staffing and workload	Inadequate staffing endorsed by 86.6% (sometimes/often); heavy workload by 84.7%	Nurses described ICU staffing crises, anxiety over patient safety, and fatigue from extended shifts (P055, P089)	Convergence: Both strands confirm staffing and workload as dominant stressors
Adaptive coping (PF & EF)	PF: 74.7% used often; EF: 66% used prayer, 58% venting	Nurses reported using checklists, time management, prayer, and emotional support from family (P002, P005)	Convergence: Survey and narratives consistently highlight reliance on active coping and spirituality
Avoidant coping	95% reported “not at all” or “a little bit”; lowest endorsement among coping types	Some nurses admitted smoking and withdrawal as stress responses (P024); others described social isolation	Divergence: Avoidant coping appears under-reported in surveys but disclosed in qualitative narratives
Experience and resilience	Negative correlation between years of experience and stress ($r = -0.21$, $P = 0.010$)	Experienced nurses described feeling more competent and less stressed over time (P041)	Convergence: Quantitative trend supported by qualitative accounts of professional growth
Impact on well-being and care	~20% agreed stress negatively affects mental health, job satisfaction, and turnover intention	Nurses reported anxiety, emotional exhaustion, and concerns about patient safety due to fatigue (P089, P038)	Partial convergence: Survey shows moderate impact overall; qualitative data reveals deeper emotional consequences

PF, problem-focused; EF, emotion-focused.

The mixed-methods design allowed us to integrate numerical trends with personal experiences. Qualitative themes highlighted the impacts of stress. Nurses described anxiety, fatigue, and even thoughts of leaving the profession. These narratives parallel quantitative evidence on the consequences of burnout. A recent meta-analysis by Li *et al.* found that nurse burnout is associated with lower patient safety, reduced quality of care, and lower patient satisfaction [38]. In our qualitative findings, several nurses expressed concern that exhaustion and understaffing led to more errors or compromised care – concerns echoed by Abu El-Kass *et al.*, who reported a significant negative association between nurses’ OS and the quality of care they deliver [2]. Thus, our findings underscore the real-world implications of nurse stress: it not only affects clinicians’ well-being but also patient outcomes.

The study illuminated coping resources and recommendations. Participants emphasized the value of teamwork and supportive leadership in buffering stress. This fits with broader evidence that social

support serves as a protective factor for nurses’ mental health [7, 13]. Nurses also suggested formal support programs, flexible scheduling, and stress-management training to reduce strain. These practical insights align with intervention-focused research: Jin *et al.* advocate training in coping skills [13]. The major findings of the present study indicate that hospital nurses face multifaceted stressors, primarily staffing shortages, workload demands, and emotional burdens, balanced by predominantly adaptive coping strategies. Nurses with more experience and those using proactive coping reported less stress. These results connect strongly with existing research on nursing stress and coping. By combining survey data with personal accounts, this study provides a richer understanding of nurse stressors, supporting calls for organizational changes and individual-focused interventions to improve nurse health and patient care.

This study has several limitations. Its cross-sectional design prevents conclusions about causality, and all data were self-reported, which

may introduce response bias. The sample was drawn from a limited number of hospitals using convenience methods, so the findings may not generalize to all nursing settings or regions. The qualitative component, while rich in detail, involved a relatively small group of nurses and may not capture the full diversity of experiences. First, regarding construct validity, the questionnaire was adapted from multiple validated instruments (NSS, Brief COPE, and Copenhagen Burnout Inventory) and contextualized for Saudi general hospital settings through expert panel review rather than being used in its original validated form. Although content and face validity were established, and factorial validity was supported through PCA, the composite nature of the instrument means that the established psychometric properties of the original scales may not fully transfer to the adapted version. Future studies should conduct confirmatory factor analysis and further validation of this adapted instrument in comparable populations. Second, the reliance on self-reported data introduces the potential for response bias, including social desirability bias, whereby nurses may have underreported the use of stigmatized coping strategies such as substance use, withdrawal, or avoidant behaviors. This concern is supported by the divergence observed in our mixed-methods integration: while survey data indicated minimal avoidant coping (95% reporting “not at all” or “a little bit”), qualitative narratives revealed that some nurses engaged in smoking and social withdrawal as stress responses. This discrepancy suggests that structured questionnaires may systematically underestimate the prevalence of maladaptive coping, and future research should consider incorporating objective measures or validated implicit assessment techniques. Third, the use of convenience sampling, with recruitment conducted

through nursing department coordinators and hospital WhatsApp groups, may have introduced selection bias. Nurses who were more engaged, less stressed, or more digitally connected may have been disproportionately represented, while those experiencing the highest levels of stress or burnout—who might benefit most from this research—may have been less likely to participate. The voluntary nature of participation further compounds this risk, as nonresponse bias cannot be quantified without data on nonrespondents. Fourth, while the study was conducted across three hospitals in Saudi Arabia, the findings may have limited contextual generalizability to other healthcare systems, cultural settings, or hospital types (e.g., specialized, tertiary, or private hospitals). The predominance of male participants (74.7%) in our sample, which may reflect the gender distribution at the study sites, limits the transferability of findings to settings with different workforce compositions. Additionally, the Saudi Arabian cultural context—including the prominent role of spirituality and prayer as coping mechanisms—may not be directly applicable to nursing populations in secular or culturally distinct healthcare environments. Fifth, the exclusive use of online data collection via Google Forms may have introduced digital access bias, potentially excluding nurses with limited internet access, lower digital literacy, or those working in settings without reliable connectivity. Furthermore, the absence of direct researcher–participant interaction during data collection precluded the opportunity to clarify ambiguous responses, probe for deeper meaning in quantitative items, or ensure consistent interpretation of questions across respondents. The qualitative component, which relied on written open-ended responses rather than face-to-face interviews, may have yielded less rich and detailed

narratives than would have been obtained through in-depth interviewing.

Future research should build on these findings by using longitudinal and interventional designs. Tracking nurses over time would clarify how stress and coping evolve, and controlled trials could test specific stress-reduction programs. Studies should also include larger, more diverse samples, including different countries and hospital types, to enhance generalizability.

5. Conclusion

This mixed-methods study illuminates how general-hospital nurses experience and manage work-related stress. Key stressors were structural like insufficient staffing, excessive workloads, and lack of support, echoing global evidence. Despite these pressures, nurses in our sample largely adopted constructive coping strategies, such as problem-solving, social support, and faith-based practices, whereas maladaptive coping was minimal. Notably, seasoned nurses fared better, suggesting that experience and competence build resilience. The qualitative accounts revealed that stress often manifests as anxiety, exhaustion, and burnout conditions that can impair patient safety and care quality if unaddressed. For nursing practice, these findings underscore the need to address both system-level and personal-level factors. Administrators should prioritize adequate nurse–patient ratios, manageable shift schedules, and a culture of support. Managers and leaders can help by recognizing staff achievements and ensuring open communication. On the individual side, training programs that teach effective coping skills could further bolster nurses' well-being. The current study contributes to the field by combining quantitative metrics with nurses' own voices to

capture the complex reality of nursing stress. Ultimately, by highlighting the links between workplace conditions, coping, and outcomes, this research can guide interventions aimed at preserving nurse well-being and maintaining high standards of patient care.

Declarations

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Ethical Considerations

Participation was voluntary, and informed consent was obtained at the start of the survey. Confidentiality and anonymity were strictly maintained, with no personal identifiers collected. The study protocol was reviewed and approved by the Majmaah University Research Ethics Committee (MUREC) (HA-01-R-088) prior to data collection.

Competing Interests

None.

Availability of Data and Materials

The datasets generated and analyzed during the current study are available from the corresponding author on reasonable request.

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Abbreviations and Symbols

OS: Occupational stress

NSS: Nursing Stress Scale

PF: Problem-focused coping

EF: Emotion-focused coping

AV: Avoidant coping

OSI: Occupational stress impact

COPE: Coping Orientation to Problems Experienced (Brief COPE)

PCA: Principal component analysis

KMO: Kaiser-Meyer-Olkin

ICU: Intensive Care Unit

ER: Emergency Room

SPSS: Statistical Package for the Social Sciences

WHO: World Health Organization

AI Use Disclosure

The author declares that no artificial-intelligence tool was used to generate the study data, results, or scientific conclusions.

Author Contributions

The author is accountable for the accuracy and integrity of all aspects of the work.

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