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Original Research Article

PREVALENCE OF FIBROMYALGIA AMONG CRITICAL CARE NURSES AND COPING STRATEGIES

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ABSTRACT

Background: *Fibromyalgia is a chronic pain syndrome characterized by widespread musculoskeletal pain, fatigue, sleep disturbance, and cognitive symptoms. Critical care nurses are exposed to sustained occupational stress, rotating shifts, high workload, and emotional demands, which may predispose them to fibromyalgia. Evidence regarding its prevalence and associated coping strategies among critical care nurses in Pakistan remains scarce.* ***Objective:*** *To determine the prevalence of fibromyalgia among essential nurses of care and to evaluate associated occupational, psychosocial factors, and coping strategies.* ***Study Design:*** *Descriptive analytical cross-sectional study.* ***Settings:*** *Critical care units of a tertiary care hospital in Pakistan.* ***Duration of Study:*** *January to July 2025.* ***Methods:*** *A total of 90 registered critical care nurses were enrolled using non-probability consecutive sampling. Fibromyalgia was assessed using the 2016 revised American College of Rheumatology criteria. Coping strategies were evaluated using the Brief COPE inventory. Sleep quality and perceived stress were assessed using the Pittsburgh Sleep Quality Index and the Perceived Stress Scale (PSS-10). Data were analyzed using SPSS. Bivariate analysis and multivariable logistic regression were performed to identify factors independently associated with fibromyalgia.* ***Results:*** *The mean age of participants was 29.8 ± 5.7 years, and 70.0% were female. Fibromyalgia was identified in 26.7% of nurses. The most frequently reported symptoms among affected nurses were fatigue (87.5%), non-restorative sleep (83.3%), and cognitive difficulty (66.7%). Fibromyalgia showed significant associations with rotating or night duties, poor sleep quality, higher perceived stress, and longer weekly working hours. On multivariable analysis, poor sleep quality (AOR 4.62), high perceived stress (AOR 3.88), and rotating or night shifts (AOR 3.53) remained independent predictors. Nurses with fibromyalgia more commonly used venting and avoidant coping strategies, whereas active coping was less frequently reported.* ***Conclusion:*** *Fibromyalgia affects nearly one quarter of critical care nurses in this tertiary care setting and is strongly associated with modifiable occupational and psychosocial factors, particularly sleep disturbance and stress. Interventions aimed at improving work schedules, sleep hygiene, stress management, and adaptive coping strategies may reduce the burden of fibromyalgia and enhance wellbeing among critical care nurses.*

Keywords: Fibromyalgia, Critical Care Nurses, Coping Strategies, Occupational Stress, Sleep Quality

INTRODUCTION

Fibromyalgia (FM) is a complex and often debilitating chronic pain condition characterized by widespread musculoskeletal pain, fatigue, sleep disturbances, and cognitive difficulties. The prevalence of fibromyalgia varies significantly across populations and settings, with estimates suggesting that it affects 2% to 8% of the global population (1, 2). Among healthcare professionals, particularly nurses, the rates may be even higher due to occupational hazards and stressors inherent in their work environments.

Critical care nurses (CCNs), who operate in high-stress environments, are particularly vulnerable to various physical and psychological health issues, including fibromyalgia. The nature of their work entails exposure to emotional trauma, physical strain, and high levels of stress, facilitated by the critical condition of patients and the complexities of intensive care. Gualano et al. reported that essential nurses in care experience significantly higher levels of emotional exhaustion and depersonalization than their counterparts in non-critical care settings, which is closely linked to the prevalence of FM (3).

Furthermore, CCNs are often subjected to moral distress associated with patient care decisions, which may exacerbate their risk for pain-related syndromes such as FM (4, 5). The compounding factors of long working hours, rotating night shifts, and inadequate coping resources can lead to significant mental health challenges, including anxiety and depression, which may further contribute to the development and persistence of fibromyalgia symptoms among nurses (6, 7).

Effective coping strategies are critical for mitigating stress and enhancing the wellbeing of essential nurses of care. Research indicates that adopting positive coping mechanisms, such as seeking social support and engaging in mindfulness practices, can significantly decrease stress and help manage symptoms of fibromyalgia (8). As Gualano et al. noted, healthcare workers have experienced increased burnout and stress levels during the COVID-19 pandemic, amplifying the need for effective coping strategies to address the psychosocial burden associated with caring for critically ill patients (3).

In the context of Pakistan, where healthcare resources are already strained, the impacts of fibromyalgia on critical care nurses are particularly concerning. Limited access to mental health resources and insufficient organizational support may hinder the development of effective coping mechanisms (3). Addressing these challenges will be crucial in ensuring a healthy workforce capable of providing care to an overwhelmed healthcare system.

In Pakistan, recent surveys have indicated a rising trend of fibromyalgia and related chronic pain conditions among nurses, highlighting a critical public health concern that necessitates both preventive and interventional measures. The cultural stigma around mental health issues may also complicate the recognition and management of these conditions, underscoring the need for targeted research into the unique experiences and coping strategies of Pakistani critical care nurses. Identifying these factors and developing tailored coping strategies can help mitigate the prevalence of fibromyalgia and

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improve the health outcomes of nurses, ultimately leading to better patient care in critical settings.

METHODOLOGY

A descriptive-analytical cross-sectional study was conducted in the critical care units of a tertiary care hospital in Pakistan over six months, from January to July 2025. The target population comprised registered nurses working in adult critical care settings, including medical, surgical, cardiac, and neuro intensive care units. The primary objectives were to determine the prevalence of fibromyalgia using internationally accepted diagnostic criteria and to assess coping strategies used by critical care nurses, along with occupational and psychosocial factors associated with fibromyalgia.

A sample size of 90 was used to ensure stable prevalence estimation and adequate precision for exploratory association testing in a single-center critical care workforce. Participants were recruited using a non-probability, consecutive approach across all ICU shifts to minimize systematic selection bias due to duty timing. Registered nurses aged 20 years or older with at least six months of continuous ICU experience were eligible. Nurses on prolonged leave during the data collection window, those with known inflammatory rheumatologic disorders (for example, rheumatoid arthritis or systemic lupus erythematosus), uncontrolled endocrine disease likely to confound widespread pain (such as unchecked hypothyroidism), current pregnancy, recent major trauma or surgery, and those unwilling to provide informed consent were excluded to reduce diagnostic misclassification.

Fibromyalgia was assessed using the 2016 revised American College of Rheumatology fibromyalgia criteria in survey format, operationalized through the Widespread Pain Index and Symptom Severity Scale, along with the required symptom duration and generalized pain conditions. Coping strategies were measured using the Brief COPE inventory, and coping domains were categorized a priori into problem-focused, emotion-focused, and avoidant coping consistent with widely used analytic frameworks. Psychosocial and occupational covariates were captured using a structured proforma covering demographic variables (age, gender, marital status, education), workplace factors (unit type, ICU experience, average working hours, shift pattern, frequency of night duties), and health-related variables. Perceived stress was assessed using the Perceived Stress Scale (PSS-10). Sleep quality was assessed using the Pittsburgh Sleep Quality Index to quantify sleep disturbance, given its relevance to both fibromyalgia symptomatology and ICU shift work.

Data were collected in a standardized manner by trained research personnel during duty breaks in a quiet area to reduce response bias and improve privacy. Questionnaires were administered in English or, when required, in an easily understandable bilingual format, and assistance was provided only to clarify item meaning, without leading participants toward responses. All participants provided written informed consent prior to enrollment. Ethical approval was obtained from the Institutional Review Board of the study hospital, and the study was performed in accordance with the principles of the Declaration of Helsinki. Confidentiality was ensured through anonymous coding, secure storage of paper forms, and restricted access to the dataset.

Data were analyzed using SPSS (version 25 or later). Continuous variables were summarized using mean ± standard deviation for approximately normally distributed data and median with interquartile range for skewed distributions. Categorical variables were summarized as frequencies and percentages. The prevalence of fibromyalgia was reported with 95% confidence intervals. Comparisons between nurses with and without fibromyalgia were performed using the independent sample t-test or Mann-Whitney U test for continuous variables and the chi-square test or Fisher's exact test for categorical variables, as appropriate. Variables demonstrating plausible clinical relevance or a bivariate association with $p < 0.20$ were entered into a multivariable logistic regression model to identify independent predictors of fibromyalgia, and adjusted odds ratios with 95% confidence intervals were reported. Model diagnostics included assessment of multicollinearity and overall fit. Statistical significance was set at $p<0.05$.

RESULTS

Ninety critical care nurses were enrolled from a tertiary care hospital in Pakistan from July to December. The mean age of participants was 29.8 ± 5.7 years (range: 21 to 45). Most participants were female (n=63, 70.0%), and the median ICU experience was 3.0 years (IQR: 1.5 to 6.0). Rotating/night duties were common (n=68, 75.6%), with a mean duty duration of 9.2 ± 1.6 hours/shift. (Table 1)

Table 1: Baseline socio-demographic and occupational characteristics of critical care nurses (n=90)

Variable	Category	n (%)
Age (years)	Mean ± SD	29.8 ± 5.7
Gender	Female	63 (70.0)
	Male	27 (30.0)
Marital status	Single	46 (51.1)
	Married	44 (48.9)
Education	Diploma in Nursing	34 (37.8)
	BS Nursing / Post-RN	56 (62.2)
ICU type	Medical ICU	31 (34.4)
	Surgical ICU	24 (26.7)
	Cardiac ICU	21 (23.3)
	Neuro ICU	14 (15.6)
ICU experience (years)	Median (IQR)	3.0 (1.5–6.0)
Shift pattern	Fixed day	22 (24.4)
	Rotating with nights	68 (75.6)
Weekly working hours	<48 hours	27 (30.0)
	≥48 hours	63 (70.0)
Self-reported sleep quality (PSQI)	Good (≤5)	28 (31.1)
	Poor (>5)	62 (68.9)
Perceived stress (PSS-10)	Low to moderate	37 (41.1)
	High	53 (58.9)

Using the 2016 revised American College of Rheumatology (ACR) fibromyalgia criteria (survey format), the prevalence of fibromyalgia was 26.7% (n=24/90). Among those meeting criteria, symptom severity was frequently moderate to high, with fatigue, non-restorative sleep, and cognitive complaints being the most common symptom clusters. (Table 2)

Table 2: Prevalence of fibromyalgia and symptom profile among critical care nurses (n=90)

Outcome	Category	n (%)
Fibromyalgia (ACR 2016)	Present	24 (26.7)
	Absent	66 (73.3)
Symptom severity among fibromyalgia cases (n=24)	Moderate	11 (45.8)
	High	13 (54.2)
Dominant symptoms among fibromyalgia cases (n=24)	Fatigue	21 (87.5)
	Non-restorative sleep	20 (83.3)
	Cognitive difficulty	16 (66.7)
	Headache	13 (54.2)
	Abdominal pain/cramps	9 (37.5)
	Depressive symptoms (screen positive)	10 (41.7)

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Coping strategies were assessed using Brief COPE and grouped into problem-focused, emotion-focused, and avoidant coping. Overall, nurses most commonly reported religious coping, planning, acceptance, and seeking emotional support. Avoidant strategies (behavioral disengagement, denial, substance use) were less frequent overall, but were significantly more common among nurses who met fibromyalgia criteria. (Table 3).

On bivariate analysis, fibromyalgia prevalence was significantly higher in nurses with rotating/night duties, poor sleep quality, high perceived stress, and weekly working hours ≥48. Gender showed a higher prevalence in females, but this did not reach statistical significance in unadjusted testing. (Table 4).

In multivariable logistic regression, poor sleep quality, high perceived stress, and rotating/night duties remained independent predictors of fibromyalgia. The model demonstrated acceptable fit and explained a clinically meaningful proportion of variance in fibromyalgia status. (Table 5)

Table 3: Coping strategies used by critical care nurses, overall and by fibromyalgia status (n=90)

Coping strategy (Brief COPE domain)	Overall n (%)	Fibromyalgia present (n=24) n (%)	Fibromyalgia absent (n=66) n (%)	p-value
Religious coping	70 (77.8)	18 (75.0)	52 (78.8)	0.69
Planning (problem-focused)	59 (65.6)	12 (50.0)	47 (71.2)	0.06
Active coping (problem-focused)	54 (60.0)	10 (41.7)	44 (66.7)	0.03
Acceptance (emotion-focused)	52 (57.8)	11 (45.8)	41 (62.1)	0.16
Emotional support	48 (53.3)	10 (41.7)	38 (57.6)	0.18
Venting	41 (45.6)	15 (62.5)	26 (39.4)	0.047
Self-distraction	40 (44.4)	14 (58.3)	26 (39.4)	0.11
Behavioral disengagement (avoidant)	19 (21.1)	9 (37.5)	10 (15.2)	0.02
Denial (avoidant)	14 (15.6)	7 (29.2)	7 (10.6)	0.03
Substance use (avoidant)	2 (2.2)	1 (4.2)	1 (1.5)	0.45

Table 4: Factors associated with fibromyalgia among critical care nurses (n=90)

Factor	Category	Fibromyalgia present n/N (%)	Fibromyalgia absent n/N (%)	p-value
Gender	Female	20/63 (31.7)	43/63 (68.3)	0.08
	Male	4/27 (14.8)	23/27 (85.2)	
Shift pattern	Rotating with nights	22/68 (32.4)	46/68 (67.6)	0.01
	Fixed day	2/22 (9.1)	20/22 (90.9)	
Weekly working hours	≥48 hours	21/63 (33.3)	42/63 (66.7)	0.02
	<48 hours	3/27 (11.1)	24/27 (88.9)	
Sleep quality (PSQI)	Poor (>5)	22/62 (35.5)	40/62 (64.5)	0.003
	Good (≤5)	2/28 (7.1)	26/28 (92.9)	
Perceived stress (PSS-10)	High	20/53 (37.7)	33/53 (62.3)	0.004
	Low to moderate	4/37 (10.8)	33/37 (89.2)	

Table 5: Multivariable logistic regression predicting fibromyalgia among critical care nurses (n=90)

Predictor	AOR	95% CI	p-value
Poor sleep quality (PSQI >5)	4.62	1.45–14.71	0.01
High perceived stress (PSS-10 high)	3.88	1.24–12.15	0.02
Rotating/night duties	3.53	1.03–12.08	0.04
Weekly working hours ≥48	1.89	0.61–5.86	0.27
Female gender	1.96	0.57–6.70	0.29

Overall, these findings indicate that approximately one in four critical care nurses met standardized criteria for fibromyalgia in this tertiary care setting, and the condition was closely linked to modifiable occupational and psychosocial factors, particularly sleep disruption and stress exposure. Coping patterns suggested a relative shift toward venting and avoidant coping among affected nurses, while active coping was less frequently endorsed, highlighting targets for staff wellness interventions.

DISCUSSION

In examining the prevalence and correlates of fibromyalgia among critical care nurses in Pakistan, our study contributes valuable insights to an emerging body of literature focused on the unique challenges faced by healthcare professionals in high-stress environments. Our findings indicate that 26.7% (n=24) of the sampled nurses met the 2016 American College of Rheumatology (ACR) criteria for fibromyalgia. This rate aligns with recent studies highlighting the burden of chronic conditions among healthcare providers.

Our finding of a 26.7% prevalence of fibromyalgia among critical care nurses is consistent with reports from the literature indicating that healthcare workers are particularly vulnerable to chronic pain conditions due to the physical and emotional demands of their roles. For instance, Alharbi and Alshehry observed high levels of perceived stress among ICU nurses in Saudi Arabia, where factors associated with chronic pain prevalence were attributed to high-stress environments (10). Moreover, Zhou et al. emphasized the impact of workplace conditions on fibromyalgia prevalence, demonstrating a link between occupational stress and chronic pain symptoms (11). This context is further underscored by reports from Jahrami et al., who noted that frontline healthcare workers are among those most affected by sleep disturbances and psychological stress, both critical contributors to chronic pain syndromes (12).

Among those who met fibromyalgia criteria, symptom severity was predominantly moderate to high, with fatigue (87.5%), non-restorative sleep (83.3%), and cognitive difficulties (66.7%) reported as the most common clusters. These findings resonate with the literature, indicating that fatigue and sleep disturbances are hallmark symptoms of fibromyalgia. According to Cheng et al., poor sleep

quality can exacerbate chronic pain and increase symptom severity in healthcare workers (13). Our results corroborate this: 68.9% of participants self-reported poor sleep quality, which aligns with findings from other research indicating a high prevalence of sleep disturbances, significantly correlated with increased stress levels (14). Our assessment of coping strategies revealed that nurses commonly employed religious coping (77.8%), planning (65.6%), and acceptance (57.8%) as primary methods. However, those with fibromyalgia displayed a notable frequency of avoidant coping strategies such as behavioral disengagement and denial. This aligns with research that found critical care nurses often resort to less effective coping mechanisms under stress, underscoring the need for improved coping frameworks within stressful healthcare environments (10). Moreover, findings by Cheng et al. indicated that emotional support plays a crucial role in the mental well-being of healthcare workers, which was echoed in our results as well (13).

Our study identified several factors significantly associated with fibromyalgia, including rotating/night shifts, poor sleep quality, and high perceived stress. The literature robustly supports these associations. Studies have shown that rotating shifts disrupt sleep patterns and are associated with increased anxiety and health issues, corroborating our findings (10, 15). Alharbi and Alshehry found that critical care nursing is synonymous with high-stress environments that exacerbate mental exhaustion and bodily pain, creating a cyclical pattern detrimental to nurse health (10).

In addition, our multivariable analysis indicated that poor sleep quality significantly predicted fibromyalgia status. This aligns with findings from Zhou et al., who pointed out sleep disturbances' mediating role in the relationship between stress and mental health among nurses [11]. This correlation emphasizes the complex interplay between work environment variables, sleep quality, and physical health in critical care settings.

Given the substantial prevalence of fibromyalgia and its association with modifiable occupational factors such as sleep quality, there is an urgent need for targeted interventions aimed at improving the well-being of critical care nurses. Implementing wellness programs focused on stress management, sleep hygiene, and effective coping strategies could mitigate the occupational hazards contributing to the prevalence of fibromyalgia. As demonstrated by our study, addressing both workplace dynamics and individual coping mechanisms is essential for fostering a resilient nursing workforce capable of effectively managing the demands of critical care.

CONCLUSION

This study demonstrates a high prevalence of fibromyalgia among critical care nurses working in a tertiary care hospital in Pakistan, highlighting a significant occupational health challenge. The strong associations with poor sleep quality, high perceived stress, and rotating or night shift duties emphasize the role of modifiable workplace factors in the development and persistence of fibromyalgia symptoms. The predominance of avoidant coping strategies among affected nurses further suggests the need for targeted psychological and organizational interventions. Implementing structured stress management programs, improving shift scheduling, and promoting adaptive coping mechanisms may reduce the burden of fibromyalgia and contribute to a healthier, more resilient critical care nursing workforce.

DECLARATIONS

Data Availability Statement

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department Concerned. (IRBEC-MUIE-0384-254

Consent for publication

Approved

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTION

FARHAT IQBAL (Assistant Nursing)

Conception of Study, Development of Research Methodology Design, Study Design, Review of manuscript, and final approval of manuscript.

Manuscript drafting.

QAMAR UN NISA (Principal)

Manuscript revisions, critical input.

SHAGUFTA MAJEED (Vice principal)

Data entry, data analysis, and drafting an article.

Conception of Study, Final approval of manuscript.

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