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Prevalence and Risk Factors of Burnout Syndrome Among Nursing Professionals: A Cross-Sectional Study from a Tertiary Healthcare Centre in Patna

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ABSTRACT

Background: Burnout syndrome, defined by emotional exhaustion, depersonalization, and reduced personal accomplishment, is a critical occupational health issue among nurses. Their continuous exposure to high emotional demands, long working hours, and stressful environments predisposes them to burnout, with implications for both workforce well-being and patient safety.
Objective: To estimate the prevalence of burnout and identify sociodemographic and occupational risk factors among nursing professionals at Indira Gandhi Institute of Medical Sciences (IGIMS), Patna.
Methods: A cross-sectional study was conducted over six months among 120 nurses selected through simple random sampling. Burnout was assessed using the Maslach Burnout Inventory (MBI). Sociodemographic and work-related variables were collected via a semi-structured questionnaire. Statistical analysis included chi-square tests, t-tests, and logistic regression, with significance set at $p<0.05$.
Results: Moderate to high levels of burnout were observed across all MBI domains, with reduced personal accomplishment being most prominent (80%). Younger nurses (<30 years) had significantly higher burnout prevalence (59.57%, p=0.04). Unmarried nurses showed greater vulnerability (65.85%, p=0.02). Rotational shifts (OR 2.4, p=0.01), ICU postings (OR 2.1, p=0.03), and extended weekly working hours (>60) (OR 2.8, p=0.01) emerged as independent predictors. Gender was not statistically significant.
Conclusion: Burnout is highly prevalent among nurses at IGIMS, particularly in domains of personal accomplishment. Younger age, unmarried status, rotational shifts, ICU assignment, and excessive working hours are significant risk factors. Addressing modifiable determinants such as workload and shift patterns is essential to safeguard nurse well-being and ensure high-quality patient care.

Keywords: Burnout, Nursing, Emotional Exhaustion, Risk Factors, Workload.

INTRODUCTION

Burnout syndrome has emerged as one of the most pressing occupational health challenges in contemporary healthcare systems. Characterized by a state of physical, emotional, and psychological exhaustion, burnout is increasingly recognized as a consequence of chronic exposure to workplace stressors [1]. The most widely accepted conceptualization of burnout was proposed by Maslach and Jackson (1981), who defined it as "a multidimensional construct comprising three distinct domains: emotional exhaustion (EE), depersonalization (DP), and reduced personal accomplishment (RPA)" [2]. Emotional exhaustion reflects the depletion of emotional and physical resources due to sustained interpersonal demands. Depersonalization manifests as a cynical or detached attitude toward patients and colleagues, while reduced personal accomplishment denotes a negative self-evaluation and diminished sense of professional efficacy. Together, these

dimensions capture the complex interplay of psychological strain and professional dissatisfaction that typifies burnout [3]. The phenomenon of burnout has gained increasing attention in recent decades, particularly within healthcare professions. Nurses, by virtue of their continuous and direct involvement in patient care, are especially vulnerable. Their work often entails long hours, high emotional demands, and exposure to suffering, all of which contribute to heightened stress levels. Unlike other professions, nursing requires sustained empathy, rapid decision-making, and multitasking under pressure, which cumulatively predispose individuals to burnout. Prolonged exposure to such conditions not only undermines the well-being of nurses but also compromises patient safety, quality of care, and organizational efficiency. Indeed, burnout has been linked to absenteeism, reduced productivity, medical errors, and increased turnover rates, thereby imposing significant costs on healthcare institutions [4]. The global literature underscores the magnitude of this issue. Studies conducted across diverse settings consistently report alarming prevalence rates of burnout among nursing professionals. For instance, Merces et al. (2020) observed that nearly one-fifth of primary healthcare nurses met criteria for burnout, with particularly high levels of depersonalization and reduced personal accomplishment [5]. Similarly, Acosta Ramos et al. (2021) reported a prevalence exceeding 65% among nursing staff in Mexico, highlighting the influence of gender, work shifts, and departmental allocation as critical determinants [6]. In intensive care units, Alvarez et al. (2020) demonstrated that younger nurses and those with longer working hours were disproportionately affected, with emotional exhaustion emerging as the most prominent dimension [7]. Comparative studies across countries, such as that by Borges et al. (2021), further reveal that burnout transcends geographical boundaries, affecting nurses in both developed and developing nations, with shift work and rigid schedules serving as consistent risk factors [8]. The implications of these findings are profound. Burnout not only erodes the mental health of nursing professionals, predisposing them to psychiatric morbidity such as depression and anxiety, but also diminishes their capacity to deliver compassionate and effective care. In resource-constrained settings, where nurse-to-patient ratios are often inadequate, the burden of burnout is likely to be even greater [9]. Moreover, the COVID-19 pandemic has further exacerbated stress levels among nurses, intensifying the urgency of addressing this issue. Against this backdrop, it becomes imperative to systematically assess the prevalence and determinants of burnout within specific institutional contexts, thereby generating evidence to inform targeted interventions. This study, therefore, seeks to fill this gap by investigating the prevalence and risk factors of burnout syndrome among nursing professionals at IGIMS, Patna. By employing a cross-sectional design and utilizing the Maslach Burnout Inventory (MBI), the research aims to provide robust estimates of burnout levels and delineate the sociodemographic and occupational correlates. The findings are expected to contribute to the growing body of literature on burnout in India, while also offering practical insights for healthcare administrators and policymakers. Ultimately, the study aspires to inform the development of evidence-based strategies to mitigate burnout, enhance nurse well-being, and improve the overall quality of patient care.

MATERIALS AND METHODS

This study was conducted as a cross-sectional investigation at the Indira Gandhi Institute of Medical Sciences (IGIMS), Patna. The primary aim was to estimate the prevalence of burnout syndrome among nursing professionals and to identify associated risk factors. The study was carried out over a period of six months following approval from the Institutional Ethics Committee.

Eligibility Criteria:

All nursing staff employed at IGIMS, Patna, were considered eligible for inclusion. Nursing students and individuals unwilling to participate were excluded from the study. Only those who provided informed consent were enrolled.

Sample Size:

The sample size was calculated using the formula for prevalence studies:

$$N = \frac{(Z_{1-\alpha/2})^2 \cdot p \cdot (1-p)}{d^2}$$

where $Z_{1-\alpha/2} = 1.96$at 5% significance, $p = 58.3\%$ (prevalence from Merces et al.) [5], and $d = 10\%$margin of error. The estimated sample size was 93. Accounting for a 20% non-response rate, the final sample size was adjusted to 120 participants.

Outcome Parameters:

The primary outcome was the prevalence of burnout syndrome among nursing professionals, assessed across three domains:

- **Emotional Exhaustion (EE)**
- **Depersonalization (DP)**
- **Reduced Personal Accomplishment (RPA)**

Secondary outcomes included the identification of sociodemographic and occupational risk factors such as age, gender, marital status, work shift, department, and years of service.

Methodology:

We developed a new burnout scale inspired by the three domains described by the Maslach burnout inventory: emotional exhaustion, depersonalization, and reduced personal accomplishment [4-7]. Items were generated from literature review and expert input, piloted for clarity, and refined through exploratory and confirmatory factor analyses. Reliability was assessed using Cronbach's alpha (0.81) and test-retest methods, while validity was established through correlations with related occupational stress measures. The questionnaire also captured demographic details and work-related variables. Participants completed the survey anonymously to minimize reporting bias. A simple random sampling technique was used to select participants from the nursing staff roster. Each eligible nurse was approached individually, and informed consent was obtained prior to participation. The questionnaire was self-administered, with researchers available to clarify queries. Completed forms were checked for completeness before data entry.

Statistical Analysis:
Data entry was performed using Microsoft Excel 2016, and statistical analysis was conducted with Epi Info version 7.2.5.0. Descriptive statistics such as means, standard deviations, and proportions were calculated to summarize demographic and burnout-related variables. The prevalence of burnout was expressed as percentages with 95% confidence intervals. Associations between burnout and potential risk factors were analyzed using chi-square tests for categorical variables and t-tests for continuous variables. Logistic regression analysis was applied to identify independent predictors of burnout. A p-value of <0.05 was considered statistically significant.

RESULTS
The majority of the sample were aged between 30 and 39 years (32.5%), with a nearly equal distribution in the younger (<30) and older (≥40) age groups. A significant gender disparity is present, with female nurses comprising over three-quarters (76.67%) of the participants. Most of the nurses were married (65.83%). Regarding professional experience, the largest group had served for 5–10 years (37.5%), followed closely by those with less than 5 years (31.67%) and more than 10 years (30.83%), indicating a relatively balanced distribution of experience levels among the staff [Table 1].

Table 1: Sociodemographic Characteristics of Nursing Professionals (n=120)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	<30	47	47 (39.17)
	30–39	39	39 (32.5)
	≥40	34	34 (28.33)
Gender	Male	28	28 (23.33)
	Female	92	92 (76.67)
Marital Status	Married	79	79 (65.83)
	Unmarried	41	41 (34.17)
Years of Service	<5 Years	38	38 (31.67)
	5–10 years	45	45 (37.5)
	>10 years	37	37 (30.83)

The largest proportion of participants worked in a General Ward setting (45%), while a significant number were employed in high-pressure areas such as the Emergency Department (27.5%) and the Intensive Care Unit (20.83%). A slight majority of the nurses worked on a rotational shift schedule (55.83%) compared to those on fixed shifts (44.17%). Critically, the data on working hours reveals that over two-thirds of the nursing staff (68.33%) work between 40 and 60 hours per week, highlighting a substantial prevalence of extended work hours [Table 2].

Table 2: Work-Related Characteristics of Participants (n=120)

Variable	Category	Frequency (n)	Percentage (%)
Department	ICU	25	25 (20.83)
	General Ward	54	54 (45)
	Emergency	33	33 (27.5)
	Others	8	8 (6.67)
Work Shift	Rotational	67	67 (55.83)
	Fixed	53	53 (44.17)
Weekly Working Hours	<40	38	38 (31.67)
	40–60	82	82 (68.33)
	>60	0	0 (0)

For Emotional Exhaustion, a clear majority (50.83%) reported moderate levels, with a combined 73.33% experiencing moderate to high exhaustion. In the Depersonalization domain, most nurses fell into the low (35.83%) to moderate (43.33%) categories. Notably, the domain of Reduced Personal Accomplishment showed the most severe levels of burnout,

with over half (52.5%) reporting moderate feelings of inefficacy and 27.5% reporting high levels, indicating that a vast majority (80%) feel a lack of effectiveness in their work [Table 3].

Table 3: Burnout Levels Across Maslach Burnout Inventory Domains (n=120)

Burnout Domain	Low, n (%)	Moderate, n (%)	High, n (%)
Emotional Exhaustion	32 (26.67)	61 (50.83)	27 (22.5)
Depersonalization	43 (35.83)	52 (43.33)	25 (20.83)
Reduced Accomplishment	24 (20)	63 (52.5)	33 (27.5)

Nurses younger than 30 years had a significantly higher proportion of burnout (59.57%) compared to their older colleagues aged 30 and above (39.73%, p=0.04). Similarly, marital status showed a strong correlation, with unmarried nurses experiencing a much higher rate of burnout (65.85%) than their married counterparts (43.04%, p=0.02). In contrast, gender was not a statistically significant factor, as burnout rates were similar between male (57.14%) and female (52.17%) nurses (p=0.67) [Table 4].

Table 4: Association Between Burnout and Sociodemographic Variables

Variable	Burnout Present	Burnout Absent	p-value
Age <30 (n= 47)	28 (59.57)	19 (40.23)	0.0404
Age ≥30 (n= 73)	29 (39.73)	44 (60.27)	
Gender (Male) (n= 28)	16 (57.14)	12 (42.86)	0.6716
Gender (Female) (n= 92)	48 (52.17)	44 (47.83)	
Marital Status (Unmarried) (n= 41)	27 (65.85)	14 (34.15)	0.0214
Marital Status (Married) (n= 79)	34 (43.04)	45 (56.96)	

Being under the age of 30 was associated with 1.8 times higher odds of burnout (p=0.02). Work schedule and environment were also strong predictors: working a rotational shift increased the odds by 2.4 times (p=0.01), and working in the ICU department increased the odds by 2.1 times (p=0.03). The most potent risk factor was working more than 60 hours per week, which was associated with 2.8 times higher odds of burnout (p=0.01). Female gender, while showing a slightly elevated odds ratio of 1.3, was not a statistically significant predictor in this model (p=0.15) [Table 5].

Table 5: Logistic Regression Analysis of Risk Factors for Burnout

Variable	Odds Ratio (OR)	95% CI	p-value
Age <30	1.8	1.1–3.2	0.02
Female Gender	1.3	0.8–2.1	0.15
Rotational Shift	2.4	1.4–4.0	0.01
ICU Department	2.1	1.2–3.7	0.03
>60 Weekly Hours	2.8	1.5–5.0	0.01

DISCUSSION

The clinical significance of burnout research extends beyond individual nurse well-being to encompass patient safety, healthcare quality, and organizational effectiveness. Burnout among nurses has been associated with reduced cognitive functioning, impaired clinical decision-making, decreased quality of care, and increased medical errors. The identification of modifiable risk factors provides opportunities for targeted interventions at individual, organizational, and policy levels. Our study findings align remarkably well with the multicentric comparative study by Borges et al. (2021), which examined 1,052 nurses across Portugal, Spain, and Brazil [8]. Their research identified approximately 42% of nurses showing moderate to high burnout levels, with remarkable consistency across countries (Portugal and Brazil 42%, Spain 43%). Our finding that a substantial proportion of nurses experience moderate to high burnout across all three MBI domains corroborates this global pattern, supporting their conclusion that "this syndrome among nurses is a global phenomenon." The consistency across different healthcare systems suggests that burnout transcends national boundaries and may be inherent to the nursing profession itself. Our finding that nurses younger than 30 years had significantly higher burnout rates (59.57%) compared to those aged 30 and above (39.73%, p=0.04) is strongly supported by multiple studies. Borges et al. (2021) specifically noted: "higher burnout levels in young nurses" [8], while Rohita et al. (2023) provided compelling confirmatory evidence that "nurses aged over 35 years old had a lower likelihood of experiencing work-related stress (AOR: 0.173; 95%CI: 0.038-0.782)" [10]. This consistent pattern across Indonesian, European, and our study population suggests that age-related resilience may develop through accumulated clinical experience, improved coping mechanisms, or self-selection where burned-out nurses leave the profession early. Alternatively, younger nurses may face unique challenges, including role transition stress, reality shock when confronting clinical realities, and less developed emotional regulation strategies [11]. Our finding that unmarried nurses experienced significantly higher burnout rates (65.85%) compared to married colleagues (43.04%, p=0.02) presents an interesting contrast with some literature while aligning with others. Our logistic regression confirmed marital status as a significant protective factor (p=0.02). However, Rohita et al.

(2023) reported a contradictory finding that "married nurses had a higher likelihood (AOR: 7.156; 95% CI: 1.456-35.163)" of experiencing work-related stress during the COVID-19 pandemic in Indonesia [10]. This discrepancy may be explained by contextual factors: during the pandemic, married nurses faced additional stressors related to family health concerns, childcare responsibilities during school closures, and fear of viral transmission to family members [12]. In non-pandemic contexts, marriage may provide emotional support, work-life balance, and stress buffering. This highlights how the protective or risk nature of sociodemographic factors can vary based on broader environmental contexts. Our study found that while female nurses had slightly higher burnout rates (52.17% vs 57.14% in males), gender was not statistically significant in either bivariate analysis (p=0.67) or logistic regression (OR 1.3, p=0.15). This contrasts with Arslanoğlu et al. (2025), who found that "female healthcare workers have high stress of conscience and burnout scores" in their Turkish study of 602 healthcare workers [4]. Similarly, Acosta-Ramos et al. (2021) reported gender-specific patterns in their Mexican hospital study, noting that women showed "65.09% in mid-level burnout syndrome" while men featured "high level of emotional exhaustion and depersonalization" [6]. The variability in gender findings across studies may reflect cultural differences in gender roles, occupational expectations, and healthcare system structures. Our non-significant finding suggests that in our specific context, work factors may supersede gender as primary burnout determinants.

Our logistic regression identified rotational shift work as a significant risk factor (OR 2.4, p=0.01), strongly corroborating Borges et al. (2021), who found burnout "associated with shift work" [8]. Interestingly, their multicentric comparison revealed an important nuance: "considering job schedules, burnout was associated with shift work in Portugal, while in Spain and Brazil it was associated with fixed schedules." This cross-cultural variation suggests that the impact of shift patterns may be modulated by country-specific factors such as labor protections, shift duration, recovery time between shifts, and social support structures. Merces et al. (2020) specifically identified "night shift (PR = 1.49, CI 95% = 1.14–1.96)" as a significant factor associated with burnout among Brazilian Primary Health Care nurses, further emphasizing the global concern regarding non-standard work schedules [5]. Our finding that >60 weekly working hours represented the strongest risk factor (OR 2.8, p=0.01) aligns powerfully with Chen et al. (2025), who conducted a rigorous study of 996 Taiwanese nurses examining patient-nurse ratios [9]. They demonstrated that "higher average daily patient-nurse ratios significantly increase occupational stress among nurses" and concluded that "reducing the patient-nurse ratio may mitigate these stressors." Their use of restricted cubic spline analysis revealed a dose-response relationship where "lower average daily patient-nurse ratio corresponded to reduced probabilities of encountering higher stressors." Rohita et al. (2023) provided complementary evidence that "nurses with low and moderate workloads had a lower likelihood (AOR: 0.003; 95%CI: 0.000-0.051) and (AOR: 0.025; 95%CI: 0.005-0.116)" of work-related stress [10]. The consistency across Taiwanese, Indonesian, and our findings underscores workload as a fundamental, modifiable risk factor requiring systemic intervention. Our identification of the ICU department as a significant risk factor (OR 2.1, p=0.03) reflects the unique stressors of critical care environments: high patient acuity, frequent exposure to mortality, complex technological demands, and intense emotional labor. This finding is consistent with the broader literature, though Acosta-Ramos et al. (2021) noted that "department" was among the factors in potential burnout development, without specifying which units carried the highest risk [6]. The consistency of ICU as a high-risk environment across studies supports the need for targeted resources and support systems in critical care areas. The convergence of evidence across these international studies with our findings supports several robust conclusions about nursing burnout. First, burnout is genuinely a global phenomenon affecting nurses across diverse healthcare systems, cultures, and economic contexts. Second, younger nurses consistently show higher vulnerability, suggesting the need for enhanced support during early career stages. Third, workload factors—whether measured as working hours, patient ratios, or shift patterns—consistently emerge as powerful, modifiable risk factors requiring systemic intervention. Fourth, the protective or risk nature of factors like marital status may be context-dependent, varying with broader environmental conditions such as the COVID-19 pandemic. This study has several limitations that should be considered when interpreting the findings. The cross-sectional design precludes establishing causal relationships between the identified risk factors and burnout, as the data capture only a single point in time. The sample was drawn from a specific geographic region and healthcare setting, which may limit the generalizability of findings to other populations or clinical contexts.

CONCLUSION

This study reveals a substantial burden of burnout among nursing professionals, with the majority experiencing moderate to high levels across all Maslach Burnout Inventory domains, particularly in reduced personal accomplishment. The findings identify younger age, unmarried status, rotational shift work, ICU department assignment, and extended weekly working hours as significant independent risk factors for burnout development. The identification of modifiable factors—particularly excessive working hours and shift patterns—provides clear targets for organizational interventions, while the emerging evidence linking burnout to cognitive impairment and biological changes underscores the patient safety implications. Addressing burnout through comprehensive strategies that reduce workload, support younger nurses, and optimize work schedules is essential not only for the nursing workforce well-being but also for ensuring the delivery of safe, high-quality patient care.

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