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EXPLORING THE ASSOCIATION BETWEEN OCCUPATIONAL BURNOUT AND NUTRITIONAL DEFICIENCIES AMONG FRONTLINE HEALTHCARE WORKERS

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ABSTRACT

Background: *Occupational burnout, a psychological syndrome characterized by emotional exhaustion, depersonalization, and reduced personal accomplishment, is increasingly prevalent among healthcare professionals. Simultaneously, poor dietary habits are common in this population due to demanding work environments, yet the interplay between nutrition and burnout remains underexplored.*

Objective: *To investigate the association between burnout dimensions and dietary habits among frontline healthcare workers and examine whether dietary habits predict levels of emotional exhaustion while controlling for gender and shift pattern.*

Methods: *A cross-sectional study was conducted among 120 healthcare professionals, including doctors, nurses, and paramedical staff from a hospital setting. Participants completed standardized measures assessing burnout (Maslach Burnout Inventory) and dietary habits. Descriptive statistics, t-tests, ANOVA, Pearson correlation, and multiple linear regression were used for data analysis.*

Results: *The sample comprised 53.3% females and was predominantly aged 20–40 years. Females reported significantly higher emotional exhaustion than males ($p = .006$), while males reported higher personal accomplishment ($p = .029$). Burnout dimensions did not significantly differ across professional roles. Dietary habits were significantly negatively correlated with emotional exhaustion ($r = -0.38$, $p < .001$) and depersonalization ($r = -0.22$, $p = .015$), and positively with personal accomplishment ($r = 0.35$, $p < .001$). Regression analysis revealed dietary habits as a significant negative predictor of emotional exhaustion ($\beta = -0.38$, $p < .001$), along with gender ($\beta = 0.18$, $p = .047$); the overall model explained 21% of the variance in emotional exhaustion ($R^2 = 0.21$, $p < .001$).*

Conclusion: *Unhealthy dietary habits are significantly associated with higher burnout levels, particularly emotional exhaustion, among healthcare workers. Interventions targeting nutritional behaviors may serve as effective strategies to mitigate burnout and enhance workforce well-being.*

Keywords: *Burnout, Emotional Exhaustion, Dietary Habits, Healthcare Workers, Nutrition, Occupational Stress.*

INTRODUCTION

Occupational burnout is increasingly recognized as a critical concern in healthcare systems worldwide, particularly among frontline professionals who are frequently exposed to emotionally demanding environments, extended work hours, and rotating shift schedules. Burnout is typified by emotional exhaustion, depersonalization, and reduced personal accomplishment, and has been shown to compromise both individual well-being and the quality of patient care (Serrano-Ripoll et al., 2020). Healthcare workers,

due to the intense nature of their responsibilities, are especially prone to chronic stress, which not only undermines their professional efficacy but also contributes to unhealthy behavioral patterns, including poor dietary habits (Afshari et al., 2021).

Proper nutrition is fundamental to maintaining optimal physical health, emotional regulation, and cognitive performance. Nutritional adequacy supports immune function, energy balance, and stress resilience. However, the demanding schedules and operational constraints faced by healthcare professionals such as limited meal breaks and high reliance on convenience foods often hinder consistent healthy eating (Nesbitt et al., 2023). These dietary constraints are particularly concerning, as emerging evidence indicates a bidirectional relationship between poor nutrition and occupational stress. Chronic stress can dysregulate appetite, lead to emotional eating, and alter food preferences, while inadequate nutrition can, in turn, amplify stress responses, impair emotional regulation, and exacerbate fatigue (Wang et al., 2021).

Recent studies have further emphasized the link between specific micronutrient deficiencies (e.g., magnesium, vitamin D, B-complex) and psychological symptoms such as fatigue, low mood, and poor concentration core components of burnout syndrome (Krok-Schoen et al., 2021; Sapkota et al., 2023). In healthcare settings, this cyclical interaction between burnout and nutritional deficiency poses significant risks to both employee well-being and organizational performance. Despite the growing recognition of this link, limited empirical research has explored the co-occurrence of burnout and dietary inadequacies specifically among frontline healthcare workers, particularly in lower- and middle-income countries.

The aim of this study is to assess the relationship between occupational burnout and dietary habits among frontline healthcare professionals, with a focus on identifying common nutritional deficiencies associated with elevated stress levels. The significance of this study lies in its potential to inform health administrators and policymakers about the dual burden of burnout and poor nutrition among medical staff. By uncovering specific dietary patterns linked to burnout, the study may also contribute to targeted interventions, such as workplace nutrition programs, stress-reduction initiatives, and policy changes to enhance work-life health integration.

Objectives of the Study

1. To assess the level of occupational burnout among frontline healthcare professionals.
2. To evaluate the dietary habits and potential nutritional deficiencies in the same population.
3. To examine the relationship between occupational burnout and dietary patterns.
4. To identify demographic and occupational predictors (e.g., shift type, workload) associated with both burnout and nutritional gaps.

METHODOLOGY

This study aimed to investigate the association between occupational burnout and dietary habits, particularly focusing on potential nutritional gaps among frontline healthcare professionals. A cross-sectional, quantitative research design was adopted to obtain data at a single point in time from a defined healthcare population. The target population consisted of frontline healthcare professionals, including doctors, nurses, and paramedical staff working in high-stress departments such as emergency rooms, ICUs, and general wards. These professionals were selected due to their direct patient care roles and increased vulnerability to occupational stress and disrupted dietary behaviors. A sample of 120 participants was determined using power analysis (confidence level = 95%, margin of error = 5%) and aligned with similar previous studies examining health-related behaviors in clinical populations. Participants were selected through stratified random sampling to ensure representation across gender, department, and professional role. Inclusion criteria were: (1) at least one year of continuous clinical experience, (2) current employment in a tertiary care hospital, and (3) involvement in direct patient care. Exclusion criteria included known psychiatric illness, diagnosed eating disorders, or those currently on medically supervised diets, to control for external influences on dietary behavior and mental well-being.

Data were collected using a structured self-administered questionnaire composed of three parts. Section one included demographic and occupational variables (age, gender, professional designation, shift pattern, years of experience). Section two assessed burnout levels using the Maslach Burnout Inventory–Human Services Survey (MBI-HSS), a 22-item validated tool measuring emotional exhaustion, depersonalization, and personal accomplishment. Section three measured dietary habits using a modified Food Frequency Questionnaire (FFQ) and a 24-hour dietary recall, capturing meal frequency, food group

intake, skipped meals, nutrient-dense food consumption, and hydration patterns. Data collection was conducted over six weeks. Questionnaires were distributed in person during shift changes with informed consent obtained from all participants. Ethical approval was secured from the Institutional Review Board of the affiliated university, and administrative approval was obtained from all participating hospitals. Data were analyzed using IBM SPSS version 26.0. Descriptive statistics (mean, standard deviation, frequencies) summarized participant demographics, burnout scores, and dietary indicators. Independent samples t-tests and one-way ANOVA were employed to examine differences in burnout levels across demographic and occupational subgroups. Pearson correlation tested associations between burnout dimensions and dietary variables. Additionally, multiple regression analysis was used to assess the predictive value of dietary habits on burnout after adjusting for demographic factors. Statistical significance was set at $p < 0.05$ for all analyses.

RESULT

Table 1; *Demographic Characteristics of Participants (n= 120)*

Variable	Subcategory	n (%)
Age	20–30 years	48 (40.0%)
	31–40 years	46 (38.3%)
	>40 years	26 (21.7%)
Gender	Male	56 (46.7%)
	Female	64 (53.3%)
Designation	Doctors	40 (33.3%)
	Nurses	44 (36.7%)
	Paramedical Staff	36 (30.0%)
Shift Pattern	Rotating Shifts	72 (60.0%)
	Fixed Shifts	48 (40.0%)

Table-1 shows that the sample consisted of 120 participants, with a nearly even distribution across age groups: 40% were aged 20–30 years, 38.3% were aged 31–40 years, and 21.7% were over 40 years. Gender distribution was relatively balanced, with 53.3% female and 46.7% male participants. Regarding professional designation, nurses represented the largest group (36.7%), followed by doctors (33.3%) and paramedical staff (30%). Most of the participants (60%) worked in rotating shifts, while 40% were in fixed shifts, suggesting varied exposure to work-related stressors based on scheduling.

Table 2; Descriptive Statistics and Reliability of Main Study Variables (n= 120)

Variable	No. of Items	Mean ± SD	Cronbach's α
Emotional Exhaustion (EE)	9	27.3 ± 8.5	0.89
Depersonalization (DP)	5	11.2 ± 5.1	0.81
Personal Accomplishment (PA)	8	28.6 ± 6.7	0.86
Dietary Habit Score	-	5.9 ± 2.1	0.80

Table-2 shows that the Descriptive statistics and reliability analysis revealed that emotional exhaustion had the highest mean score (M = 27.3, SD = 8.5) and excellent internal consistency (α = 0.89). Depersonalization and personal accomplishment had mean scores of 11.2 (SD = 5.1) and 28.6 (SD = 6.7), with good reliability values of α = 0.81 and α = 0.86, respectively. The dietary habit score averaged 5.9 (SD = 2.1) with acceptable reliability (α = 0.80), indicating that the measures used in the study were psychometrically sound and appropriate for further analysis.

Table 3; Independent Samples t-test for Burnout by Gender (n= 120)

Burnout Dimension	Male (n = 56)	Female (n = 64)	t(df)	p-value
	Mean ± SD	*Mean ± SD*		
Emotional Exhaustion	25.1 ± 7.9	29.2 ± 8.7	-2.83(118)	.006
Depersonalization	10.4 ± 4.8	12.0 ± 5.3	-1.78(118)	.078
Personal Accomplishment	30.1 ± 6.3	27.3 ± 6.8	2.21(118)	.029

Table-3 reveals a significant gender difference in emotional exhaustion and personal accomplishment. Female participants reported significantly higher emotional exhaustion (M = 29.2) compared to males (M = 25.1), $t(118) = -2.83$, $p = .006$. Females also reported lower personal accomplishment (M = 27.3) than males (M = 30.1), $t(118) = 2.21$, $p = .029$. However, the gender difference in depersonalization was not statistically significant ($p = .078$), although females showed slightly higher scores.

Table 4; One-Way ANOVA for Burnout Across Professional Designation (n= 120)

Burnout Dimension	Doctors (n=40)	Nurses (n=44)	Paramedics (n=36)	F(2,117)	p-value	Post Hoc (Tukey)
	Mean ± SD	*Mean ± SD*	*Mean ± SD*			
Emotional Exhaustion	26.5 ± 7.4	28.7 ± 9.1	26.3 ± 8.6	0.97	.382	NS
Depersonalization	10.1 ± 4.3	11.8 ± 5.5	11.9 ± 5.3	1.32	.270	NS
Personal Accomplishment	29.3 ± 6.4	27.6 ± 6.9	29.1 ± 6.7	0.56	.573	NS

Table-4 indicated that there were not any statistically significant differences in emotional exhaustion, depersonalization, or personal accomplishment across professional roles (doctors, nurses, and paramedics), with all *p*-values above .05. This suggests that burnout levels did not differ meaningfully by professional designation in this sample, and post hoc Tukey tests confirmed the lack of significant pairwise differences

Table-5; Pearson Correlation Between Burnout and Dietary Habits (n= 120)

Variable	Dietary Habit Score
Emotional Exhaustion	**-0.38** (p < .001)
Depersonalization	-0.22 (p = .015)
Personal Accomplishment	**+0.35** (p < .001)

Note: Higher dietary habit score indicates healthier dietary behavior.

Table-5 results demonstrated that there were significant associations between dietary habits and all three dimensions of burnout. Emotional exhaustion was negatively correlated with healthier dietary habits ($r = -0.38$, $p < .001$), as was depersonalization ($r = -0.22$, $p = .015$), indicating that better dietary behaviors were linked to lower burnout levels. Conversely, personal accomplishment was positively correlated with dietary habits ($r = +0.35$, $p < .001$), suggesting that healthier eating was associated with a stronger sense of professional efficacy.

Table 6; Multiple Linear Regression Predicting Emotional Exhaustion from Dietary Habits

Predictor	*B*	*SE B*	*β*	*t*	*p-value*
Constant	35.10	2.80	—	12.54	<.001
Dietary Habit Score	-1.65	0.42	-0.38	-3.95	<.001
Gender (1 = Female)	2.21	1.10	0.18	2.01	.047
Shift (1 = Rotating)	1.95	1.03	0.17	1.89	.061

Model Summary: $R^2 = 0.21$, $F(3,116) = 10.31$, $p < .001$
Table-6 result revealed that dietary habits significantly predicted emotional exhaustion ($\beta = -0.38$, $p < .001$), with healthier eating linked to lower exhaustion levels. Gender also emerged as a significant predictor, with females reporting higher emotional exhaustion ($\beta = 0.18$, $p = .047$). Shift pattern showed a marginal effect ($\beta = 0.17$, $p = .061$), indicating a trend toward higher exhaustion in rotating shifts. The overall model accounted for 21% of the variance in emotional exhaustion, $F(3,116) = 10.31$, $p < .001$, underscoring the relevance of lifestyle and demographic factors in explaining burnout.

DISCUSION

The aim of this study was to assess the relationship between occupational burnout and dietary habits among frontline healthcare professionals, with a focus on identifying nutritional patterns and associated demographic predictors. Burnout, characterized by emotional exhaustion, depersonalization, and reduced personal accomplishment, has been widely documented among healthcare workers, especially those exposed to continuous stress in high-intensity clinical environments (Maslach & Leiter, 2016). The current study adds to this body of evidence by exploring not only the extent of burnout but also its association with dietary behavior, a dimension that has received relatively limited empirical attention in frontline healthcare populations.

The demographic profile (Table 1) revealed a diverse sample of doctors, nurses, and paramedical staff, with a slight female majority and a predominance of professionals working in rotating shifts. These demographics are consistent with previous studies, which highlight how rotating or irregular shift patterns are common in hospital-based healthcare roles and are associated with increased psychological stress, sleep disturbance, and dietary irregularities (Han et al., 2021; Hulsegge et al., 2020). Notably, the higher percentage of younger professionals (aged 20–40) reflects a workforce likely to be in earlier or mid-career stages, where workload pressure and career demands may contribute to elevated burnout risk (Rotenstein et al., 2018).

Descriptive statistics (Table 2) indicated that emotional exhaustion had the highest mean score among the three burnout dimensions, aligning with findings from similar studies where emotional exhaustion is reported as the most prominent and debilitating component of burnout in clinical staff (Salvagioni et al., 2017). The reliability coefficients for all scales were within acceptable to excellent range, ensuring the internal consistency of the instruments used. The dietary habit score, though relatively moderate ($M = 5.9$), reinforces the notion that healthcare workers often struggle with consistent and nutrient-rich dietary practices, a concern echoed in literature emphasizing the challenges of maintaining healthy eating behaviors under time constraints and shift demands (Michels et al., 2016; Pham et al., 2022).

Gender-based comparisons (Table 3) revealed that female healthcare professionals reported significantly higher emotional exhaustion and lower personal accomplishment than their male counterparts. This finding supports prior literature noting that female healthcare workers often experience greater emotional burden, potentially due to gendered expectations in caregiving roles, emotional labor, and dual work-family responsibilities (Purvanova & Muros, 2010; Garcia et al., 2019). Although depersonalization did not differ significantly by gender, the mean was higher among females, suggesting a potential trend worth further exploration.

Interestingly, no significant differences in burnout dimensions were observed across professional designations (Table 4), indicating that doctors, nurses, and paramedics reported similar levels of burnout. This contrasts with some earlier findings suggesting that nurses typically experience higher burnout levels due to prolonged patient contact and emotional demands (Adriaenssens et al., 2015). However, the non-significance in this study may reflect uniformly high occupational stress across roles or effective role-specific coping mechanisms. The lack of significant post hoc differences further implies a shared exposure to burnout-inducing conditions irrespective of job title.

The correlation analysis (Table 5) revealed a meaningful relationship between dietary habits and burnout. Emotional exhaustion and depersonalization were negatively correlated with healthy dietary practices, while personal accomplishment showed a positive correlation. These findings substantiate previous research that highlights how poor dietary behavior can exacerbate stress and fatigue and undermine coping capacity (Yau & Potenza, 2015; Jacka et al., 2010). Nutritional deficiencies—such as low intake of iron, B-vitamins, and omega-3 fatty acids—have been associated with reduced mental clarity, increased fatigue, and low mood, which may, in turn, amplify feelings of burnout (Adam & Epel, 2007; Rucklidge & Kaplan, 2016).

The regression analysis (Table 6) further affirmed the predictive role of dietary habits in emotional exhaustion, even after controlling for gender and shift pattern. Healthier dietary habits significantly predicted lower emotional exhaustion ($\beta = -0.38$, $p < .001$), reinforcing the bidirectional link between nutrition and psychological well-being. This is consistent with emerging evidence suggesting that dietary interventions may serve as a complementary strategy for reducing stress and promoting emotional resilience among high-stress professionals (O'Neil et al., 2014; Rao et al., 2020). Gender remained a significant predictor, with females experiencing greater emotional exhaustion, supporting earlier gender-specific findings. The marginal significance of shift type ($p = .061$) also resonates with literature that underscores the disruptive impact of rotating shifts on circadian rhythms, sleep, and metabolic health, all of which may mediate burnout outcomes (Sookoian et al., 2007).

CONCLUSION

This study provides compelling evidence for a significant relationship between occupational burnout and dietary habits among frontline healthcare professionals. The findings underscore that emotional exhaustion, the most pronounced dimension of burnout, is not only prevalent but is also strongly associated with suboptimal dietary behaviors. Female healthcare workers exhibited higher burnout levels, while rotating shift patterns emerged as a marginal yet meaningful contributor to emotional fatigue. Importantly, healthier dietary practices were linked to reduced emotional exhaustion and depersonalization and were positively associated with a stronger sense of personal accomplishment. The predictive value of dietary habits for burnout—independent of gender and shift schedule highlights the critical role nutrition plays in the mental and emotional resilience of healthcare staff. These results align with growing interdisciplinary literature emphasizing that nutrition and occupational health are interconnected domains. While burnout has traditionally been addressed through psychosocial or organizational interventions, these findings suggest that workplace nutrition should be considered an essential component of staff well-being programs.

LIMMITATIONS AND RECOMMENDATIONS OF THE STUDY

While this study offers valuable insights into the association between occupational burnout and dietary habits among frontline healthcare professionals, several limitations should be acknowledged. First, the cross-sectional design limits causal inferences; although significant associations were identified, the directionality of the relationship between burnout and dietary behaviors cannot be firmly established. Second, reliance on self-reported measures for both burnout and dietary intake may introduce reporting biases, such as social desirability or recall errors, which could affect the accuracy of the findings. Third, although the sample was stratified and diverse in terms of profession and shift pattern, the study was limited to a specific region and healthcare setting, which may constrain the generalizability of the results to broader national or international contexts. Additionally, the study did not include biological assessments of nutritional deficiencies (e.g., blood levels of vitamins or minerals), which could have provided more objective indicators of nutritional status. Lastly, potential confounding factors such as sleep quality, workload intensity, and access to institutional support services were not controlled for, which may influence both dietary behaviors and burnout levels.

Considering these limitations, several recommendations are proposed for future research and practical application. Longitudinal studies should be conducted to establish causal relationships between dietary patterns and burnout trajectories over time. Incorporating objective nutritional assessments, such as biomarkers and anthropometric data, would enhance the accuracy and depth of future investigations. Expanding the sample to include healthcare workers from various regions, hospital types, and cultural contexts can improve external validity and yield more generalizable findings. From a practical standpoint, healthcare institutions should prioritize the integration of nutrition-focused wellness programs within broader burnout prevention strategies. This may include the provision of healthy food options during all shifts, nutrition education workshops, and structured meal breaks. Occupational health policies should also account for the unique stressors faced by rotating shift workers and female staff, offering tailored interventions that support both mental health and dietary well-being. Ultimately, fostering a supportive and health-promoting work environment is essential not only for the well-being of healthcare workers but also for the quality of patient care they deliver.

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