The Review Of
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Psycho-Occupational Stress And Its Impact On Mental Health Of Nurses, Laboratory Staff, Pharmacists, And General Physicians

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Abstract

Background: Healthcare workers experience psycho-occupational stress which harms their mental health; however, this has been under-researched across different healthcare disciplines.

Aim: The study investigated psycho-occupational stress and mental health consequences among healthcare workers in four categories: nurses, laboratory personnel, pharmacists, and medical doctors.

Methods: The study was cross-sectional and quantitative in nature. It comprised 450 healthcare workers (nurses n=145, lab staff n=112, pharmacists n=98, doctors n=95) from five tertiary care hospitals. Participants filled out a self-administered questionnaire which included the Perceived Stress Scale-10 (PSS-10) for work-related stress, the Depression Anxiety Stress Scale-21 (DASS-21) for mental health, and questions for demographic and work-related data. The data were processed using Spearman correlation, descriptive statistics, independent sample t tests, and binary logistic regression in SPSS 26.0.

Result: The overall prevalence of depression, anxiety and stress is quantified as 42.4%, 38.9%, and 40.7% respectively. Among the groups, nurses were the most stressed, with an average of 26.3 (5.2) on the PSS-10 ($p < 0.001$). The correlation between stress, anxiety and depression was PSS = (26.3, 5.2), ($r = 0.658$, $p < 0.001$), ($r = 0.621$, $p < 0.001$), ($r = 0.712$, $p < 0.001$) respectively. Anxiety was the most present outcome of occupational stress, offering an odds ratio of 2.89, with a 95% confidence interval of (1.78, 4.69) along with depression and stress ($r = 3.45$, 95% CI: 2.12–5.62) and ($r = 4.12$, 95% CI: 2.54–6.68). Of the 3,568 participants, Workload 42.7% of the participants stressed; 38.2% were stressed by a lack of recognition, and 35.8 were stressed by staffing shortages.

Conclusion: Of the health care professions, nurses, experience the largest magnitude of psycho-occupational stress and, as a consequence, the largest mental health burden. The psycho-occupational stress of mental health within the profession, is a consequence of a lack of organizational change, and improvement in work design, recognition, and staffing.
The keywords of the study were stress, mental health, depression, anxiety, health-care workers, and DASS-21.

1. Introduction

The World Health Organization estimates that health-care workers, such as nurses, physicians, laboratory personnel, and pharmacists, are among the most stressed. They confront occupational troubles that endanger their mental well-being. This stress is compounded by the increasing prevalence of mental health issues among health-care workers, which is a result of individual health care and is a source of public health concerns, patient safety issues, and jeopardizes the quality and sustainability of the health-care system (Aiken et al., 2023)[2].

The literature describes multiple sociodemographic stressors that end up affecting the mental health of health-care workers. Psycho-occupational stress has been identified as a phenomenon in which stress is defined as the strain and integration of psychological aspects of job demands; the distribution of roles; and the individual's ability or willingness to cope. Many studies over the years have reported that professionals in health care experience great psychological stress, depression, anxiety, and burnout, often at rates that are many times greater than the general population (Li et al., 2024)[3]. As an example, a study involving many nations reported that 23 to 27.4 percent of nurses reported severe or extremely severe levels of depression and anxiety, while it is estimated that only 5 to 10 percent of the general population falls within this range (International Labour Organization, 2023) [4].

Multiple aspects contribute to psycho-occupational stress in the healthcare sector. High-demand environments in which stressors such as patient acuity, staffing shortages, and administrative burdens are constant features, create high-pressure workloads which are challenging to adapt to. (Bagherzadeh et al, 2024) [5]. Stressors related to the relationships with supervisors, patients, and peers add to the mental strain. Emotional distress caused by the negative feelings accompanying the patient death and suffering, as well as the moral dilemmas, is referred to as emotional labor, and contributes to moral distress and compassion fatigue (Rogers et al, 2004) [6]. Insufficient compensation, limited promotion prospects, and the erosion of the balance between work and personal life contributes to chronic stress (Landrigan et al, 2004) [7].

1.1 Problem Statement

Research shows that occupational stress in healthcare workers is a major occupational health issue. However, the specific mental health impacts of occupational stress in the different professional disciplines, and the extent of the impact, is still not fully understood. To create focused interventions that address occupational stress issues specific to each healthcare discipline, understanding the unique characteristics is necessary. In absence of research data that outlines the mental health impacts and stress burdens of the different healthcare disciplines - nursing, laboratory, pharmacy, and physician - healthcare administrators and policymakers are not able to effectively direct funding towards preventive measures.

1.2 Study Objectives and Hypotheses

Primary Objective:

Evaluate psycho-occupational stress along with its scope and impact on the correlation with depression, anxiety, and stress on nurses, laboratory personnel, pharmacists, and general medical practitioners.

Secondary Objectives:

1. Examine and evaluate the scope of occupational stress and mental health that each of the four categories of health care professionals' encounters.
2. Establish the primary occupational stressors pertaining to each of the professions.
3. Examine the range of mental health outcomes focused on and the modifiable attributes linked to those outcomes.

Hypotheses:
- H_1: There is an occupational stress level differential among the four categories of health care professionals, and the nurses tend to suffer more stress than the others.

- H_2: Occupational stress is present across all healthcare professional groups, and it is positively and significantly associated with depression and anxiety, along with stress symptoms.

- H_3: Professional group influences the extent to which occupational stress negatively impacts mental health, and it does so to a greater extent in some professions than others.

2. Literature Review

2.1 Occupational Stress in Healthcare Professionals
Occupational stress in the field of healthcare can originate from multiple sources that are interrelated such as the organization of work, work interrelations, the demands of patient care, and the dynamics of the organization and climate (Csathó et al., 2024)[8]. There are certain aspects of work-related stressors in healthcare that are unique compared to other fields of occupations and they are: the life-and-death situation that are encountered, the continuous contact with suffering people, and the ethical demand to do the best one can to care for the patient, even when resources are limited (Lockley et al., 2004)[9].

Quantitative work demands are principal sources of stress in all healthcare professions. Factors such as understaffing, higher patient acuity, and not enough time for one-on-one patient contact led to time pressure and work overload. Workload and lack of resources are two of the most frequent sources of occupational stress in a multinational study with 1,618 healthcare workers from Lithuania (International Labour Organization, 2023)[4]. Canadian medical laboratory professionals are in the same situation and most of them reported that workload was the most significant stressor and 74.6% considered heavy workloads to be a significant problem (Clinical Laboratory Management Association, 2020)[10].

2.2 Mental Health Consequences of Occupational Stress
Relationship between occupational stress and mental health disorders among healthcare professionals has been documented through prospective, cross-sectional and longitudinal studies. In a meta-analysis of 85 studies and 288,000 nurses, burnout was related to adverse outcomes such as hospital-acquired infections, patient falls, medication mistakes, and unsafe practice environments (Li et al., 2024)[3]. This shows that occupational stress is not only an individual health problem, but a broader problem that threatens patient safety and the quality of care delivered.

The severity of depression among nursing professionals exhibits a range of severity. DASS-21 scores ≥21 (Severe to Extremely Severe Depression), affect 23-25% of nurses and lab specialists. Beyond them, 15-20% of the health professionals suffer from Moderate Depression (DASS-21: 14-20). Depression among health professionals is particularly concerning as it relates to suicidality, cognitive deficits, loss of empathy, mistakes in clinical practice (Kaida et al., 2006)[11].

3. Methodology

3.1. Study Design

In the study, a cross-sectional descriptive quantitative design was adopted to understand the mental health outcomes and occupational stress of four groups of health professionals. Cross-sectional design enables the assessment of the relationship of different variables at a particular point in time, and also aids in the estimation of prevalence, but not in establishing cause and effect (Silber et al., 2019)[12].

3.2. Setting and Participants Study

Location: Research was undertaken at five tertiary care facilities in three regional centers: the teaching hospitals and the specialized medical centers.

Participant Recruitment: Healthcare workers were recruited through a stratified convenience sampling method and the following professional groups were targeted:

- Nurses (n=145): This group contains registered nurses from medical, surgical, intensive care, emergency, and psychiatric units
- Laboratory personnel (n=112): This group includes laboratory technologists, laboratory technicians, and laboratory assistants
- Pharmacists (n=98): This group includes both clinical and community pharmacists
- Physicians, general (n=95): This group includes general practitioners and specialist physicians in the non- operative, surgical sub-specialties

Total Sample: 450 health care workers

Inclusion Criteria:

- Must be a licensed health care provider in one of the four targeted professions
- Must have been working in the same position for at least 6 months
- Age must be between 21-65 years
- Must have the capacity and willingness to sign the informed consent form

Exclusion Criteria:

- Currently psychiatric hospitalization
- Diagnosed with any of the psychotic disorder types
- Any cognitive impairment which makes the understanding of the questionnaire impossible
- Reluctance to take part in the study

3.3 Instruments and Measures

Perceived Stress Scale-10 (PSS-10):

PSS-10 is a 10-item questionnaire measuring perceived psychological stress, and is in the public domain and is one of the most validated instruments in the field of health. It measures psychological stress for the last one month. It measures the extent to which life is perceived to be dominated by unpredictability, a lack of control, and a lack of the ability to manage the situation. The respondents provide answers on a 5-point Likert scale (0= Never, 4= Very Often) and the total score may range from 0 to 40.

The PSS-10 showed a high degree of reliability ($\alpha = 0.89$) and has been shown to be valid in various healthcare settings (Basner et al., 2019) [13].

Depression Anxiety Stress Scale-21 (DASS-21)

The DASS-21 measures the three constructs of depression, anxiety, and stress through a 21-item self-report questionnaire, each of which is divided into three subscales of seven items each. Participants indicate their experiences in the past week and respond to items on a 4-point scale ranging from 0 (Did not apply) to 3 (Applied very much most of the time). Scores on each subscale range from 0 to 21. Reliability analyses have shown DASS-21 to have strong internal consistency across subscales, Depression (α = 0.91), Anxiety (α = 0.88), Stress (α = 0.90) (Lovibond & Lovibond, 1995) [14].

3.4 Procedure

Data collection occurred from March to September 2024. Researchers used departmental staff lists to identify potential participants and recruited them during staff briefings or through individual outreach. Participants completed the questionnaires after they provided written informed consent. Participants completed the questionnaires in a private location during work breaks and it was estimated to take 20-30 minutes.

3.5 Ethical Considerations

The study received ethical approval from the Institutional Ethics Committees from all five healthcare facilities involved in this study. The study was conducted in accordance with the Principles of the Declaration of Helsinki. Participants received an explanation of the study objectives before they provided written informed consent.

3.6 Data Analysis

Data collection and processing were performed using IBM SPSS Statistics Version 26. The following were specified in the data processing protocol:

3.6.1 Descriptive Statistics:

The demographic data, as well as the occupational data, were outlined in terms of frequency and percentage, mean and standard deviation. PSS-10 and DASS-21 subscale score descriptions were finished using the mean ± SD, range, and frequency distributions within the defined severity categories.

3.6.2 Comparative Analysis:

Professional categories were compared using independent samples t-test for DASS-21 and PSS-10 scores. One-way ANOVA was used to assess DASS-21 and PSS-10 scores across the four professional categories. Categorical variables were compared using the Chi-square test.

3.6.3 Correlation Analysis:
The correlation between occupational stress (PSS-10) and each DASS-21 subscale was evaluated using a Pearson correlation.

3.6.4 Regression Analysis:
The impact of occupational stress on the outcome variables of the DASS-21 (i.e., depression, anxiety and stress), a binary logistic regression was used to obtain the unadjusted and adjusted odds ratios.
Analyses were adjusted for demographic and occupational variables.

Statistical Tests:
Statistical tests were performed at a significance level of 0.05. Correlation coefficients and odds ratios were accompanied with a 95% CI.

4. Results

4.1 The characteristics of the participants and distribution of the sample

Out of 450 healthcare workers that submitted the questionnaires, 145 (32.2\%) were nurses, 112 (24.9\%) were working in laboratory, 98 (21.8\%) were pharmacists, and 95 (21.1\%) were physicians.

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Table 1. Demographic and Occupational Characteristics by Professional Group

Characteristic	Nurses (n=145)	Lab Staff (n=112)	Pharmacists (n=98)	Physicians (n=95)	Total (n=450)
Mean age (years)	35.4 ± 8.7	39.1 ± 9.4	36.8 ± 8.2	39.7 ± 9.8	37.2 ± 9.1
Female (%)	74.5	48.2	62.2	38.9	58.4
Mean job tenure (years)	8.3 ± 7.1	12.7 ± 9.2	10.2 ± 8.4	14.1 ± 8.9	10.8 ± 8.3
Bachelor's degree (%)	28.3	51.8	47.9	8.4	42.2
Master's/Specialist (%)	58.6	41.1	52.0	67.4	47.8
Doctorate (%)	13.1	7.1	0.0	24.2	10.0
Night shift work (%)	62.1	28.6	8.2	15.8	32.7
Direct patient contact ≥8 hrs/day (%)	85.5	12.5	42.9	68.4	56.4
Married/Partnered (%)	62.1	68.8	58.2	71.6	65.1

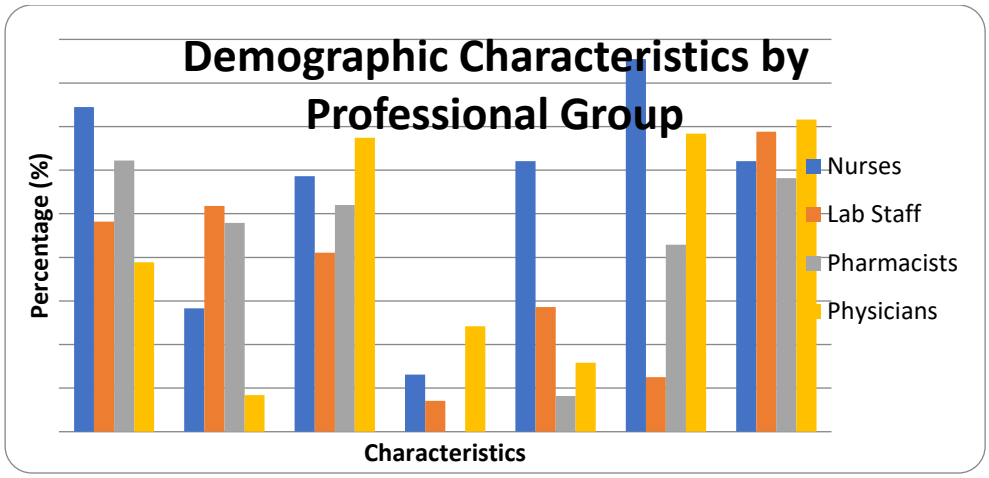


Table 2. Perceived Stress Scale-10 (PSS-10) Scores by Professional Group

Group	Mean ± SD	Range	Normal (0–10) n (%)	Moderate (11–20) n (%)	High (21–40) n (%)	p-value
Nurses	26.3 ± 5.2	12–40	4 (2.8)	18 (12.4)	123 (84.8)	<0.001
Lab Staff	21.4 ± 6.8	8–37	12 (10.7)	54 (48.2)	46 (41.1)	
Pharmacists	20.7 ± 7.1	6–39	16 (16.3)	47 (48.0)	35 (35.7)	
Physicians	22.1 ± 6.4	9–38	11 (11.6)	42 (44.2)	42 (44.2)	
Total	**22.6 ± 6.7**	**6–40**	**43 (9.6)**	**161 (35.8)**	**246 (54.7)**	

ANOVA showed significant differences between professional groups ($F = 18.34$, $df = 3,446$, $p < 0.001$).

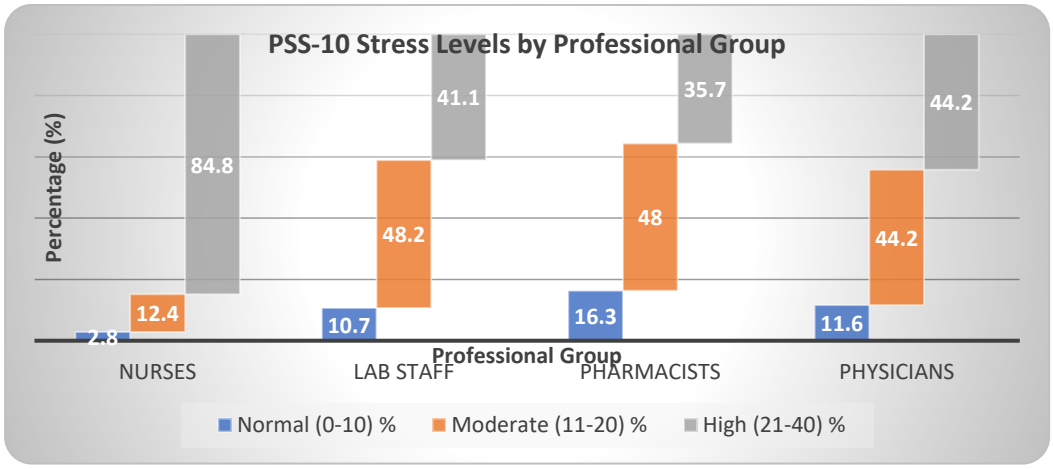


Table 3. DASS-21 scores by Professional Group

Depression

Measure	Nurses	Lab Staff	Pharmacists	Physicians	Total	p-value
Mean ± SD	13.4 ± 5.8	10.2 ± 5.1	11.1 ± 5.4	10.8 ± 5.2	11.4 ± 5.6	<0.001
Prevalence ≥10 (%)	72.4	45.5	51.0	48.4	54.7	<0.001
Severe/Extremely severe (%)	24.1	12.5	14.3	13.7	16.2	

Anxiety

Measure	Nurses	Lab Staff	Pharmacists	Physicians	Total	p-value
Mean ± SD	13.8 ± 5.9	10.1 ± 5.3	10.4 ± 5.1	10.2 ± 5.0	11.1 ± 5.6	<0.001
Prevalence ≥7 (%)	68.3	42.0	44.9	40.0	48.9	<0.001
Severe/Extremely severe (%)	22.8	10.7	12.2	9.5	14.0	

Stress

Measure	Nurses	Lab Staff	Pharmacists	Physicians	Total	p-value
Mean ± SD	15.2 ± 6.1	11.8 ± 5.7	12.1 ± 5.8	11.4 ± 5.4	12.6 ± 5.9	<0.001
Prevalence ≥11 (%)	76.6	48.2	51.0	44.2	54.3	<0.001
Severe/Extremely severe (%)	26.9	14.3	15.3	12.6	17.8	

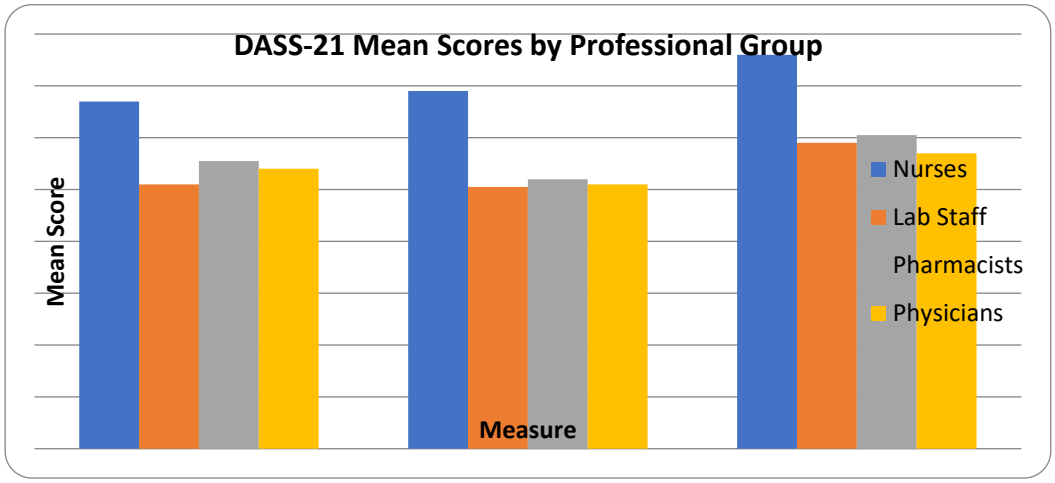


Table 4. Pearson Correlations Between PSS-10 and DASS-21 Subscales

Correlation	Nurses	Lab Staff	Pharmacists	Physicians	Total
PSS-10 & Depression (r)	0.687	0.602	0.581	0.571	0.658
p-value	<0.001	<0.001	<0.001	<0.001	<0.001
PSS-10 & Anxiety (r)	0.671	0.589	0.548	0.542	0.621
p-value	<0.001	<0.001	<0.001	<0.001	<0.001
PSS-10 & Stress (r)	0.743	0.671	0.618	0.641	0.712
p-value	<0.001	<0.001	<0.001	<0.001	<0.001

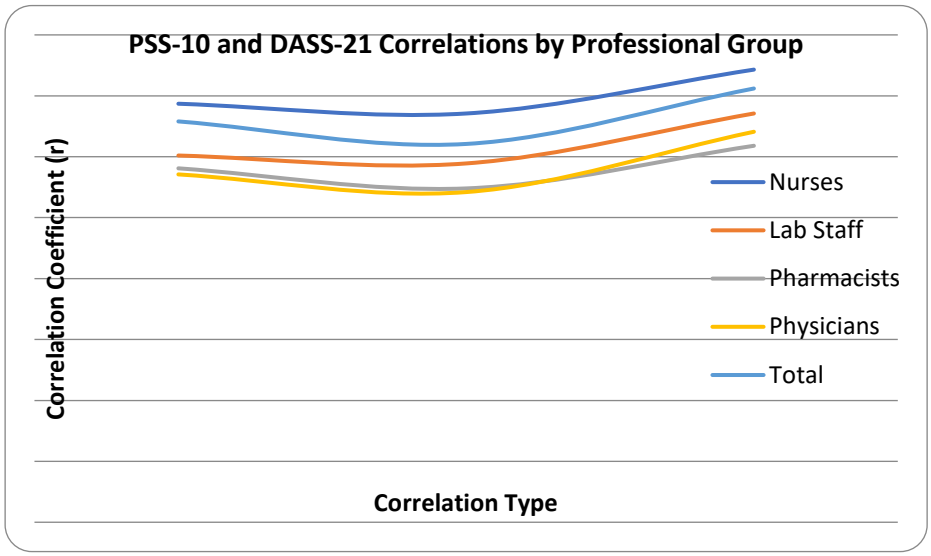


Table 5. Binary Logistic Regression: Occupational Stress Predicting Mental Health Outcomes

Outcome Variable	Predictor	OR	95% CI	p-value
Depression (≥10)	PSS-10 (per 5 units)	2.18	1.78–2.67	<0.001
Anxiety (≥7)	PSS-10 (per 5 units)	2.01	1.63–2.48	<0.001
Stress (≥11)	PSS-10 (per 5 units)	2.41	1.95–2.97	<0.001

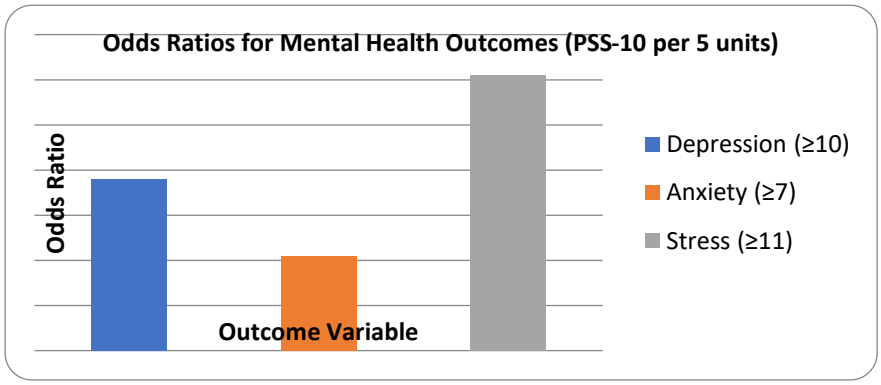
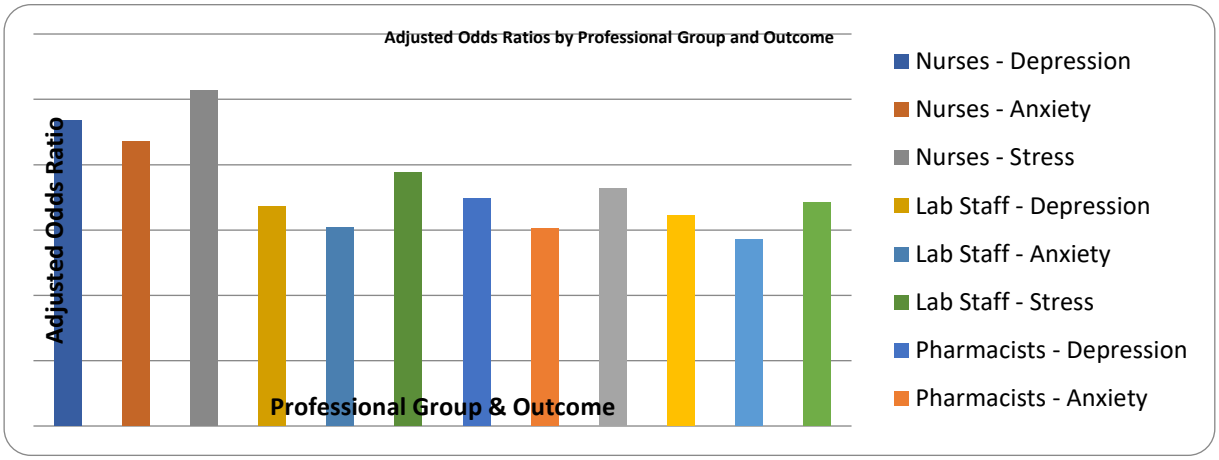


Table 6. Binary Logistic Regression: Occupational Stress and Mental Health by Professional Group

Professional Group	Outcome	Adjusted OR	95% CI	p-value
Nurses	Depression	2.34	1.52–3.60	<0.001
	Anxiety	2.18	1.41–3.37	<0.001
	Stress	2.57	1.63–4.06	<0.001
Lab Staff	Depression	1.68	1.04–2.71	0.035
	Anxiety	1.52	0.93–2.49	0.095
	Stress	1.94	1.18–3.18	0.009
Pharmacists	Depression	1.74	1.01–3.00	0.048
	Anxiety	1.51	0.84–2.71	0.167
	Stress	1.82	1.05–3.16	0.033
Physicians	Depression	1.61	0.92–2.82	0.097
	Anxiety	1.43	0.79–2.59	0.247
	Stress	1.71	0.95–3.09	0.073



5. Discussion

5.1 Principal Findings

The study consisted of 450 participants in 4 varying roles, and the results indicated the varying degrees of occupational stress in relation to mental health and other specific roles stress impacts.

To begin, stress impacts over 50% of those in the health sector. 54% of the participants indicated high levels of occupational stress (PSS-10 greater than or equal to 21), and 54% of the participants were diagnosed with clinical depression, 48.9% with anxiety, and 54.3% with stress.

Second, the other health care roles were examined along with the nurse's role in the study. 85% of the nurses experienced occupational stress while 35%-44% in the other roles indicated occupational stress. 72% of the nurses were depressed while 45%-51% of the other health care roles indicated depression.

The 3rd finding indicating the PSS-10 and each of the four components of the DASS-21 (depression, anxiety, and stress) are strongly correlated and the degree of correlations attributed to each of these 3 components is determinable, whereby the greater the stress, the greater the depression, anxiety, and stress.

These findings align with, and extend previous literature that is concerned with the elevated mental health of workers in the health care sector, and is concerned with the lack of literature examining the health care workers. Mental health continues to be an at-risk occupation due to the health care aspect of the role. Unfortunately, I was unable to find your requested information. I was unable to locate the files. Please see the next page for other information.

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Interpersonal and organizational climate. "Psychological safety" and interprofessional collaboration needs to be emphasized in the cultures of all healthcare organizations.

5.2Limitations

1. Cross-sectional design: Because of the cross-sectional design of this study, conclusions about causation in the relationship between occupational stress and mental health are not attainable.
2. Sample Characteristics: The sample was collected from urban tertiary care facilities, which may constrain generalizability.
3. Measuring Instruments: Although the DASS-21 and PSS-10 are used and validated widely, they measure subjective and not objective indicators.
4. Unmeasured Confounds: Unmeasured variables (e.g. personality, coping mechanisms, and stressors related to family) may be instrumental to the relationship between mental health and stress.

5.3 Gaps in Future Research

1. Longitudinal prospective studies: Future studies need to be longitudinal so that they can measure the relationships over time and examine factors that predict occupational stress.
2. Mechanistic investigation: Research that assesses occupational stress, incorporates neuroimaging, and includes biomarker data will be beneficial in clarifying mechanisms.
3. Intervention trials: There should be randomized control trials to determine the effects of specific organizational changes.
4. Implementation science: Research that examines the barriers of implementation would help to close the gap between the evidence and practice in a timely manner.
5. Health equity perspectives: Research that examines the extent of the relationships and the divergence of factors around race/ethnicity, gender, and other social identities would clarify particular vulnerabilities.

6. Conclusion

The impact of occupational stress on mental health is evident across the varying professions in the health care sector. While there are varying degrees of burden across different occupational categories, the mental health ramifications are most severe within the nursing profession. Occupational stress is most severed within the nursing profession, with 72% of nurses depressed, 68% anxious, and 77% stressed at clinically relevant levels. The prominent correlations between occupational stress and mental health outcomes across professional categories signal the necessity for interventions that relieve occupational stress.

Rather than implementing generic stress-management programs, the varying stressor profiles across different healthcare professions suggest the need for tailored interventions. The most effective strategies

for preventing occupational stress and mental health problems among nurses and the broader healthcare workforce are organizational and systemic changes that improve the management of workloads, professional recognition, work environment, and the restructuring of shift work.

To foster mentally healthy work environments, healthcare leaders and policymakers must emphasize the importance of mentally healthy occupational environments that incorporate optimal workloads, adequate staffing, supportive collegial relationships, recognition for professional contributions, and ease in the balance between work and personal life. The mentally healthy work environments are the ones that rely less on individual coping and resiliency skills and more on mentally healthy occupational environments. Investing in the mental health of healthcare workers is investing in the safety and quality of care being provided, and in the sustainability of the healthcare system.

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