

MENTAL HEALTH CHALLENGES AMONG NURSING HEALTHCARE PROFESSIONALS: A CROSS-SECTIONAL STUDY OF STRESS, ANXIETY, ACADEMIC PERFORMANCE, AND PHARMACIST PERSPECTIVES ON PRECISION MEDICINE AND TARGETED THERAPIES

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Abstract

Background: Occupational stresses that impact negatively on the mental state of health care professionals are very common. Health care practitioners including nurses, pharmacists, doctors, and allied health professionals are constantly faced with heavy workloads, emotional exhaustion, staff shortage, and increased clinical duties. At the same time, there are many developments taking place in oncology field especially in terms of targeted and precision medicine. These factors might increase the stress levels of pharmacists and other health care professionals impacting their academic and professional performance.

Objective: The purpose of this study was to determine the frequency of stress and anxiety experienced by health care professionals employed at large tertiary hospitals in Punjab and Islamabad and the views of pharmacists on precision medicine and targeted therapy for cancer treatment. The study also focused on the relation between psychological stress and professional performance.

Methodology: The present research is a multicenter cross-sectional study carried out on 500 healthcare practitioners enrolled from Mayo Hospital Lahore, Punjab Institute of Cardiology Lahore, Services Hospital Lahore, Allied Hospital Faisalabad, Nishtar Hospital Multan, Holy Family Hospital Rawalpindi, and Pakistan Institute of Medical Sciences (PIMS) Islamabad. Data was collected through a structured questionnaire, which included demographic variables, Perceived Stress Scale, Generalized Anxiety Disorder, professional performance variables, and pharmacist perspective about precision medicine. The statistical analysis was carried out by SPSS version 26 and significant value was $p < 0.05$.

Results: Of the total 500 respondents, 61.8% had high stress levels, while 54.2% showed clinical signs of anxiety symptoms. Severe stress was most prevalent among nurses when compared with physicians, pharmacists, and allied health practitioners. High-stress individuals had poor performance outcomes compared with their low-stress counterparts ($\chi^2 = 21.64$, $p < 0.001$). Pharmacists had a positive attitude towards precision medicine as 78.4% were aware of its ability to enhance cancer patients' survival rates, and 72.6% were willing to enroll in specialized training.

Conclusion: Mental health issues continue to be very common among healthcare practitioners at tertiary care hospitals. The higher levels of stress and anxiety were found to be positively correlated with poor professional performance. The pharmacists showed their full support towards precision medicine and targeted treatments despite the presence of obstacles such as training, facilities, and high costs.

INTRODUCTION

The mental well-being of people has become a highly significant issue in the field of healthcare all over the world. The healthcare sector is associated with numerous working-related issues like working long hours, dealing with the emotional strain of work, patients' stress, workplace violence, understaffing, and complex nature of work.

In Pakistan, tertiary care hospitals deal with huge numbers of patients and mostly function in limited-resource settings. Occupational stress is a common problem faced by healthcare professionals while delivering excellent quality of healthcare services. Long-term exposure to such stress can lead to anxiety, burnout, job dissatisfaction, and poor performance at work. With recent developments in oncology, precision medicine and targeted therapies have become key elements in the treatment of cancer. Pharmacists have a growing importance in achieving positive treatment results through the management of medications, pharmacogenomics, and personalized treatment regimens. However, the introduction of precision medicine requires certain expertise and further professional development.

This study examines psychological problems in healthcare workers and, at the same time, looks into the perspectives of pharmacists on precision medicine and targeted therapies.

II. Literature Review

Various studies have shown considerable amounts of psychological distress among medical staff. For instance, according to Shanafelt et al. (2019), the burnout prevalence among healthcare professionals is significantly higher than that of the rest of the population. Likewise, Lai et al. (2020) highlighted increased anxiety and depression among frontline healthcare staff.

Research carried out in the South Asian region has indicated that nurses are highly susceptible to occupational stress as a result of patient contact and work-related demands. According to Ahmed et al. (2021), nearly 58% of nurses employed in tertiary hospitals are moderately or severely stressed.

Precision medicine has revolutionized cancer care via molecular profiling and targeted treatments. Jameson and Longo (2015) pointed to the rising role of personalized medicine for increased efficiency in treatment along with reduced side-effects. Pharmacists have turned into important members of oncology teams in terms of treatment choice, adverse event identification, and education. Despite increasing recognition of precision medicine, implementation barriers remain prevalent in developing countries, including inadequate training, limited infrastructure, and insufficient genomic testing facilities.

III. Statement of Purpose

Objective of the study:

This research is aimed to assess the level of stress and anxiety amongst healthcare professionals working at leading tertiary care hospitals of Punjab and Islamabad and to assess the point of view of pharmacists about precision medicine and targeted therapies for cancer treatment. Furthermore, the connection between psychological stress and job performance was also assessed.

IV. Methodology

Study Design

A descriptive cross-sectional multicenter study was conducted.

Study Setting

The subjects for the study were selected from Mayo Hospital Lahore, Services Hospital Lahore, Punjab Institute of Cardiology Lahore, Allied Hospital Faisalabad, Nishtar Hospital Multan, Holy Family Hospital Rawalpindi, and PIMS Islamabad

Study Population

The study included Nurses, physicians, pharmacists, and allied healthcare professionals.

Sample Size and Inclusion Criteria: A total of 500 participants were enrolled using convenience sampling techniques. Healthcare professionals with at least six months of professional experience were included.

Data Collection Instrument

A structured questionnaire consisting of demographic variables, stress assessment items, anxiety assessment items, professional performance indicators, and pharmacist perception statements regarding precision medicine was utilized.

Statistical Analysis

Data were analyzed using SPSS version 26. Frequencies, percentages, means, and standard deviations were calculated. Chi-square tests were applied to assess associations between categorical variables.

V. Results

Table I. Demographic Characteristics of Participants (N = 500)

Variable	Frequency	Percentage
Nurses	220	44.0
Physicians	120	24.0
Pharmacists	90	18.0
Allied Professionals	70	14.0
Male	210	42.0
Female	290	58.0
Age 21–30 Years	240	48.0
Age 31–40 Years	180	36.0
Age >40 Years	80	16.0

The majority of participants were nurses and females. Nearly half belonged to the 21–30 years age group.

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Table II. Distribution of Stress and Anxiety Levels

Variable	Low n (%)	Moderate n (%)	High n (%)
Stress	191 (38.2)	203 (40.6)	106 (21.2)
Anxiety	229 (45.8)	185 (37.0)	86 (17.2)

More than sixty percent of participants reported moderate-to-high stress levels. Anxiety symptoms were present in over half of the study population.

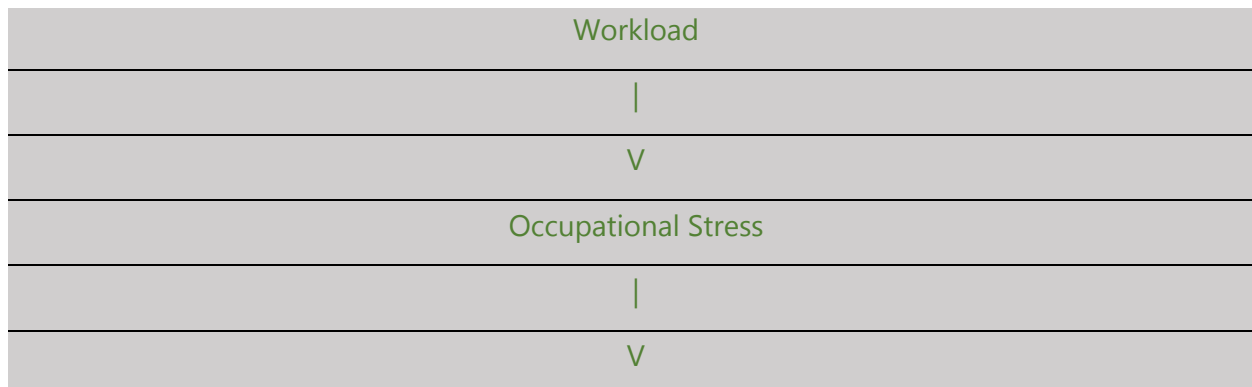
Table III. Association Between Stress Level and Professional Performance

Stress Level	Good Performance	Poor Performance	Total
Low Stress	155	36	191
Moderate Stress	120	83	203
High Stress	39	67	106
Total	314	186	500

Chi-square analysis demonstrated a statistically significant association between stress levels and professional performance ($\chi^2 = 21.64$, $df = 2$, $p < 0.001$).

Participants experiencing high stress showed significantly poorer professional performance outcomes.

Figure I. Conceptual Relationship Between Occupational Stress and Professional Outcomes



Anxiety Symptoms
V
Reduced Professional Performance
V
Lower Quality of Patient Care

VI. Findings Related to Pharmacist Perspectives on Precision Medicine

Of the total 90 pharmacists in the study, 71 (78.9%) felt that precision medicine would greatly contribute to better cancer treatment results. In addition, 65 (72.2%) felt confident about the use of pharmacogenomics in oncology in the future. Nevertheless, 60 pharmacists (66.7%) viewed lack of proper training as a key challenge, while 56 (62.2%) pointed out poor infrastructure.

The majority of pharmacists stressed the importance of continuing education, interdisciplinary cooperation, and government funding of genomic technologies.

VII. Discussion

Stress and anxiety were found to have an important prevalence among healthcare workers employed in tertiary care hospitals. The findings of the current research correspond to previous studies carried out worldwide and locally. The level of psychological distress was highest among nurses probably because of constant patient interaction and high demands on the job.

Figure I. Conceptual framework illustrating the relationship between occupational stressors, mental health outcomes, professional performance, and pharmacist perspectives on precision medicine



Figure I represents the conceptual model of the study and the connection between occupational stressors, mental health consequences, professional performance, and perspectives of pharmacists concerning the implementation of precision medicine in the cancer care setting. From the diagram, it can be seen that employees of tertiary healthcare institutions are facing a variety of occupational stressors such as heavy workloads, long working hours, emotional exhaustion, understaffing, and increasing responsibilities to care for patients.

According to the presented conceptual model, various stressors create a significant contribution to the development of stress, anxiety, burnout, and emotional exhaustion among healthcare professionals. The results obtained in the current study are compatible with the presented conceptual model since participants with higher levels of stress experienced worse professional performance outcomes ($\chi^2 = 21.64, p < 0.001$). Thus, previous studies have shown

the existence of the negative correlation between occupational stress and quality of healthcare services.

Moreover, Figure I reflects the perspectives of pharmacists concerning precision medicine and targeted therapy in the cancer care setting. According to pharmacists, personalized approach in treatment is beneficial from the clinical point of view; however, such obstacles as lack of specialization in pharmacogenomics, underdeveloped healthcare infrastructure.

The established connection between stress and professional performance stresses the need to implement organizational measures that help to diminish workplace stress. Hospitals and clinics can implement mental screening and counseling, teach employees about resilience and manage their workload effectively.

The pharmacists' part of the research showed high appreciation of the concept of precision medicine and its use. Pharmacists were well aware of the benefits of the treatment approach but noted lack of education and infrastructure. The findings correlate with previous studies showing problems in implementation in low- and middle-income countries.

Implementation of precision medicine into the treatment of cancer patients requires cooperation of various parties including healthcare institutions, policy makers, educational organizations and oncologists. Pharmacists can play an important role in implementation process.

VIII. Conclusion

The current multicentered cross-sectional study highlighted the prevalence of high levels of stress and anxiety amongst the medical practitioners operating in important tertiary care hospitals of Punjab and Islamabad. It was observed that psychological distress had a strong correlation with poor professional performance. Nurses were found to be the most susceptible occupational group. On the other hand, pharmacists showed a positive attitude regarding the application of precision medicines.

Medical organizations need to focus on promoting mental health of their staff members and professional training in precision oncology. This could lead to improved patient outcomes.

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