

ORIGINAL ARTICLE

WORK ASSOCIATED STRESS IN FEMALE POSTGRADUATE RESIDENTS OF PUBLIC SECTOR TEACHING HOSPITALS OF PESHAWAR

Iqbal Haider¹, Nayab Munib¹, Muhammad Tariq Khan², Abdul Majid¹

¹Department of Medicine, Khyber Teaching Hospital/ Khyber Medical College, Peshawar, ²Department of Ophthalmology, Hayatabad Medical Complex/ Khyber Girls Medical College, Peshawar, Pakistan

ABSTRACT

Background: Postgraduate training is a stressful and demanding job. The long working hours and profound professional responsibilities of these doctors make it one of the most stressful phases of their lives. The commonly reported conditions during this period are emotional impairment, depression and burnout. This study's concept is to assess work-associated stress in female postgraduate residents.

Materials & Methods: This cross-sectional descriptive study was conducted at three Public Sector Teaching Health Institutes of Peshawar (Khyber Teaching Hospital, Hayatabad Medical Complex, and Lady Reading Hospital) from 1st February 2023 to 1st March 2023. A convenient sampling technique was utilized after approval from Institutional Ethical Committee. The sample size was 152 female postgraduate residents. A validated Kessler-10 Psychological Index (KSI) was used as a research tool to assess stress levels. Data were analyzed by the SPSS software Version 21. Overall stress and in relation to specific departments, marital status, maternal status and year of residency were calculated.

Results: Out of 152 participants, 70 (46.1%) had mild stress, 57(37.5%) had moderate stress and 17 (11.2%) had severe stress. Eight (5.2%) had no stress. The highest level of severe stress in female postgraduate residents was documented from Pediatrics Department (16.7%), followed by Gyne/Obstetric Department (15.0%) and General Medicine Department (14.3%).

Conclusion: High levels of perceived severe stress are reported in the Pediatrics/ Gyne/obstetric and General Medicine Departments during the training period. The potential high workload and prolonged duty hours can be the underlying phenomenon; however, further multicenter studies involving large cohorts are required for generalization.

KEY WORDS: Postgraduate Residents; Female; Stress; Workplace; Kessler-10 Psychological Index (KSI).

Cite as: Haider I, Munib N, Khan MT, Majid A. Work associated stress in female postgraduate residents of public sector teaching hospitals of Peshawar. *Gomal J Med Sci* 2023 Oct-Dec;21(4):240-44. <https://doi.org/1046903/gjms/21.04.1330>

INTRODUCTION

Residency can be a challenging time for postgraduate trainees, as they face multiple stressors that are often linked to depression, emotional impairment and burnout.¹ Residency presents a formidable challenge for aspiring physicians as it entails meet-

ing the stringent demands of seasoned clinicians, educators, and administrators, coupled with the need to shoulder immense responsibility for the lives of their patients while working prolonged hours.² Both male and female physicians experience a significant amount of stress during their postgraduate medical training, but females tend to report higher levels of stress compared to their male counterparts, particularly during residency. Several studies have shown that burnout, anxiety, depression, fatigue and distress are highest among doctors.³ Stress affects every individual physiologically and psychologically. The psychological dysfunction due to stress often goes unnoticed and is neglected. Mental strain often goes unnoticed by doctors, who resort to ineffective coping mechanisms like denial and avoidance rather

Corresponding Author:

Dr. Muhammad Tariq Khan, Associate Professor
Department of Ophthalmology
Khyber Girls Medical College
Hayatabad Medical Complex, Peshawar, Pakistan
E-mail: doctormarwat@yahoo.com

Date Submitted: 25-04-2023

Date Revised: 05-09-2023

Date Accepted: 29-10-2023

than addressing the issue head-on. The workload and long working hours impose a significant challenge in balancing personal and professional life. Many countries promote females as one of the most vital needs of any profession, giving them equal roles and responsibilities without discrimination.

A study by King Saud University on postgraduate residents indicated that 70.4% of trainees suffer from stress, including severe stress in 22.6%, moderate stress in 20.4% and mild stress in 27.4%.⁴ Female doctors in Pakistan face numerous obstacles and prejudices while pursuing their medical careers, as the country is often regarded as a conservative society. A study by the Department of Community Medicine, DOW University of Health Science Karachi Pakistan on 207 residents revealed that 62.3% of doctors were stressed, while a significant proportion of females (66.3%) were found to be affected by stress.⁵ A recent publication has documented that females make up more than 70% of medical graduates in Pakistan.⁶

The concept of this study is moved around the assessment of work-associated stress in the female gender that was completing the necessary training in the medical profession. This paper highlights and discusses the stressors experienced by female postgraduate trainees employed at Public Sector Teaching Hospitals in Peshawar. This study was conducted to explore workplace stress in female residents and identify the most common sources associated with it.

MATERIALS AND METHODS

This cross-sectional descriptive study was conducted at three Public Sector Health Institutes of Peshawar (Khyber Teaching Hospital, Hayatabad Medical Complex and Lady Reading Hospital Peshawar) from 1st February 2023 to 1st March 2023. A convenient sampling technique was used. The sample size was calculated using the openepi statistics calculator (<https://www.openepi.com>) through OpenEpi software.⁷ Ethical approval was availed from the institution through reference No. 50/DME/KMC Dated 31-01-2023. Total of 152 female residents enrolled in the postgraduate training programs were recruited. Informed written consent was obtained from all participants. Exclusion criteria were: trainees on leave or

placed in external rotations outside the main campus, female participants with known chronic diseases like diabetes, hypertension, asthma, pregnant females and participants not willing to participate in the study. Validated Kessler-10 Psychological Index (KSI¹⁰) developed by Kessler et al. (freely available on the internet without patent rights) with some modification was used.⁸ The validation of these modifications was performed by Lynn criteria with six relevant faculty members of KMC having a minimum threshold of 0.8 for each construct.⁹ The pilot testing was performed on ten final year MBBS students of KMC Peshawar for content and face validity. Nonetheless, these students were not included in this study.

This KSI¹⁰ questionnaire measures current (4 weeks) stress, level of stress and severity of symptoms associated with psychological symptoms. A hard copy of the questionnaire was given to each participant, along with a letter explaining the purpose of this study. We aimed for a response rate of 75%. The principal investigator collected all survey forms returned by the residents and data were coded to protect the identification of the participants. Data were entered into the SPSS software (IBM Corp. Released 2019. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.). Cross tabulation and frequency were computed to analyze the stress levels in residents working in different departments along with the associated variables.

RESULTS:

Out of 152 participants and a response rate of 100%, 70 (46.1%) had mild stress, 57(37.5%) had moderate stress and 17 (11.2%) had severe stress. Only eight (5.2%) participants documented no stress on KSI¹⁰. Table 1 is documenting the demographics of the study participants. In the married participants, 42.1% had mild, 35.1% moderate and 17.5% severe stress. However, in the single female residents, 48.5% had mild, 39% moderate and 7.4% had severe stress on KSI¹⁰. Pediatrics department had the highest percentage of severe stress (16.7%) followed by the Gynecology (15.0%) and General Medicine departments (14.3%) (Figure 1; Table 2). Levels of stress in relation to the year of residency, marital status and maternal status are shown in Figure 2 and Table 3.

Table 1: Baseline Characteristics

Total Number of Participants	Year of Training (%)	Marital Status (%)	Maternal Status (%)	Department (%)
152	First year =39 (25.7) Second year = 40 (26.3) Third year =73 (48)	Married =57 (37.5) Unmarried =95 (62.5)	Kids =23(15.1) No Kids =106(69.8) Lactating =23(15.1)	Gynecology =40 (26.4) Intensive care =7 (4.6) Medicine =28 (18.4) Neurosurgery =6 (3.9) Pediatrics =18 (11.8) Radiology =10 (6.6) Surgery =43 (28.3)

Table 2: Stress levels in relation to specific clinical departments

Department	Normal (%)	Mild (%)	Moderate (%)	Severe (%)
Gynecology	3 (7.5)	14 (35)	17 (42.5)	6 (15)
Intensive care	0 (0)	5 (71.4)	2 (28.6)	0 (0)
Medicine	1 (3.5)	11 (39.2)	12 (43)	4 (14.3)
Neurosurgery	0 (0)	3 (50)	3 (50)	0 (0)
Pediatrics	1 (5.6)	8 (44.4)	6 (33.3)	3 (16.7)
Radiology	0 (0)	6 (60)	3 (30)	1 (10)
Surgery	3 (7)	23 (53.5)	14 (32.5)	3 (7)

Table 3: Levels of stress in relation to year of residency, marital status and maternal status

		Normal (%)	Mild (%)	Moderate (%)	Severe (%)
	First Year Resident	4 (10.3)	19 (48.7)	13 (33.3)	3 (7.7)
Year of Residency	Second Year Resident	1 (2.5)	22 (55)	10 (25)	7 (17.5)
	Third Year Resident	3 (4.1)	29 (39.7)	34 (46.6)	7 (9.6)
Marital Status	Married	3 (5.4)	24 (42.1)	20 (35.1)	10 (17.5)
	Unmarried	5 (5.3)	46 (48.4)	37 (39)	7 (7.4)
Maternal Status	Have Kids	2 (8.7)	13 (56.5)	4 (17.4)	4 (17.4)
	No Kids	6 (5.7)	49 (46.2)	43 (40.6)	8 (7.5)
	Lactating	0 (0)	8 (34.8)	10 (43.5)	5 (21.7)

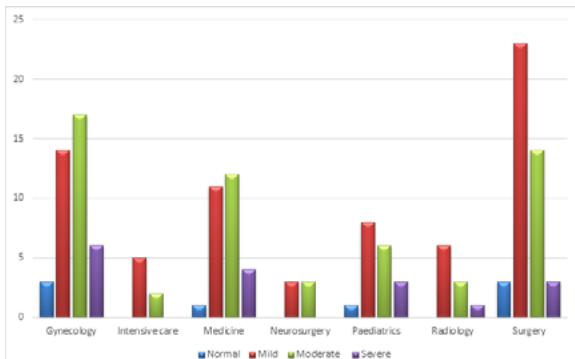


Figure 1: Stress Levels in relation to Specific Clinical Department

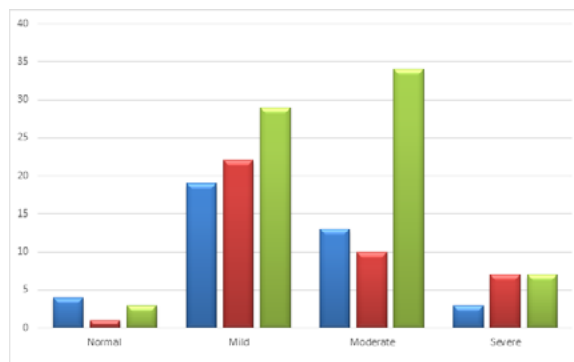


Figure 2: Year of Residency and Level of Stress

DISCUSSION

Women in the 19th century faced considerable barriers when attempting to enter the medical profession, whereas the 21st century has witnessed a significant shift towards the feminization of medicine.^{10, 11} This phenomenon is also observed in Pakistan as 70-80% of medical students nowadays are females.⁶ Despite the increased enrollment of women in the medical field, the medical workforce is severely lopsided. After thorough searching on PubMed and Google Scholar, we could find no such study conducted in our province to expedite stress levels in female postgraduate residents working in public sector hospitals of Peshawar. It underpins the stress levels of female medical residents working in different clinical departments of the medical field and the associated factors culprit to the issue. According to our study, a large proportion of residents experienced mild (46.1%) to moderate (37.5%) levels of occupational stress, which contrasts with a previous study conducted in Iran by Bahreinian et al. The study found that 73.4% of physicians in Iran reported mild to severe stress, with residents (75.5%) and specialists (65%) being significantly affected.¹² Most of the reports stated that medical careers had been known to be stressful.¹³ The stress level of residents in the present study varies among different clinical departments. As evidenced by Table 2, residents doing their residency in the Pediatrics department face more severe stress (16.5%) than other departments. This is followed by the Gynecology (15%) and Medicine (14.3%) departments. This mainly attributes to the long working hours, stressful hospital environment and undue high expectations of proficient clinicians and educational researchers. Moreover, regarding marital status and stress, a significant correlation was present in our study and our findings are consistent with the study by Danayi in Iran.¹⁴ Statistical analysis showed severe stress in 17.5% married females and 7.4% of unmarried female trainees. This finding is also consistent with relevant regional and international studies.¹⁵⁻¹⁷ Another significant factor contributing to stress, as evident in the study is the maternal status of the postgraduate residents. The data of this study reveals that lactating mothers face severe stress (21.7%) compared to mothers who have kids of 2 years or above (17.4%). This finding correlates with finding of Hashmi but contradicts the findings from that of Malek.¹⁸

The prevalence of stress levels at different years of training indicated severe stress in second-year (17.5%) postgraduate trainees, followed by third-year (9.6%) and first-year residents (7.7%). The source of stress for senior residents lies in the daunting postgraduate examinations, overwhelming responsibilities, high expectations and the need to secure a good job. On the other hand, for junior residents, stress could stem from mood changes,

dissatisfaction with hospital amenities, or familial problems. Higher stress scores among resident trainees were linked to increased reports of missed workdays and decreased efficiency during their workday. The psychological distress and physical symptoms associated with stress may negatively impact residents' academic and professional performance.

Although the study had a high response rate, there are certain limitations to the study. Due to the cross-sectional nature of this study and not being a cohort one, it is important to be cautious when interpreting the different stress levels among trainees at different levels. A follow-up cohort study that tracks the same group of residents through the entire 4-year residency program is necessary to accurately determine the impact of different training years.

CONCLUSION

The present study documents a significant prevalence of stress among resident trainees at public sector hospitals in Peshawar. The findings indicate that the Pediatrics department had the highest perceived stress levels, followed by Gynecology and Internal Medicine. This high level of stress could potentially lead to decreased daytime efficiency and increased absenteeism among trainees.

Acknowledgments:

We are grateful to all the participants who took part in this study and made it possible to highlight the issue of stress in female post-graduate residents. We would also like to acknowledge the contribution of Syed Muhammad Hamid, Statistician Department of Community Medicine, Khyber Medical College, Peshawar Pakistan, for statistical compilation of data.

REFERENCES

1. Yousuf A, Ishaque S, Qidwai W. Depression and its associated risk factors in medical and surgical post graduate trainees at a teaching hospital: a cross sectional survey from a developing country. *J Pak Med Assoc.* 2011;61(10):968-73.
2. Cohen JS, Patten S. Well-being in residency training: a survey examining resident physician satisfaction both within and outside of residency training and mental health in Alberta. *BMC Med Educ.* 2005;5:21. <https://doi.org/10.1186/1472-6920-5-21>
3. Soares DS, Chan L. Stress and wellbeing of junior doctors in Australia: a comparison with American doctors and population norms. *BMC Med Educ.* 2016;16:183. <https://doi.org/10.1186/s12909-016-0693-2>
4. Abdulghani HM, Al-Harbi MM, Irshad M. Stress and its association with working efficiency of junior doctors during three postgraduate residency training programs. *Neuropsychiatr Dis Treat.* 2015;11:3023-9. <https://doi.org/10.2147/NDT.S92408>

5. Mumtaz Y, Jahangeer A, Habib A, Adnan S, Mumtaz Z. Stress in postgraduate trainee doctors of public and private universities of Karachi. *Pak J Med Sci.* 2010;26(2).
6. Zaheer A. The Lost Doctors. *Pak J Med Sci.* 2022;38(8):2053-5. <https://doi.org/10.12669/pjms.38.8.7022>
7. OpenEpi. Open Source Epidemiological Statistics for Public Health [Internet]. [cited 2023 Sep 20]. Available from: <https://www.openepi.com/SampleSize/SSCohort.htm>
8. Kessler RC, Andrews G, Colpe LJ, Hiripi E, Mroczek DK, Normand SL, et al. Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychol Med.* 2002;32(6):959-76. <https://doi.org/10.1017/S0033291702006074>
9. Yusoff MSB. ABC of content validation and content validity index calculation. *Educ Med J.* 2019;11(2):49-54. <https://doi.org/10.21315/eimj2019.11.2.6>
10. Ramakrishnan A, Sambuco D, Jagsi R. Women's participation in the medical profession: insights from experiences in Japan, Scandinavia, Russia, and Eastern Europe. *J Womens Health (Larchmt).* 2014;23(11):927-34. <https://doi.org/10.1089/jwh.2014.4736>
11. Abuzeyad FH, Al Qasem L, Bashmi L, Arekat M, Al Qassim G, Alansari A, et al. Women's contribution to medicine in Bahrain: leadership and workforce. *Hum Resour Health.* 2022;20(1):67. <https://doi.org/10.1186/s12960-022-00762-9>
12. Bahreinian S, Sabahi A. The evaluation of the degree of occupational stress in a group of specialists and residents of vary specialties in Shahid Beheshti University of Medical Sciences. *Res Med.* 1999;23(4):239-44.
13. Hoonpongsimanont W, Murphy M, Kim CH, Nasir D, Compton S. Emergency medicine resident well-being: stress and satisfaction. *Occup Med (Lond).* 2014;64(1):45-8. <https://doi.org/10.1093/occmed/kqt139>
14. Danayi Fakhr J. The evaluation of psychological disorders of medical residents in 13 hospitals of Iran & Tehran universities of Medical Sciences: [Dissertation]. Iran university of Medical Sciences. School of Medicine;1991.
15. Iqbal S. Correlation between Stress and Meaning in Life in Early Career Doctors in Pakistan: Stress and Meaning in Life in Early Career Doctors. *Pak J Health Sci.* 2022:27-31. <https://doi.org/10.54393/pjhs.v3i04.85>
16. Arif M-M, Qadir A, Ahmad SR, Baqir M, Irfan M. Occupational Stress among Medical and Paramedical Staff in Tertiary Care Hospitals Based on Observational Study. *Pak J Public Health.* 2020;10(4):231-41. <https://doi.org/10.32413/pjph.v10i4.623>
17. Hashmi M, Khan FA. Job Stress among female residents during postgraduate training at a university hospital in Karachi, Pakistan. *SEAJME* 2015;9(2):22. <https://doi.org/10.4038/seajme.v9i2.79>
18. Malek M, Mohammadi S, Attarchi M. Occupational stress and influencing factors, in medical residents of one of the educational hospitals of Tehran University of Medical Sciences. *Razi J Med Sci.* 2011;18(87).

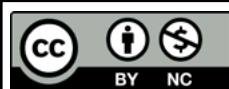
CONFLICT OF INTEREST
Authors declare no conflict of interest.
GRANT SUPPORT AND FINANCIAL DISCLOSURE
None declared.

AUTHORS' CONTRIBUTION

The following authors have made substantial contributions to the manuscript as under:

Conception or Design:	IH, NM
Acquisition, Analysis or Interpretation of Data:	IH, NM, MTK, AM
Manuscript Writing & Approval:	IH, NM, MTK, AM

All the authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.



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