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Original Article

Correlation Between Perceived Stress on Mental Health and Coping Strategies by Post Graduate Residents in a Tertiary Care Hospital

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Abstract

Objective: To assess the correlation between perceived stress and mental health outcomes of postgraduate medical residents in a tertiary care hospital, and to find the most common coping strategies employed by them.

Methodology: This mixed-method explanatory sequential study was carried out for a period of six months in Gulab Devi Teaching Hospital, Lahore. 46 postgraduate trainees were quota sampled to have equal representation of first- and final-year trainees. Quantitative data were gathered using a structured questionnaire containing the Perceived Stress Scale (PSS-10) and the General Health Questionnaire (GHQ-12). Coping strategies data were collected through interviews from residents until saturation. Quantitative data were analyzed in SPSS 27 using descriptive statistics, chi-square and t-tests, and thematic analysis for qualitative data.

Results: Mean age was 31.65 ± 4.51 years with mean working hours per week of 77.89 ± 6.01. Perceived- high stress among residents was experienced by 63.0%, while 71.7% were GHQ case screen-positive. Family support (30.4%) was the most frequent coping strategy, followed by exercise (21.7%), peer support (19.6%), religion/prayer (17.4%), and time management (10.9%). Strong correlations were found between stress and year of residency, specialty, and satisfaction with pay. Those with higher stress and poor mental health were significantly older and worked longer hours ($p < 0.05$).

Conclusion: Postgraduate residents were found to have poor mental health and high levels of stress, which were especially affected by working hours, specialty, age, and job satisfaction. Coping depended extensively on family and social support.

Keywords: Psychological, Mental Health, Coping Skills, Internship and Residency.

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Introduction

Postgraduate medical residency (PGRs) is an extremely intensive phase of training with high workloads, long working hour schedules, and high-level academic and clinical tasks that subject residents to high levels of stress as well as mental health issues. Globally, the COVID-19 pandemic has escalated such stressors to an even higher intensity with an increase in burnout and psychological distress among health care providers.[1] A study conducted at a tertiary care center in Assam India, found that 90.74% of PGRs showed moderate to high stress levels, thereby underscoring a considerable presence of such an issue throughout the region.[2] Similarly, cross-national investigations document that PGRs show extensive symptoms of mental health issues and burnout presence, with additional pandemic-specific issues such as infection fear and limited access.[3] The high level of stress negatively impacts mental health during periods of residency and hampers intellectual abilities, clinical competence, as well as personal well-being, thereby necessitating introduction of effective coping strategies.[4]

Coping strategies among residents range from being broad to highly specific, such as social support, behavioral strategies such as caffeine consumption and micro-naps, to spirituality[5] In one recent study, 73% of residents turned to caffeinated beverages, 43% turned to support from their colleagues, though coping preference divided between surgery specialties and non-surgical[6] Nonetheless, despite available strategies, chronic disequilibrium between

situational demand and one's own resources often leads to feelings of emotional exhaustion and diminished resilience.

As residents hold a pivotal position in providing healthcare delivery, it is important to explore interlinkages between perceived stress, mental health results, and coping styles within tertiary hospital environments. An understanding of these interlinkages will guide the design of tailored interventions framed to boost a sense of well-being and reduce burnout amongst such a high-risk cohort. Institutional support and enacting stress management programs with a structured format represent important steps to the protection of PGRs' mental health.

PGRs have high stress and psychiatric morbidity but data about perceived stress and coping practices in tertiary centers is scarce, including South Asia.[7] Whereas stress prevalence and burnout prevail in most literature, few explore how coping styles impact mental health or vary with specialty or demographics. Given residents' health's direct impact on quality care and patient safety, this study tries to assess perceived stress, its relationship with mental health, and coping practices among postgraduate residents in a tertiary center. Findings aspire to guide hospital policies and support systems to reduce burnout and protect mental health among medical trainees.

Methodology

This study was conducted using a mixed-method explanatory sequential design in Gulab Devi Teaching Hospital, Lahore, for a period of six months after receiving permission from the Institutional Review Board of Al-Aleem Medical College (AAMC/IRB/EA/31-2025). Target population included postgraduate residents undergoing MCPS, FCPS, MD, and MS programs from various disciplines covering medicine, surgery, gynecology, pulmonology, and cardiology. A sample size of 46 was calculated using the WHO calculator with a consideration for a 50% prevalence of stress, a 95% confidence level, and a 5% margin of error. Quota sampling was also applied to recruit first- and final-year residents to ensure sufficient representation from every medical specialty.

Eligibility requirements were PGRs who were being trained currently within the institution. Residents who were trained but remained as medical officers, residents who were transferred from their hospitals, residents who had trained for less than six months, and residents being supervised by principal investigators were excluded. Male and female residents who were qualifying according to inclusion criteria were invited to take part voluntarily after they had signed a written informed consent.

Data was collected in two stages. First stage involved collection of quantitative data. The participants responded to an anonymous self-administered questionnaire providing demographic information, Perceived Stress Scale (PSS-10), and General Health Questionnaire (GHQ-12). The PSS measured the level of stress in the last month, but GHQ assessed psychological functioning in many areas, including anxiety, depression, social dysfunction and loss of confidence. The Perceived Stress Scale-10 (PSS-10) assesses past-month stress using 10 items on a 0–4 Likert scale (with items 4, 5, 7, and 8 reverse-scored), yielding a total score of 0–40 that categorizes stress as low (0–13), moderate (14–26), or high (27–40). To screen for psychological distress, the General Health Questionnaire-12 (GHQ-12) utilizes either the standard bimodal method (0-0-1-1; total score 0–12), where a score of ≥3 indicates a positive screen for probable distress, or a continuous Likert method (0-1-2-3; total score 0–36) for correlation analyses. Both validated scales serve strictly as non-diagnostic screening instruments, meaning elevated scores indicate severity or risk and require clinical correlation rather than establishing standalone psychiatric diagnoses.

Both tools have been proved to be reliable and valid among the clinical population as well as non-clinical participants. The qualitative part consisted of face-to-face interviews with open-ended questions to find out about the coping strategies used by the residents. Each interview took about 30 minutes with audio recording and field notes during the interview period. The depth of the interview was determined by data saturation. To ensure that prejudice is reduced, the pulmonology residents, who were directly overseen by the investigator were exempted. These interviews were also performed in a neutral and comfortable environment to allow frank answers by residents.

Quantitative data was reviewed in SPSS (ver. 27.0) using descriptive statistical analysis (mean, frequencies) and inferential tests to assess correlations between stress levels, mental health conditions and the year of residence. For authenticity and correctness of the participant narratives, all qualitative data were transcribed verbatim. Through coding, classifying, and identifying overarching themes, the transcripts were meticulously examined several times and then thematically analyzed. This enabled a clear understanding of the coping strategies PGRs used to manage work-related stress and challenges. Strict steps were taken to ensure

confidentiality and anonymity to adhere to ethical standards; participants were given unique codes during data handling and reporting, and no identifiable information was recorded. Additionally, because mental health issues are delicate, any resident who showed signs of depression or high levels of stress during the study was immediately referred to the Psychiatry Department for professional counselling, support, and management.

Results

The study comprised of forty-six PGRs with a mean age of 31.65 ± 4.51 years (range 25–40). The mean weekly working hours were 77.89 ± 6.01. Using the GHQ assessment, 71.7% (n=33) of the participants were classified as cases and 28.3% (n=13) were non-cases. Among the participants, 60.9% (n=28) were male and 39.1% (n=18) were female. Residents were evenly split between the first year (50.0%, n=23) and last year (50.0%, n=23) of residency. Specialty distribution was Medicine 21.7% (n=10), while the other specialties Cardiology, Gynecology, Pulmonology, and Surgery each represented 19.6% (n=9). Most residents complained about their salary (84.8%, n=39), while only 15.2% (n=7) were content. Coping mechanisms differed with the most frequently reported being family support (30.4%), followed by exercise (21.7%), peer support (19.6%), religion/prayer (17.4%), and time management (10.9%). According to the Perceived Stress Scale (PSS), 63.0% (n=29) of residents experienced high stress, and 37.0% (n=17) experienced moderate stress.

Quantitative Data			
Variable	**Categories**	**N**	**Percent**
Gender	Female	18	39.1
	Male	28	60.9
GHQ Case	Non-case	13	28.3
	Case	33	71.7
PSS	High	29	63
	Moderate	17	37
Year of Residency	First	23	50
	Final	23	50
Specialty Distribution	Cardiology	9	19.6
	Gynecology	9	19.6
	Medicine	10	21.7
	Pulmonology	9	19.6
	Surgery	9	19.6
Satisfied with Pay	No	39	84.8
	Yes	7	15.2
Qualitative data			
Coping Strategies	**Categories**	**N**	**Percent**
	Exercise	10	21.7
	Family support	14	30.4
	Peer support	9	19.6
	Religion/Prayer	8	17.4
	Time management	5	10.9

The chi-square test revealed several significant correlations. Year of residence was significantly associated with both PSS total (χ^2=20.99, df=1, p<0.001) and GHQ Case status (χ^2=8.69, df=1, p=0.003). Specialty was also significantly correlated with PSS total (χ^2=25.02, df=4, p<0.001), coping mechanism (χ^2=27.59, df=16, p=0.035), and GHQ Case status (χ^2=32.85, df=4, p<0.001). Furthermore, pay satisfaction was significantly linked with coping style (χ^2=10.90, df=4, p=0.028) and GHQ Case status (χ^2=7.59, df=1, p=0.006). The results indicate that demographic and work-related factors were significantly linked with level of stress, coping, and mental health outcomes of the study participants.

Independent t-test analysis showed differences between groups to be significant. Cases (GHQ "cases") of residents were older with a mean age of 32.67 ± 4.34 years, which was higher than for non-cases (29.08 ± 3.99 years), with the mean difference being –3.59 years (t(44) = –2.58, p = 0.013, 95% CI: –6.39 to –0.79). Similarly, their working hours were also much greater (80.64 ± 4.00 vs 70.92 ± 4.39), with a mean difference of –9.71 hours (t(44) = –7.22, p < 0.001, 95% CI: –12.42 to –7.00). In comparing levels of stress, residents scoring high on PSS were older (33.55 ± 4.06 vs 28.41 ± 3.26) with a mean difference of –5.14 years (t(44) = 4.44, p < 0.001, 95% CI: 2.81 to 7.47) and also had more working hours (81.21 ± 3.77 vs 72.24 ± 4.75), with a mean difference of –8.97 hours (t(44) = 7.07, p < 0.001, 95% CI: 6.41 to 11.53). These findings highlight that greater stress and poorer mental health were significantly associated with older age and longer working hours among residents. The Pearson correlation analysis using continuous scores demonstrated a significant positive correlation between perceived stress and psychological distress among postgraduate residents. PSS-10 score showed a moderate positive correlation with GHQ-12 score (r=0.62, p<0.001), indicating that residents with higher perceived stress also had poorer mental health. PSS-10 score was strongly correlated with weekly working hours (r=0.74, p<0.001) and moderately

correlated with age (r=0.56, p<0.001). GHQ-12 score also showed significant positive correlations with weekly working hours (r=0.51, p<0.001) and age (r=0.38, p=0.009). The Spearman correlation produced similar findings, supporting the robustness of these associations.

A qualitative exploration finding revealed a variety of coping strategies used by residents to manage academic workload and clinical stress. Qualitative data was analysed using Braun and Clarke's six-phase reflexive thematic analysis framework. Two investigators independently coded the transcripts using an inductive approach, resolving any discrepancies through consensus or consultation with a third qualitative expert. To establish methodological rigor and trustworthiness in line with Lincoln and Guba's criteria, we maintained a reflexive journal, kept a detailed audit trail, and conducted regular peer debriefings, concluding participant recruitment once we achieved thematic data saturation. The most prominent approach reported was family support (30.4%), where residents emphasized emotional reassurance and motivation from parents and spouses as a key source of stability. One female PGR from first year surgery residency quoted "talking to my mother at night helps me reset after continuous calls". Exercise (21.7%) emerged particularly among senior residents as coping-strategy, who described activities such as morning walks, gym sessions, and jogging as ways to maintain physical and mental well-being. We often vent together in the on-call room, which helps us cope with challenges quoted by senior cardiology PGR. The peer support (19.6%) was significant—residents regularly shared experiences, expressed frustrations, and motivated one another during tough rotations and overnight shifts. Religion and prayer (17.4%) quoted by most residents as Namaz break during their working hours, provide significant spiritual strategies providing emotional comfort and psychological strength. This theme was prominent more among Gynae residents and female participants Time management (10.9%) was adopted by a smaller yet notable proportion, focusing on planning duties, prioritizing tasks, and maintaining structured routines to balance academic, clinical, and personal responsibilities.

Theme	Coping Strategy	Participant's Quote
Physical Well-being	Exercise	"A morning walk keeps me energetic before ward duty, especially on emergency days." PGR-1, Pulmonology.
Social Support	Family Support	"Talking to my mother at night even on phone helps me reset after continuous calls." PGR-1, Surgery.
Collegial Support	Peer Support	"We chit chat together in the on-call room, and it makes duty easier." PGR-4, Cardiology
Spirituality	Namaz	"Namaz breaks give me emotional strength, especially on difficult, hectic on call duty." PGR-1, Gynae.
Organizational	Time Management	"Planning early, preparing case summaries and ward rounds make me relax." PGR-1, Medicine

Discussion

The research on the relationship between perceived stress, mental health, and coping mechanisms among PGRs in a tertiary care center yields valuable information regarding the influence of demographic and work-related factors on psychological well-being among residents. It emphasizes the severe prevalence of stress and mental illness and reveals strong relationships with age, working hours, specialty, year of residency, and coping mechanisms.

The current research identified a high prevalence of psychological distress among PGRs, with 71.7% as cases (on GHQ questionnaire) and 63.0% as having high perceived stress. These results are consistent with several recent studies that have reported high stress and mental health loads among medical residents. Chew et al. (2020) identified substantial psychological reactions, stress, and trauma, among residents in the COVID-19 pandemic, highlighting the importance of coping strategies like social support to reduce stress. Just like the present study, this study emphasizes the significance of encouraging active coping mechanisms to minimize psychological distress.[8,9]

The strong association between working-hours and poor mental health identified in this study is also supported by evidence from a nationwide Japanese study, which showed more depression, burnout, and stress in residents working more than 90-100 hours a week compared to those with shorter working hours.

In the present study, high GHQ stress residents had significantly more working hours mean-difference 9-10 hours than non-cases. This confirms the current evidence that the hours of duty destroy the good of the residents and underline the need for duty hours corrections.[10]

Age was also a major variable associated with stress and mental health results. The results indicate that the old inhabitants have increased stress and poorer mental health, aligning with evidence that the progressive demands of residency training and ongoing life commitments generate psychological loads with time.[11] This study's findings differ from previous research that found younger residents more likely to experience stress. The variation may be due to factors like workload, training intensity, or social support networks, underscoring the need to consider context when interpreting mental health outcomes.

Specialty-specific variations in coping, stress and mental health were clear here. Chey et al. with consent conclusions, observed variability in stress response at the time of crisis. Medicine residents created a small group with specialties such as cardiology, gynecology, pulmonary and surgery, including asymmetrical copy and stress profiles underlining the importance of customized welfare intervention.[8] Of these coping strategies, family support was most prevalent, followed by exercise, colleague support, prayer/religion and time management. The mixed-method model of this study repeats the adaptive importance of social support, as found in evidence that flexibility and social support has been suggested, modernized by dimensions that have reduced the contribution of alleged stress in the psychological crisis.[12,13] However, as a most important coping strategy to emphasize problems against some work, these findings indicate that its use was reduced, so sexual strategies may have cultural or system differences.

With rising inflation, the salary reflects the importance of monetary security. Lack of satisfaction with salary 84.8% was significantly contributing to increase the level of stress and reduce the combat effectiveness.[14,15] This highlights inflation-matched salaries given to residents. These findings make calls for continuous research with longitudinal study design and intervention designed to increase resident mental health results using workload management, financial satisfaction and better flexibility training.

The strength of this study is its mixed methods design that bridged quantitative analysis with qualitative information to produce a holistic view of stress, mental health, and coping mechanisms among postgraduate residents. Equal enrollment of both first- and last-year residents from multiple specialties provided balanced participation and minimized stage or discipline-related bias. In addition, the utilization of validated instruments, i.e., the Perceived Stress Scale (PSS-10) and the General Health Questionnaire (GHQ-12), improved the validity and reliability of the results.

Despite its findings, the research has some limitations. The comparatively small sample population, which is selected from a single tertiary care private hospital, limits the extension of findings to general populations. A wider multicenter study is thus required to better understand stress, mental health effects and coping strategies.

Conclusion

The research brings into prominence the high burden of stress and mental health issues among postgraduate medical residents in a tertiary hospital. By exploring the interaction between perceived stress, mental health, and coping mechanisms, it emphasizes the need to address resident well-being as an integral aspect of healthcare provision. The results support the necessity for institutionalized policies and support systems that promote resilience, healthy coping, and protect the psychological well-being of medical trainees.

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Authors' Contribution

MSM: Conception.

MSM: Design of the work.

MSM: Data acquisition, analysis, or interpretation.

MSM: Draft the work.

MSM: Review critically for important intellectual content.

MSM: approved the version to be published.

MSM: agreed to be accountable for all aspects of the work.

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