

Correlation between resident's mental health and duty hours during orthopaedic postgraduate training in GMC Jammu: A cross sectional analysis

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ABSTRACT:

Postgraduate residency programmes specially in surgical and emergency branches are hectic and often leave the residents burnt out due to hectic and long duty hours like emergency duties, ward duties, on call duties, OPDs and OTs that lead to no time for peace and rest leading to compromised mental health of the residents. The present study evaluates the stress and burnout among the postgraduate residents and its association with their long duty hours. METHOD- current study was conducted among 48 orthopaedics postgraduate residents in GMC Jammu and they were divided into three categories: category 1(>90 hrs), category 2(70-90hrs) and category 3(<70hrs). stress level was measured using perceived stress scale(PSS-10) and burnout, job satisfaction using Mini-Z scale. Results- this study established significant correlation between long duty hours and stress with has worsened their mental health during residency. This was established by increase in PSS score where 88% residents were in moderate stress and 4% in severe stress. being under stress was experienced by 39.6% residents and 20% felt completely burnt out. 2.1% were satisfied with their job ,43.8% felt it neutral and 51 % residents felt poor control over work. There was significant positive correlation between duty hours and mini-Z (p value <0.001) and significant negative correlation duty hours and PSS score(p value<0.001). CONCLUSION- long duty hours are significant in determining the mental health of the residents in the residency programme so structured maximum working hour limit should be decided and there should be a team for the psychological support and counselling of the residents during residency programmes.

Keywords: *Stress, Burnout, Residency, Duty hours*

INTRODUCTION:

Postgraduate Residency programs specially in branches which are surgical and deal with emergency often have long working hours due to emergency duties, ward duties, OPDs, on call duties and OTs which leads to stress and burnout among residents leading to compromised mental health of the residents. this type of working environment leads to poor mental well, being of the doctors as well as poor management of the patient. A systematic review of orthopaedic residents reported burnout prevalence of 50-70% leading to emotional exhaustion. Tomioka K *et al.*, (2011) conducted a study and found that doctors working >70 hours weekly were 1.8 times more likely to go through depression compared to those working <54 hours. In Japan, a survey of 604 residents was done and found a link between overwork and workout with 2.75-fold increase burnout risk (28.5% prevalence) in those working for longer working hours. Ogawa *et al.*, (2018) conducted a study involving 1241 residents and

found that those working >80 hours/week tend to face depression double the rate. A study in delhi involving four medical colleges involving 930 residents showed that prevalence of stress was 32.8%(17.7% mild, 12.2% moderate, 2.9% severe). Duty hours specifically in those medical colleges which have large patient flow are too hectic, sometimes exceeding the NMC-recommended limits of working hours of 74 hours/week and 24-hour at a stretch. No prior study has specifically examined this correlation at GMC Jammu. So, This study aims to evaluate the association by PSS-10 for stress and Mini-Z 2.0 for burnout/job satisfaction in orthopaedic postgraduate residents, with duty hours categorised as(>90hrs, 70-90hrs, <70 hrs/week).

MATERIALS AND METHOD:

This was a hospital based cross sectional study which involved 48 orthopaedic postgraduate residents

conducted in the Department of Orthopaedics at Government Medical College Jammu.

This Study evaluated the association between duty hours per week and mental health of the residents during residency training programs.

Inclusion criteria: orthopaedic postgraduate residents at GMC Jammu willing to participate.

Exclusion criteria: residents with already diagnosed psychiatric disorders, residents unavailable during the collection of the data, residents who did not give consent. Sociodemographic data was collected-age, gender, year of residency, marital status, and self-reported duty hours per. We categorized the working hours in three groups based on total hours spent on duties: Category 1 (>90 hours/week), Category 2 (70-90 hours/week), and Category 3 (<70 hours/week). This categorisation is according to the thresholds from prior literature which is linked with excessive hours leading to adverse outcomes related to doctor as well as patient perspective.

Perceived stress was measured using the Perceived Stress Scale (PSS-10), it is a 10-item self-administered questionnaire developed by **Cohen et al., (1983)** Each item is scored on a 5point Likert scale (0=never to 4=very often), with reverse scoring for positively

worded items. Total scores range from 0-40, categorized as low stress (0-13), moderate stress (14-26), and high stress (27-40). Higher scores indicate greater perceived stress.

Burnout, job stress, and satisfaction were assessed using the Mini-Z 2.0 scale, a 10 item tool designed for healthcare professionals to evaluate the mental health and workplace stress level. items included single question assessments of burnout (using participant's definition, scored 0-7 where 0=none and 7=severe), overall job satisfaction (0-7, higher=more satisfied), and control over workload (0-7, higher=more control). A team effectiveness score and overall "joyful place to work" composite (>40/50 threshold) were also derived. The Mini-Z demonstrates high reliability and correlates well with longer burnout inventories like Maslach Burnout Inventory. Data was collected anonymously via a structured online questionnaire hosted on Google Forms, distributed through departmental WhatsApp groups and email. Response rate was 100%. No incentives were provided. Statistics were done using SPSS. Group differences across duty categories were compared via ANOVA with post hoc analysis. Statistical power was adequate (80%) for detecting moderate correlations ($r=0.3$) at $\alpha=0.05$ with $n=48$.

RESULTS:

Control Level	Percentage (%)
Poor	12.2%
Marginal	38.8%
Satisfactory	28.6%
Good	18.4%
Optimal	2.0% (approx.)

12.2% residents had poor control over their workload, 38.8% experienced marginal control, 28.6% felt satisfactory control while 18.4 % and only 2% felt good and optimal control respectively.

Satisfaction Level	Percentage (%)
5. Strongly Agree	2.1% (approx.)
4. Agree	35.4%
3. Neither Agree nor Disagree	43.8%
2. Disagree	12.5%
1. Strongly Disagree	6.2% (approx.)

When participants were asked about the satisfaction level with their job, 6.2 % residents strongly disagreed to be satisfied with their job, 12.5%disagree, 43.8 were neutral and 35.4% agreed.

Burnout Description	Percentage (%)
I enjoy my work; no symptoms of burnout	12.5%
Under stress, do not always have enough energy	39.6%
Beginning to burn out; one or more symptoms	27.1%
Persistent burnout symptoms; think about work often	16.7%
Completely burned out; may need to seek help	4.1% (approx.)

When residents were asked about burnout, 39.6% were under stress and 27% were starting to burnout while 12.5% enjoyed their work and 16.7% were of the opinion that that symptoms of burnout they are experiencing will not go away.

Scale/Category	N	Minimum	Maximum	Mean	Std. Deviation
MINI Z2.0 CAT 1	16	16	31	24.31	4.571
MINI Z2.0 CAT 2	16	25	37	31.50	3.141
MINI Z2.0 CAT 3	16	31	45	38.31	4.701
PSS CAT 1	16	27	36	31.00	3.307
PSS CAT 2	16	20	30	25.75	3.376
PSS CAT 3	16	11	20	15.13	2.604

Scales	Pearson Correlation (r)	P Value
MINI Z2.0	0.815	< 0.001
PSS	-0.893	< 0.001

Stress Category	Percentage (%)
Mild	8.0%
Moderate	88.0%
Severe	4.0%

According to PSS score Mild stress was felt by 8%, 88% participants were having moderate stress where as 4% had severe stress which was also evident by the significant values of pearson correlation and p values of mini-Z 2.0 and PSS scales.

DISCUSSION:

This study found strong correlation between long working hours and stress among postgraduate residents which was seen through higher scores of PSS and mini-Z scale. These results corroborates with other literature also. A study was conducted in japan among 604 residents, and the prevalence of burnout was found to be 28.5%. Similarly, **Ogawa *et al.*,(2018)** conducted a study which involved 1241 residents and found that working >80 hours in a week was significantly associated with higher rates of depressive symptoms.

The present study correlates with Indian literature as well. A cross sectional study from four medical colleges and associated hospitals in Delhi, included 930 resident doctors and reported stress prevalence of 32.8%, with 17.7% experienced mild stress, 12.2% moderate stress, and 2.9% severe stress. These figures are correlating with the current study suggesting that long working hours and demanding clinical surroundings are the issues that need to be dealt with in Indian residency programs.

The correlation found between duty hours and stress, burnout in this study therefore not only shows the local working conditions but also suits well with the global and national working condition as per the literature. This prioritises the mental well-being of the resident doctors as well as patient standard of care. This also tells us the need of the proper duty hour regulations, and optimal working conditions and institution of the structured psychological support and

wellness interventions as essential part of postgraduate training program.

CONCLUSION:

The study showed that long duty hours in a week are significantly associated with higher stress level and burnout among postgraduate residents. This highlight that burden of long duty hours is very important factor in determining the mental health of the residents and even patient safety and quality of care.

To prioritize the well-being of resident doctors considering their demanding clinical schedules, enforcing clear, evidence based guidelines for maximum working hours and continuous duty duration is important. Hospitals which serve large volume of patients should have a structured duty hour roster with acceptable maximum duty hour limit considering mental health of the postgraduate residents working there.

In addition, the results of the study highlight the necessity of integrating structured psychological support into postgraduate training. This should include accessible counselling services, periodic mental health screening, peer support or mentorship programs, and sensitization of faculty to recognize early signs of stress and burnout.

Conflict of interest: none

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