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Original Research Article

Occupational fatigue of Medical Interns

Burn Out Among Medical Interns: A Cross Sectional Study

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Abstract: Burnout or chronic stress exhaustion is connected to high-stress occupations, a widespread problem among health care workers. Medical Interns are a vulnerable group to experience burnout, as they are exposed to stressors like long working hours, night shifts, lack of free time, lack of sleep, and recreational activities. It is also a transition period from being a medical student to a working doctor, which comes with responsibilities. These factors make them susceptible to mental aggravations, such as burnout syndrome, that are not always evaluated. In this regard, a study was done among medical interns to assess the prevalence of burnout and identify the associated factors. This cross-sectional study was conducted among 96 medical interns at ESIC Medical College in Kalaburagi over three months from November 2022 to January 2023. Burnout was evaluated by using the Maslach Burn Out Inventory. Based on the scores, individuals were classified as high-level, moderate-level, and low-level burnout. Burnout was observed in 22.91% of participants. 25% of participants scored high on the emotional exhaustion subscale, 55.20% scored high on the depersonalization subscale, and 60.42% scored low on the personal accomplishment subscale. A statistically significant association was found between resting interval, the total number of monthly night shifts, and burnout. The study showed that medical interns experience burnout, which has to be handled individually and by creating a conducive working environment.

Keywords: Prevalence, Burnout, Medical Interns, Cross sectional study, Maslach Burn Out Inventory

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1. INTRODUCTION

WHO defined Burn-out in ICD-11 as a syndrome conceptualized resulting from chronic workplace stress that has not been successfully managed. It is characterized by feelings of energy depletion or exhaustion, increased mental distance from one's job, or feelings of negativism or cynicism related to one's job and reduced professional efficacy[1]". The term "burnout" was originally coined by Herbert Freudenberger in 1974. The psychologist Freudenberger noted that the personnel of a clinic for drug addicts in the United States were unable to help the patients because they did not make any attempt to follow the treatment. Therefore, it could be observed that the employees showed some symptoms associated with the Burnout syndrome[2]. Burnout has been connected to high-stress occupations, jobs requiring care of people, and jobs with extended working hours, and it is a widespread problem among health workers and caretakers[3]. In India, a medical intern means a medical graduate undergoing a training period, "Compulsory Rotating Internship," or "Internship," as provided by NMC regulations. The internship is a phase of training wherein a medical graduate will acquire the skills and competencies for the practice of medical and health care under supervision in preparation for independent, unsupervised primary care for 12 months to be eligible for the degree of Bachelor of Medicine and Bachelor of Surgery (MBBS) by the respective universities and permanent registration regulations 2021 of the NMC[4]. Medical internships are highly complex because key stressors, such as daily dealing with pain and death, are linked with elements connected to the personality of medical interns[5], which is the transition from being a medical student to working as a doctor[6,7]. Also, apart from that, the internship training period is extremely demanding for medical students because they must finish training in a variety of specialties, including surgery, gynecology, family medicine, internal medicine, pediatrics, and emergency departments, in addition to studying for exams and evaluations for higher studies[8,9]. Students start to take on patient responsibilities, including attending hospitalized and ambulatory patients, assisting with or performing surgeries, taking blood samples, and making notes for the medical record. These obligations also include 24-36 hours of on-call duty, during which time students deal with demanding and stressful situations, irregular eating patterns, lack of sleep, long working hours, a lack of peer support in a competitive environment, an imbalance between personal and professional lives, a lack of recreational activities, being away from home, financial difficulties, an uncertain future, and emergency situations[10] and - in rare instances - humiliation or gender discrimination by attending physicians or nursing staff, either for personal reasons or to reinforce a hierarchy[11,12], makes medical interns as one of the vulnerable groups to mental health aggravations that are not always evaluated, such as Burnout Syndrome. Previous studies conducted among medical interns [13-15] found the prevalence of burnout to be high. Not only among medical interns, but the prevalence of burnout is also high among medical students[16-17]. Indeed, the prevalence of burnout is high in the medical profession[18,19]. Studies related to burnout among medical interns are limited in our area. In this regard, a study was done among Medical Interns to assess the prevalence and factors associated with Burn Out among medical interns of ESIC Medical College, Kalaburagi.

2. MATERIALS AND METHODS

2.1 Study design, setting, and participants

This cross-sectional study was conducted among Medical Interns of ESIC Medical College, Kalaburagi, Karnataka, over three months from November 2022 to January 2023. All the medical interns were included in the study.

2.2 Sample size and procedure

The Convenience sampling method included 96 medical interns willing to participate in the study.

2.3 Outcome variables

Burnout was classified as the outcome variable. Burnout was assessed by using the validated Maslach Burnout Inventory, which consists of three subscales: namely (a) Emotional Exhaustion subscale, (b) Depersonalization subscale, and (c) Personal accomplishment subscale. For example, the characteristic items are: "I feel emotionally drained by my work." All 21 items were scored from 0 (never) to 6 (every day). Then, the results of the pertinent scores were added up to determine the scores; based on the scores, individuals were classified as low-level, moderate, and high-level. In our study, we classified the participants based on the definition of burnout. Burnout was defined as having a high score (>27 points) on the emotional exhaustion subscale, a high score (>10 points) on the depersonalization subscale, and a low score (33 points) on the personal accomplishment subscale.

2.4 Socio-demographic factors

Socio-demographic factors included gender and place of residence. The variable gender was grouped into male and female while the place of residence was classified into hostel and day scholar.

2.5 Working factors

Working factors included the number of working days in a month, duration of working days in hours per day, total number of night shifts per month, and rest interval. The variable number of working days in a month is divided into 24-27 days and 30-31 days. The duration of working days in hours per day is grouped into 8 hours, 12 hours, 12 hours, and above, while the total number of night shifts per month is classified as 5-7 days, 8-15 days, and every alternative day. The rest interval for medical interns is defined as when they can get a resting time between working hours. Resting interval is grouped into 5-30 mins, 31-59 mins, >60mins, and none.

2.6 Methods of data collection

The data was collected using a pre-tested, semi-structured questionnaire and an interview method. For data collection, the aim of the study was briefly described, and the investigators cleared the doubts of the participants regarding the study. Participants were requested to choose the item in the questionnaire closest to what they felt in the past week to minimize recall bias. Following this, the questionnaire form

was distributed to them. The questionnaire contained questions regarding the socio-demographic and working factors of the participants, along with the scale for measuring burnout. We used reliable and validated instruments to minimize information bias.

2.7 Ethical considerations

Ethical clearance was obtained from the Institutional Ethical Committee of ESIC Medical College, Kalaburagi ethical clearance no. ESICMC/GLB/IEC/05/2024-05. A cover letter of informed consent was attached with each questionnaire, including the study description and participants' right to decline altogether or to leave the questions unanswered. Consent was obtained by completing the questionnaire. The names or signatures of the participants were not included in the questionnaire to keep the participant's identity anonymous. Participants did not receive any incentives or financial compensation for participating in the study.

3. STATISTICAL ANALYSIS

The data collected was entered in MS-Excel, and frequency, percentage, chi-square tests, and univariate analysis were used for analysis. The total burnout score for each intern in each Maslach Burnout Inventory dimension was calculated. Univariate analysis was carried out using Burnout as the dependent variable. The independent variables studied included gender, place of residence, and working factors.

4. RESULTS

The total number of medical interns who participated in the study was 96. 57 (59.37%) were females, and 39 (40.62%) were males. The majority of them resided in hostel 84 (87.50%).

Table No 1. Distribution of Respondents based on Socio-demographic factors (n=96)

Socio-demographic factors		Frequency	Percentage
Gender	Female	57	59.37%
	Male	39	40.63%
Place of Residence	Hostel	84	87.50%
	Day scholar	12	12.50%
Number of Working days in a month	24-27 days	7	7.29%
	30-31 days	89	92.70%
Duration of work (Hours)/Day	8 hrs	11	11.45%
	12 hrs	26	27.08%
	12 hrs and above	59	61.45%
Total No of night shifts per month	5-7 days	26	27.08%
	8-15 days	66	68.75%
	Every alternative day	2	2.08%
Rest interval	5-30 mins	42	43.75%
	31-59mins	31	32.29%
	>60mins	6	6.25%
	None	17	17.70%

4.1 Working factors

The number of participants having 30-31 working days in a month was 89 (92.70%), and 7 (7.30%) working for 24-27 days. The majority (61.45%) of the study participants were working for 12 hours and above, followed by 12 hours (27.10%) and 8 hours (11.45%). Most (68.75%) had night shifts 8-15 days a month. In rest intervals, 42 (43.75%) of the participants had a break for 5-30mins in between work, followed by 31 (32.29%) participants for 31-59 mins, 6 (6.26%) participants for > 60mins, and 17 (17.70%) of the participants have mentioned that they were not getting any resting time in between work.

Table No: 2 Distribution of respondents based on Working factors (n=96)

Working factors		Frequency	Percentage
Number of Working days in a month	24-27 days	7	7.30%
	30-31 days	89	92.70%
Duration of work (Hours)/Day	8 hrs	11	11.45%
	12 hrs	26	27.10%
	12 hrs and above	59	61.45%
Total No of night shifts per month	5-7 days	26	27.08%
	8-15 days	66	68.75%
	Every alternative day	4	4.17%
Rest interval	None	17	17.70%
	5-30 mins	42	43.75%
	31-59mins	31	32.29%
	>60mins	6	6.26%

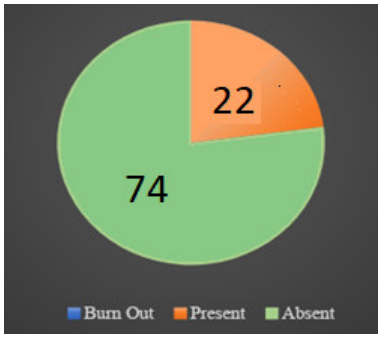

Fig No:1 Prevalence of Burn Out among Medical Interns(n=96)

As per the definition of burnout, 22 (22.91%) participants were experiencing burnout.

Table No. Prevalence of Burn Out among Medical Interns based on Burnout Subscales.

Burn out level	Burn out subscale					
	Emotional exhaustion		Depersonalization		Personal Accomplishment	
	N	%	N	%	N	%
High	24	25%	53	55.20%	58	60.42%
Moderate	38	39.58%	26	27.08%	14	14.58%
Low	34	35.42%	17	17.72%	24	25%

In the Emotional exhaustion subscale, 25% of participants scored high, 39.58% scored moderately, and 35.42% scored low. In the Depersonalization subscale, 55.20%% of participants scored high, 27.08% scored moderately, and 17.72% scored low. In the Personal Accomplishment subscale, 60.42% of participants scored high, 14.58% scored moderately, and 25% scored low.

Table No. Association of Burn Out with Baseline Characteristics

Baseline Characteristics		Burn Out				p-value
		Present		Absent		
		n	%	n	%	
Gender	Male	6	15.38	33	84.62	1.46
	Female	16	28.08	41	71.92	
Place of Residence	Hostel	18	21.43	66	78.57	0.35
	Day Scholar	4	33.34	8	66.66	
Rest interval	None	9	52.95	8	47.05	0.005
	5-30mins	8	19.05	34	80.95	
	31-59mins	3	9.67	28	90.33	
	>60mins	2	33.34	4	66.66	
Total no of night shifts	5-7days	4	15.38	22	84.62	0.03
	8-15days	15	22.72	51	77.28	
	Every alternative day	3	75.00	1	25.00	
No working days in a month	24-27days	5	38.46	8	61.54	0.11
	30-31days	17	20.48	66	79.52	
Duration working hours per day	8hrs	3	27.27	8	72.73	0.55
	12hrs	4	15.38	22	84.62	
	12hrs and above	15	25.42	44	74.58	

It was found that Medical Interns with fewer rest intervals between shifts and more nightshifts experienced high burnout. A statistically significant association was found between Resting Interval(p=0.005), total number of night shifts per month (p=0.03), and Burnout.

Table No. Univariate analysis of corelates of Burn Out

Baseline Characteristics		Burn Out				Odd's ratio	Chi-square	p-value
		Present		Absent				
		n	%	n	%			
Gender	Male	6	15.38	33	84.62	0.4659 (0.1640-1.3238)	2.1095	1.46
	Female	16	28.08	41	71.92	1		
Place of Residence	Hostel	18	21.43	66	78.57	0.5455 (0.1474-2.0186)	0.8424	0.35

	Day Scholar	4	33.34	8	66.66	1		
Rest interval	None	9	52.95	8	47.05	2.2500 (0.3213-15.7568)	12.4758	0.005
	5-30mins	8	19.05	34	80.95	0.4706 (0.0730-3.0350)		
	31-59mins	3	9.67	28	90.33	0.2143 (0.0269-1.7039)		
	>60mins	2	33.34	4	66.66	1		
Total no of night shifts	Every alternative day	3	75.00	1	25.00	16.5000 (1.3525-201.2988)	6.9788	0.03
	8-15days	15	22.72	51	77.28	1.6176 (0.4819-5.4300)		
	5-7days	4	15.38	22	84.62	1		
No working days in a month	24-27days	5	38.46	8	61.54	2.4265 (0.7036-8.3684)	2.0568	0.11
	30-31days	17	20.48	66	79.52	1		
Duration working hours per day	8hrs	3	27.27	8	72.73	1.1000 (0.2579-4.6921)	1.1631	0.55
	12hrs	4	15.38	22	84.62	0.5333 (0.1581-1.7991)		
	12hrs and above	15	25.42	44	74.58	1		

Independent correlates of burnout in univariate analysis, it was found that rest interval and the total number of night shifts per month were associated with burnout.

5. DISCUSSION

Burnout during the internship year is a serious problem worldwide, and numerous studies have been conducted to determine its prevalence, explore the key issues that contribute to it, and find remedies. This study was conducted to identify the prevalence and levels of burnout.

5.1 Socio-demographic factors

Out of 96 interns, 57 (59.37%) were females, and 39 (40.63%) were males, which was similar to the study conducted by Niranjan V et al. [21] but opposite to the study conducted by Costa EF et al. 5. The majority (87.50%) of the medical interns were residing in hostels, which was not similar to the study conducted by Niranjan V et al. [21].

5.2 Working factors

Medical interns who are 30-31 working days in a month are 89 (92.70%), and 24-27 working days in a month are 7 (7.29%). This depends on which department they are posted. The majority (61.45%) of the medical interns said that they were working for more than 12hrs and above, followed by 12hrs (27.08%) and 8hrs (11.45%). Most interns had night shifts for 8-15 days (68.75%) a month, with the least (2.08%) having night shifts on every alternative day. The rest interval is the break time they get between working hours. In which medical interns who are getting no rest interval are 17 (17.70%). This is because they are posted in Intensive care units, who are getting rest intervals of 5-30mins are 42 (43.75%), 31-59mins are 31 (32.29%), and more than 60 minutes are 6 (6.25%).

5.3 Prevalence of Burnout

The Prevalence of Burnout in the present study was found to be 22.91% which was almost similar to the study conducted by Niranjan V et al. [21] (22%) but lesser compared to the studies by Bahaa Aldin Alhaffar et al[22] (70%), Chandra A et al[23] (44.75%), Fontana et al[24](44.2%). The study conducted by Costa EF et al[5] showed a prevalence of 10.3%, which is less than ours. The reasons for Burnout in our study might be because of different departmental rotations and preparation for National Eligibility cum Entrance test – Post Graduate.

5.4 Burnout subscales

Burnout subscales in our study showed high scores, which was similar to the study by Niranjan et al. [21], and Willcock et al. [26]. High emotional exhaustion was found in 25%, which is lower than the study conducted by Niranjan et al[21] (34%), costa EF et al[5](62.6%), Fontana et al[24](40.8%). High Depersonalization scores (55.20%) and low Personal Accomplishment scores (60.42%) were found in participants, which is more compared to the study by Niranjan et al[21] (7%), Fontana et al[24] (35.1%, 27.4%), but equivalent to the study conducted by costa EF et al[5](47.2%, 60.2%) These differences may be due to varying conditions in work environment at different countries.

5.5 Burnout and Gender

In this study, burnout was found more in females (28.07%) than males (15.3%), which corresponded to the study conducted by Fontana et al. [24](females 60.4% and males 51.5%), González-Ojeda et al. [25] (Females 22% and Males 18.6%). There was no statistically significant association between gender and Burnout, which is parallel to the study conducted by Niranjan et al. [21], González-Ojeda et al. [25], and Adekola et al. [27]. The reason is females are more emotionally involved, and they get exhausted, which lead to more burnout compared to males. However, as there is no statistically significant association, it can be concluded that gender is not a reason for burnout.

5.6 Burnout and Residence

The current study did not show any significant association between place of residence.

5.7 Burnout and Working factors

The present study did not show any statistically significant association between the number of working days in a month and the duration of working hours per day with burnout. Previous studies on burnout among medical interns have used different scales, and according to our knowledge, they did not take into account factors like residency, the number of working days in a month, the number of hours worked each day, resting interval, and total number of night shifts which makes it difficult for comparison. The present study shows burnout is higher in medical interns who are day scholars (33-34%) and those with no resting interval (52.95%) during duty hours. This is because when posted in the Intensive Care Unit, they must continuously monitor and work more than 36 hours, leading to more burnout. In the current study, burnout is seen less when those with fewer night shifts in a month, which is 5-7/month (15.38%) compared to those with night shifts on every alternative day (75%). The reason is that those who have fewer night shifts will have adequate relaxation time and a good night's sleep. However, those who have night shifts on every alternative day will have disturbed sleep routines with inadequate relaxation time, which affects them physically and mentally, leading to high burnout. A statistically significant association was found between the total number of night shifts per month and burnout. Limited studies have been done among medical interns, and other studies have not yet to be the working factors. So, the working factors could not be compared with those of similar studies.

6. CONCLUSION

Medical interns experience a notable amount of burnout, which must be managed by teaching them stress management, coping skills, and relaxation training. They should also take workplace interventions like ensuring reasonable working hours, giving off after night shifts or 24-hour duty, and ensuring adequate break time between working hours.

7. LIMITATIONS

Medical interns from a single institution only were enrolled, which cannot be representative of the general population.

8. ACKNOWLEDGEMENT

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9. AUTHORS CONTRIBUTION STATEMENT

Dr. Siva Keerthika S and Dr. Santosh Biradar designed the whole study and prepared the manuscript. Dr Vinod S Kamble prepared part of the manuscript. Mr Shrinivas Reddy contributed to the statistical analysis and preparation of the manuscript.

10. CONFLICT OF INTEREST

Conflict of interest declared none.

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