

Prevalence of Stress and Coping Styles in Resident Doctors: A Cross Sectional Study

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ABSTRACT

Medical education is becoming complex posing extra burden on students. This increases stress in students, which has serious effects on their health, if it is not managed properly. Coping strategies are effective ways in reducing stress when used judiciously. Studies in postgraduate medical students (residents) focusing on these aspects are sparse. Aim is to assess the stress levels its correlates and coping strategies used by residents. Study is done on resident doctors working in three different hospitals and a medical college. Opt in method was used to include participants into the study. Single cross sectional assessment was done. All residents were approached for the study, consenting residents were asked for socio demographic details and administered Perceived stress scale and Brief COPE. Data was analyzed using SPSS software package 16 for windows. Spearman's correlation, Kruskal Wallis test, Independent t test, Mann Whitney U test, ANOVA and factor analysis were done. Totally 251 residents were analyzed, 80% reported stress. Female gender, personal and workplace problems and sleep deprivation correlated with stress. Coping styles used were Self-distraction, Active coping, Emotional support, Instrumental support, Positive reframing, Planning and Acceptance. They differed with respect to gender, marital status, year of post-graduation, stress levels and choosing the subject. Principal component analysis of coping strategies grouped into three categories. In conclusion, Stress was highly prevalent in resident doctors and has more significance to personal factors. Adaptive coping strategies were used by the residents though they had inter-group differences.

Keywords: Post-Graduate Students, Resident Doctors, Stress, Coping Strategies

Medical education is transforming rapidly owing to a vast number of researches and technological advancements in treatment which have occurred in the past few decades, thus making it more and more complex. The medical education is identified with vast knowledge to assimilate, numerous skills to master, longer duration to study and lesser personal/ leisure

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time (Mahajan, 2010). During this process a student faces ample amount of demanding and conflicting situations which burden the young minds of the students and thus it begets stress (Dahlin et al., 2005). Stress when overwhelming exerts negative effect on the academic performance, physical health and psychological wellbeing of the students (Mosley et al., 1994). To adapt or to overcome these adverse circumstances individual uses different ways of cognitive and behavioral process which are called coping strategies (Suls et al. 1996).

Despite the problem of stress in doctors, they are reluctant to seek any help due to factors like lack of awareness, stigma, confidentiality issues and fear of unwanted intervention (Menon et al., 2015). This may lead to poorer ways of coping such as substance use. Drug abuse in medical professionals takes an upward trend often leading to substance use disorders (Seshadri, 2008).

Studies done in the past mainly focused on medical undergraduate students. Lesser number of studies were done on postgraduate students which focused on stress and coping styles. In this background, present study aims to assess the prevalence of stress in postgraduate students also referred as resident doctors and factors contributing to stress and the coping strategies used by them.

METHODOLOGY

The study was a cross-sectional survey conducted on postgraduates/residents, who were working in three hospitals; two government and one private hospitals and a Medical College in the state of Karnataka, South India. The study was approved by the Institutional Ethical Committee Review Board and administrative approvals were obtained from the each department Heads prior to the study. Each resident was explained about the study and was invited to participate. Consenting residents were administered the questionnaire. Of 311 residents approached, 260 consented for the study, of which 9 proforma were excluded from analysis due to incomplete information and 251 proforma were finally analyzed.

Assessment tools

Socio-demographic details and work-related information were assessed using a self-designed proforma. Cohen's Perceived Stress Scale (PSS) was used to assess stress (Cohen et al., 1983) Brief COPE to assess coping strategies (Carver, 1997).

Statistical Analysis

The data was checked for normality of distribution using Kolmogorov Smirnov test. All the characteristics are summarized descriptively. Independent t test was used to compare between groups, Spearman's correlation, Mann Whitney U test and Kruskal Wallis test was used wherever applicable. Principal Component Analysis was carried out for factor analysis of coping strategies. Data was compiled in Microsoft excel spread sheets and analyzed using SPSS for windows version 16.0

RESULTS

Sample consisted of residents with mean age $27(\pm 2)$ years & more females 137(54%). Majority of the residents were following Hindu religion 215 (86%), staying alone 177 (71%), were single 177(71%), from urban background 166 (66%), in the first year of post-graduation 171(62%) and were not using any psychoactive substance 209 (83%). Residents were dispersed over 17 departments, 214 (85%) were from clinical and 37(15%) were from non-clinical departments.

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A significant number of residents, 202 (80%), had score above 13 on PSS indicating they were stressed, of which 28 participants (11%) scored above 27, suggesting they were highly stressed. Female residents had higher stress as compared to males ($Z = 4.511, P = 0.0001$,

Mann Whitney U test). Residents having workplace difficulty, lesser sleep time and personal maladjustment had significant stress. Various correlates of stress are depicted in table 1. Self-distraction, Active coping, Emotional support, Instrumental support, Positive reframing, Planning and Acceptance were frequently used Coping strategies by the residents while Substance-use was least utilized by the resident doctors overall.

Residents who had significant stress were compared with those who didn't have stress using Independent t test. Barring substance use all other coping strategies were used significantly in higher proportions in former group as shown in table 2. Substance use ($t = 2.35, P = 0.02$,) and Humor ($t = 2.15, P = 0.03$,) were more frequently used by males as compared to females residents and no other gender differences were found in coping styles.

One way ANOVA was used to compare residents on coping strategies with respect to the year of post-graduation; first year residents showed marked differences. On post hoc tests, third year residents used Self-distraction ($t = 0.95, P = 0.03$), and Acceptance ($t = 1.3, P = 0.003$) more than first year residents while first year residents indulged in Substance-use more than second ($t = 0.51, P = 0.005$) and third year residents ($t = 0.51, P = 0.012$).

Based on marital status participants were divided into three groups: single, committed and married. When looked into differences between these groups on Coping styles using ANOVA; married people showed significant difference than other two groups. On post hoc analysis married residents used Self distraction ($t = 1.37, P = 0.02$) and Planning coping ($t = 1.41, P = 0.04$) more than committed, Emotional support more than both committed ($t = 1.79, P = 0.002$) and single ($t = 1.02, P = 0.002$) in significantly higher frequencies.

No significant difference in types of coping styles used between clinical and non-clinical residents. Residents who had compromised their choice of subject for post-graduation were compared with who chose their branch as preferential with independent t test. Former group had higher use of coping styles like Emotional support ($t = 2.38, P = 0.05$), Venting ($t = 2.27, p < 0.05$), Acceptance ($t = 2.66, p < 0.05$) and Religious ($t = 2.36, p < 0.05$).

Principle Component Analysis was carried out to reduce the 14 coping strategies to fewer dimensions. The coping strategies that clubbed together are shown in the table 3. Group 1 consisted of Planning, Humor, Acceptance, Positive reframing, Active coping and Self-distraction. Group 2 consisted of Emotional support, Venting, Religious, Instrumental support and Self-blame. Group 3 consisted of Behavioral disengagement, Denial and Substance use.

DISCUSSION

Medical education is improving in quality apart from quantity (Chacko, 2013). Students are expected to learn, remember and acquire skills more than ever before. This puts them in tremendous pressure, increasing the stress levels, as is reported worldwide (Mahajan, 2010). The education is incomplete without teaching soft skills to improve stress resilience and coping strategies.

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Our study reaffirms the fact that there is universality of stress in medical field and it is not unexpected to find that 80% of the resident doctors were stressed but it is a concerning issue. Of total, 11% reported to be severely stressed; on the verge of decompensating. This is a concern for all: the students, parents, teachers/consultants, hospital administrators and policy makers, considering the ill effects of stress on health (Ray & Joseph, 2010). Females in our study had significant stress, as they were exposed to many responsibilities than male residents. Females are also more susceptible to experience and report stress as emotional perception is higher in females in comparison to males. Resident doctors facing difficulty in workplace, personal maladjustment had substantial level of stress. The stress level was also high in residents who had lesser time for rest/ sleep. This suggests that personal problems and difficulties contributed more to perception of stress than general issues such as year of post-graduation, work hours, departments and so on. This finding is particularly important when interventions are planned to address stress. Those interventions might be more successful in reducing stress levels which focus more on individual aspects of resident doctors than general blanket measures.

Study done by Bassols et al. (Bassols et al., 2015) in Brazil in the year 2015 reported stress was higher in first-year medical students. The factors associated with stress in their study were younger age, female gender, initial year of the course, lower family income, bearing an illness, using some medication and lesser satisfaction with the course.

Bamuhair S. et al. in 2015 (Bamuhair et al. 2015) reported in their study that female students had higher stress compared to male students. Factor that were stressful to students were studying, poor sleep, worry about the future, interpersonal conflicts, low self-esteem and problem commuting. They concluded that major stressors in the medical students were related to social and personal problems apart from problems within medical training.

Grover et al. in 2018 (Grover et al., 2018) reported that 67.2% of medical professionals reported moderate level of stress and 13% of participants reported high level of stress. Females had higher stress scores. Stress level did not vary among non-clinical and clinical departments.

Other than hitherto mentioned numerous other factors that have been attributed to stress in medical students, they are: home sickness, living conditions in hostel, quality of food in hostel, lack of study environment, vastness of academic curriculum & difficulty in reading it, frequency of examinations, non-availability of adequate clinical material, indifferent/biased behaviour of teachers, financial problems, conflict with friends and seniors, no enough time for revision, lack of time for recreational activities, difficulty in the journey back home, high parental expectations, fear of failure in exams, unemployment after graduation and insecurity regarding professional future were the sources of stress reported by medical students in previous studies (Nazeer & Sultana, 2014, Sreeramreddy et al., 2007).

Taking into consideration the ill effects of stress on health, it calls for interventions like early detection of stress, sensitizing the stake holders by creating awareness and training students for effective management of stress. One such stress management could be effective use of Coping strategies. Coping strategies that are already being used by the residents, needs to be considered for their effectiveness and beneficence. Effective coping strategies can be taught to them to reduce their stress levels without decompensating. Resident doctors in our study robustly used coping strategies that were beneficial such as Self-distraction, Active coping, Emotional support, Instrumental support, Positive reframing, Planning and Acceptance. These are categorized under adaptive coping strategies.

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Significant stress elaborates more number of coping strategies including those which are not beneficial to the individual like substance use (Bassols et al., 2015). Substance use was least utilized coping strategy in our study. This finding is in contradiction to popular belief that drug abuse is common in medical profession (Aston & Kamali 1995). This could be probably because of awareness of its dangerous effects or even because of underreporting the use for the fear of being judged or advised or mandated to quit.

An earlier study reports that stressed medical students used more escape-avoidance tactics than non-stressed students, even though it is one of the maladaptive coping styles. Escape-avoidance coping involves disengaging or staying away from a stressful situation and its behavioral, cognitive or emotional consequences (Bassols et al., 2015).

Barring substance use, other coping strategies were used in significantly higher proportions by the stressed than non-stressed residents. This probably might be because of fact already stated that substance use was overall less was not seen as a way of coping to stress. All the other coping strategies were evoked frequently in stressed residents. This finding could be explained by the finding that the perceived stress elaborates more number of coping strategies indiscriminately (Bassols et al., 2015). It could also be explained by another possibility that stressed residents due to their indiscriminate use of coping strategies which included maladaptive coping, were inefficient in reducing stress and thus maintaining the cycle of increased stress eliciting maladaptive coping and maladaptive coping accentuating the stress further.

In our study male residents were using Substance-use coping more than female residents. This trend depicts the social norm. Drug use in females in Indian society is a taboo & stigma whereas drug use in males is acceptable in society and it may also evoke sympathy in view of their psychological distress.

Residents in first year of the course used substance more than residents of second and third year and they (first year residents) also had lesser use of Self distraction and Acceptance coping. This difference is probably explained by the gap in maturity with respect to thinking and understanding capability about the things that are more beneficial to them. Acceptance of the situation without getting perturbed, conscious deviation of attention to something calming from the anxiety provoking stimuli and refraining oneself from easy but detrimental way (drug use) to overcome distress needs greater emotional regulation, which comes with experience and maturity (Kulkarni et al. 2016).

Humor was also frequently used coping strategy by males than females in our study. This could be because males are more externalizing in their behavior and try to express-out their anxiety with wit. This finding correlates with an earlier study (Bhadania et al. 2011).

Marriage, being an important life event, brings significant change in person's thinking, perception and behavior (Wilson et al, 2005). This could be clearly seen in our study that married residents significantly differed in the choice of coping strategies as compared to unmarried residents. Self-distraction, Planning and Emotional support were more frequently used in former group. The difference could be explained based on the fact that marriage increases social support system, thus increasing the availability of certain coping ways like emotional support. Furthermore from the multitudinous interpersonal interactions that happen in marriage, the effective ways emerge by trial & error to deal with stressful situation. This process is also cognitively challenging thus modifying the cognitive styles.

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There was difference in types of coping styles used between the residents who had chosen their branch of specialization as preferential and who had to compromise their choice of branch. Those who had compromised showed higher use of Acceptance, Venting, Emotional support and Religious coping. This suggests that those who compromised had higher acceptance of the situation, venting out their distress and seeking for emotional support from others and involvement in religious practices to overcome stress. This gives the idea of the underlying personality of the group, which might be flexibility or neuroticism as compared to other group.

Sreeramareddy et al. in 2007 (Sreeramareddy et al., 2007) study reported that Coping strategies commonly adopted by the medical students during the stress were positive reframing, planning, acceptance, active coping and self-distraction.

Whereas in a study done by Bamuhair et al. in 2015, (Bamuhair et al., 2015) found that Blaming-self, Seeking support, Religion, Planning, Self-Distraction were utilized commonly by the medical students.

When clinical and non-clinical residents were compared on stress levels and coping strategies used there were no significant differences seen in our study. Though this looks quite surprising, it suggests that stress can be present irrespective of work pressure. Similar finding was also reported by Bhadania et al. (Bhadania et al., 2011)

On dimension reduction analysis using Principal Component Analysis the 14 Coping strategies were grouped into three main groups. The first group consisted of Humor, Acceptance, Positive reframing, Active coping, Planning and Self-distraction Coping strategies. These coping were based mainly on cognitive domain hence could be named as *cognitive coping strategies*. The second group consisted of Emotional support, Instrumental support, Religious, Venting and Self-blame which uses mainly emotional domain to cope, thus it can be grouped under the name of *emotional coping strategies*, while the remaining coping strategies like Behavioural disengagement, Denial and Substance use grouped together which are detrimental to oneself, hence they could be termed under *maladaptive coping strategies*. Our study sample used both cognitive and emotional coping strategies more than maladaptive coping strategies.

CONCLUSION

Stress level was high in resident doctors. Residents with female gender, workplace difficulties, personal maladjustment and sleep deprivation had higher stress levels. Ways of coping differed significantly among the resident doctors. The study highlights the fact that the stress is ubiquitous and inevitable more so in the field of medicine. Stress can't be avoided altogether but can be dealt effectively. Coping styles can alter the course and influence the outcome of stress. Improper and ineffective management of stress has major impact on physical and mental health of doctors. This can be reflected in their capability of discharging duties efficiently. Importance of addressing the stress and improving the ways de-stress could not be emphasized more. It is imperative for medical educators to be aware of the prevalence and cause of stress in students and train them with stress management skills to improve their ability to meet the demands of professional course (Abdulghani et al. 2011)

Strengths & Limitations

There are certain strengths of the study; residents of almost all the departments were included in fair unbiased manner, residents were working in government and private hospitals thus were exposed to both scenarios & limitations of the study were: it was a single cross

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sectional assessment, multiple assessments would have been better; study was done at a single center; study didn't include other psychological factors like personality, emotional quotient; study used self-assessment scales and thus subjected to reporting bias which is inevitable in exploratory psychological based assessment.

Implications

Medical education is becoming more complex thus increasing the burden & stress on students. Medical education traditionally focuses on knowledge based teaching more than competency based education, it is necessary for us to take into consideration the large number of studies reporting higher stress levels in students and call for appropriate measures to curb this at the earliest. Soft skills such as stress management are to be a mandatory part in medical education to make them capable of managing their own stress as well as maintain their health optimally while delivering health to others.

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Conflict of Interest

The authors carefully declare this paper to bear not conflict of interests

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TABLES

Table 1. Correlates of Perceived Stress

Variable	Value	P
Age *	r = 0.022	0.725
Gender #	Z = -4.511	.000
Marital status +	X ² = 3.28	.193
Religion +	X ² = 1.62	.445
Substance users #	Z = -1.594	.111
Year of post-graduation +	χ ² = 3.788	.150
Choice of branch #	Z = -0.178	.859
Work Difficulty #	Z = -3.778	.000
Sleep hours *	r = -0.163	0.01
Personal Maladjustment #	Z = -3.232	.001

* - Spearmans Correlation test, # - Mann Whitney U test, + - Kruskal Wallis test. @- P < 0.001,

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Table 2. Independent t test between Stressed and Not stressed groups on coping styles

Coping styles	Stressed (N=202) Mean Std. Deviation	Not stressed (N= 49) Mean Std. Deviation	t	P	95% CI	
					Lower	Upper
Self-Distraction	4.47 (1.63)	3.65(2.21)	2.93	.004	.27	1.38
Active Coping	4.82(1.57)	3.65(1.84)	4.51	.000	.66	1.68
Denial	3.21(1.34)	2.32 (.98)	4.33	.000	.48	1.29
Substance Use	2.60(1.18)	2.59(1.56)	0.06	.952	-.39	.41
Emotional Support	4.46 (1.74)	3.28(1.36)	4.42	.000	.65	1.71
Instrumental Support	3.58 (1.55)	2.55 (1.19)	4.35	.000	.57	1.50
Behavioural Disengagement	3.79(1.49)	2.57(1.24)	5.32	.000	.77	1.68
Venting	4.40(2.12)	3.06 (1.51)	4.16	.000	.71	1.97
Positive Reframing	4.89 (2.29)	3.89 (2.09)	2.76	.006	.28	1.70
Planning	3.80 (2.16)	2.65 (1.19)	3.60	.000	.52	1.79
Humor	4.86 (1.86)	3.63 (2.10)	4.04	.000	.63	1.83
Acceptance	4.054(1.86)	3.40 (2.06)	2.13	.034	.05	1.24
Religion	4.85(2.18)	3.51(1.72)	4.00	.000	.68	2.00
Self-Blame	3.90(1.73)	2.71(1.48)	4.43	.000	.66	1.72

Table 3. Rotated Component Matrix of Coping styles

Coping Dimensions	Component		
	1	2	3
eigen values	5.218	1.369	1.126
%of variance	37.274	9.78	8.04
Humor	0.701		
Acceptance	0.688		
Positive reframing	0.669		
Active coping	0.664		
Self distraction	0.614		
Planning	0.735	0.421	
Emotional support	0.347	0.655	
Religious	0.4	0.436	
Venting		0.754	
Instrumental support		0.682	
Self -blame		0.595	
Behavioural disengagement		0.393	0.657
Denial		0.447	0.623
Substance use			0.698

KMO sample adequacy = 0.873, Bartlett's Chi square = 1168.863 , P< 0.0001