

Prevalence, severity, causes and drugs used for depression, stress and anxiety among junior doctors in a tertiary care teaching hospital in South India

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ABSTRACT

Background: Due to various reasons, junior doctors experience high level of stress in their workplace. However, very few studies have been done to analyze the stress levels and pertinent causative factors among junior doctors in India. So the present study was done to investigate the prevalence, severity and causes of depression, stress and anxiety among junior doctors along with the drugs used to mitigate them.

Methods: A cross sectional, questionnaire based study was conducted on a total of 114 junior doctors who include 80 interns and 34 post graduates belonging to 2013-14 batch, utilizing the 21-item depression, anxiety and stress scale (DASS 21). A personal interview was also conducted to enquire into the causes responsible for the stress and the medications employed by them to overcome it.

Results: Among the interns, the mean depression score was 5.64 ± 3.85 , mean anxiety score was 6.69 ± 3.86 and mean stress score was 7.33 ± 3.22 . Among the post graduates, the mean depression score was 4.73 ± 2.15 , mean anxiety score was 5.18 ± 3.19 and mean stress score was 7.82 ± 2.68 . The percentage of junior doctors who had severe or extremely severe scores of depression was 11.40%, anxiety was 40.35% and stress was 9.65%. Alcohol was the most commonly used psychotropic drug (60.87%). Frequent calls during night duties and late working hours were the leading causes for stress among junior doctors.

Conclusions: Overall higher stress was observed among post graduates compared to interns and females compared to males. Anxiety was more severe compared to depression and stress among junior doctors. Reducing working hours and increasing workplace flexibility are some measures to reduce stress among the junior doctors.

Keywords: Stress, Junior doctors, DASS 21, Alcohol

INTRODUCTION

Mental health is regarded as an integral and essential component of health by the World Health Organization.¹ Depression is characterized by a variable combination of low mood, loss of interest or pleasure, feelings of guilt, low self-esteem, disturbed appetite, disturbed sleep or disturbed concentration. Anxiety and stress are characterized by feelings of tension, worried thoughts and physical changes.

Doctors have a high prevalence of mental health problems compared to the general population.² They are also known to have higher rates of problems when compared to the general public due to marital discord, drug abuse and suicide.³ Despite the above reasons, there

is evidence that many doctors do not bother adequately for their own medical care. Many do not have their own general practitioner.³ Doctors appear to be reluctant patients.⁴ They look after their health in a haphazard way, through corridor consultations, self-medication and sometimes inappropriate direct referrals for themselves and their family members to specialist services.^{5,6} As it has been suggested that there is a relationship between the general well-being of doctors and the standard of medical practice.⁷ The concern is that unhealthy doctors would provide a poor quality of medical service to their patients.

Junior doctors include interns, who are fresh graduates undergoing the final stage of their training in medical hospitals before they were granted with full license to

practice and the post graduates of various departments. The well-being and the health of these doctors requires special attention so that they could improve, excel and later develop into a well-adjusted and a capable physicians for providing better care to the communities they serve in their career.

Junior doctors being lower in cadre, the first people of contact with the patients and lack of sufficient experience puts them in a state of severe stress. Several reports indicate that the time period during internship and post-graduation are especially associated with severe stress.⁸ High prevalence of anxiety and depression has been reported among junior doctors in western countries.^{9,10} Female doctors tend to be more vulnerable than their male counterparts.¹¹

Numerous factors for anxiety and stress among junior doctors have been documented such as frequent night duties, long working hours, multiple responsibilities, fear of committing clinical errors, sleep deprivation, minimal holidays, talking to distressed relatives and serious treatment failures.⁸ These high levels of fatigue and distress have also been independently associated with self-perceived medical errors in junior doctors.¹² Despite the introduction of numerous steps to reduce working hours, improve education and clinical supervision, the incidence of psychological morbidity amongst junior doctors remains high.¹³

However, very few studies have been done to analyze the stress levels and pertinent causative factors among junior doctors in India. In the present study, attempts have been made to investigate the prevalence, severity and causes of depression, stress and anxiety among junior doctors along with the drugs used to mitigate them.

METHODS

This was a cross sectional, questionnaire based observational study done on a total of 114 junior doctors who include both 80 interns and 34 postgraduate students of 2013-14 batch undergoing training in Vinayaka Missions Medical College and Hospital, which is a tertiary care teaching hospital located in coastal town of south India.

All the junior doctors of either sex who were interested to participate in the study were included and those junior doctors who were not interested to participate in the study were excluded. A written informed consent was taken from them before the initiation of the study. For assessing the severity of depression, anxiety and stress among the junior doctors, we employed a standard scoring questionnaire called as depression, anxiety and stress scales (DASS) which is a well-validated tool to measure negative emotional states with specified score ranges indicating different severity levels from normal to extremely severe.¹⁴ It is a 21-item questionnaire which includes three self-report scales designed to measure the

negative emotional states of depression, anxiety and stress. Each of the three scales contains seven items or statements divided into subscales with similar content. The depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation and lack of interest or involvement, anhedonia and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety and subjective experience of anxious affect. The stress scale is sensitive to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal and being easily upset/agitated, irritable/over-reactive and impatient.

Each statement has four options and the scoring is done as follows: Did not apply to me at all (never)=0; Applied to me to some degree, or some of the time (sometimes)=1; Applied to me to a considerable degree, or a good part of time (often)=2; Applied to me very much, or most of the time (almost always)=3.

Scores for depression, anxiety and stress are calculated by summing the individual scores of the relevant items and categorized according to the severity level as normal, mild, moderate, severe and extremely severe as follows¹⁵

Table 1: Scores for depression.

	Depression	Anxiety	Stress
Normal	0-4	0-3	0-7
Mild	5-6	4-5	8-9
Moderate	7-10	6-7	10-12
Severe	11-13	8-9	13-16
Extremely severe	14+	10+	17+

Along with the DASS, 21 questionnaire, a personal interview was also conducted to enquire about the various causes responsible for the stress, anxiety and depression as perceived by the junior doctors and the medications employed by them to overcome the above conditions.

RESULT

A total of 114 junior doctors participated in the study, out of which 80 were interns and the remaining 34 were postgraduates. Among the 80 interns who participated in this study, 46 (40.35%) were males and 34 (29.82%) were females (Figure 1). The male interns had a mean depression score of 5.15 ± 3.73 , their mean anxiety score was 6.15 ± 3.98 and the mean stress score was 7.37 ± 3.51 . The female interns had the mean depression score of 6.29 ± 3.96 , their mean anxiety score was 7.41 ± 3.62 and the mean stress score was 7.26 ± 2.82 . The total interns participated was 80 (70.18%) subjects, with a mean depression score of 5.64 ± 3.85 , their mean anxiety score was 6.69 ± 3.86 and the mean stress score was 7.33 ± 3.22 . Among the 34 postgraduates who participated in this study, 23 (20.18%) were males and 11 (9.65%) were females (Figure 1). Among the male postgraduates, the mean depression score was 6.26 ± 4.96 , their mean anxiety

score was 6.35 ± 4.68 and the mean stress score was 8.30 ± 5.10 .

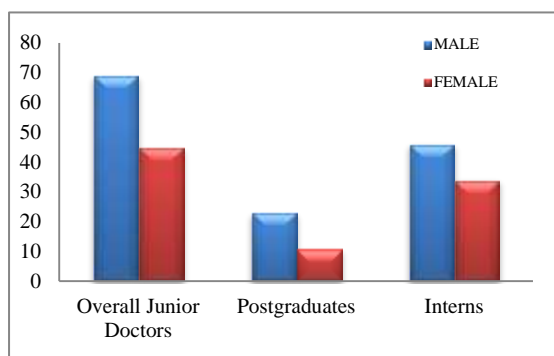


Figure 1: Sex wise distribution of junior doctors who participated in the study.

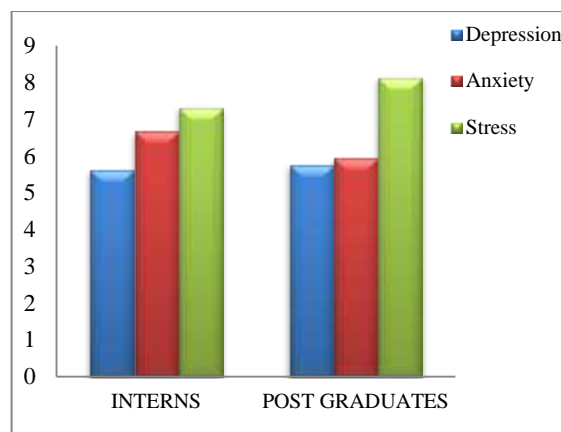


Figure 2: Mean scores of depression, anxiety and stress among junior doctors.

Table 2: Mean scores of depression, anxiety and stress among junior doctors.

Type of junior doctor	Total number of subjects(%)	Mean depression score	Mean anxiety score	Mean stress score
Interns-M	46 (40.35%)	5.15 ± 3.73	6.15 ± 3.98	7.37 ± 3.51
Interns-F	34 (29.82%)	6.29 ± 3.96	7.41 ± 3.62	7.26 ± 2.82
Interns-Total	80 (70.18%)	5.64 ± 3.85	6.69 ± 3.86	7.33 ± 3.22
Postgraduate-M	23 (20.18%)	6.26 ± 4.96	6.35 ± 4.68	8.30 ± 5.10
Postgraduate-F	11 (9.65%)	4.73 ± 2.15	5.18 ± 3.19	7.82 ± 2.68
Postgraduate-Total	34 (29.82%)	5.77 ± 4.28	5.97 ± 4.24	8.15 ± 4.43
Total	114 (100%)	5.68 ± 3.96	6.47 ± 3.97	7.57 ± 3.62

Among the female postgraduates participated in this study, they had a mean depression score of 4.73 ± 2.15 , the mean anxiety score was 5.18 ± 3.19 and the mean stress score was 7.82 ± 2.68 , which sums up a total post graduates participated was 34 (29.82%) with the mean

depression score of 5.77 ± 4.28 , their mean anxiety score was 6.47 ± 3.97 and the mean stress score was 8.15 ± 4.43 . The overall junior doctors participated were 114 (100%), which had a mean depression score of 5.68 ± 3.96 , the mean anxiety score been 6.47 ± 3.97 and the mean stress score was validated as 7.57 ± 3.62 . (Table 2, Figure 2)

Table 3: Severity of depression according to DAS scale among junior doctors.

Depression	Postgraduate male	Postgraduate female	Postgraduate total	Interns male	Interns female	Interns total	Overall total	Total percentage
Normal (0-4)	10	5	15	24	12	36	51	44.74%
Mild (5-6)	4	4	8	6	5	11	19	16.67%
Moderate (7-10)	4	2	6	12	13	25	31	27.19%
Severe (11-13)	2	0	2	4	4	8	10	8.77%
Extremely severe (14+)	3	0	3	0	0	0	3	2.63%
Total	23	11	34	46	34	80	114	100%

The severity of depression according to DAS scale among junior doctor is shown in Table 3. The total number of junior doctors who had normal level of depression score was 51 (44.74%), who had mild level of

depression score was 19 (16.67%), who had moderate level of depression score was 31 (27.19%), who had severe level of depression score was 10 (8.77%), who had extremely severe level of depression score was 3

(2.63%). Table 4 represents the severity of anxiety according to DAS scale among junior doctors. The total number of junior doctors who had normal level of depression score was 31 (27.19%), who had mild level of depression score was 21 (18.42%), who had moderate level of depression score was 16 (14.04%), who had severe level of depression score was 18 (15.79%), who had extremely severe level of depression score was 28 (24.56%).

Table 5 represents the severity of stress according to DAS scale among junior doctors. The total number of junior doctors who had normal level of depression score was 63 (55.26%) who had mild level of depression score was 19 (16.67%) who had moderate level of depression score was 21 (18.42%) who had severe level of depression score was 8 (7.02%) who had extremely severe level of depression score was 3 (2.63%).

Table 4: Severity of anxiety according to DAS scale among junior doctors.

Anxiety	Postgraduate male	Postgraduate female	Postgraduate total	Interns male	Interns female	Interns total	Overall total	Total percentage
Normal (0-3)	6	3	9	17	5	22	31	27.19%
Mild (4-5)	6	2	8	6	7	13	21	18.42%
Moderate (6-7)	5	4	9	3	4	7	16	14.04%
Severe (8-9)	1	1	2	10	6	16	18	15.79%
Extremely severe (10+)	5	1	6	10	12	22	28	24.56%
Total	23	11	34	46	34	80	114	100%

Table 5: Severity of stress according to DAS scale among junior doctors.

Stress	Postgraduate male	Postgraduate female	Postgraduate total	Interns male	Interns female	Interns total	Overall total	Total percentage
Normal (0-7)	13	6	19	27	17	44	63	55.26%
Mild (8-9)	3	3	6	6	7	13	19	16.67%
Moderate (10-12)	1	1	2	9	10	19	21	18.42%
Severe (13-16)	3	1	4	4	0	4	8	7.02%
Extremely severe (17+)	3	0	3	0	0	0	3	2.63%
Total	23	11	34	46	34	80	114	100%

Interns and post graduates had reported about the substantial use of several classes of anti-depressants among which the most commonly used agent was selective serotonin receptor inhibitors (SSRIs) like fluoxetine hydrochloride, fluvoxamine maleate and citalopram hydrobromide.

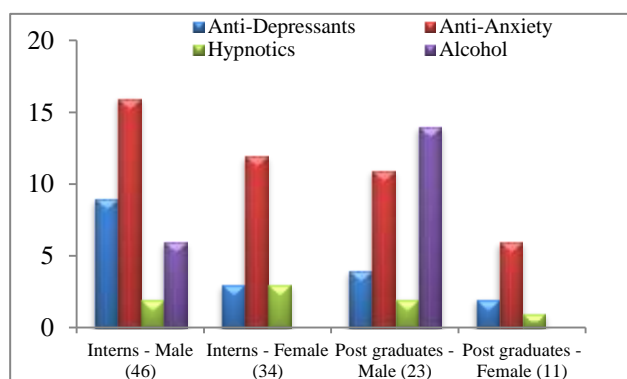


Figure 3: Use of medications to overcome depression, anxiety and stress by junior doctors.

The use of anti-depressants were more common in male interns (19.57%) compared to their female counterparts (8.82%). The use of anti-anxiety drugs especially the sedatives like benzodiazepines were the most common class, they include alprazolam, clonazepam, lorazepam and diazepam. In our study, the female post graduates took more sedatives (54.55%) when compared to the least consumed male interns (34.78%).

The non-benzodiazepines hypnotics (Z-drugs) specifically the drugs like zaleplon, zolpidem and zopiclone were also equally used by the doctors to aid in shift work. The female post graduates used more of hypnotics (9.09%) while the male interns took less of hypnotics (4.35%). Even alcohols had been used commonly by the doctors while they had post duty off and more commonly among the male post graduates (60.87%) and less when compared to male interns (13.04%) in our institution (Table 6, Figure 3).

Table 7 represents the causes responsible for depression, anxiety and stress among junior doctors, which clearly shows that the frequent calls during night duties (100%)

and the long working hours (100%) were experienced by all the junior doctors and remained the major reason for depression, anxiety and stress, followed by the expectation of senior doctors (93.86%).

Heavy workload (92.11%) stood the next reason responsible for depression, anxiety and stress among junior doctor. The least experienced cause among the junior doctors was the sleep deprivation (71.93%).

Table 6: Use of medications to overcome depression, anxiety and stress by junior doctors.

Total subjects	Anti-depressants	Anti-anxiety	Hypnotics	Alcohol
Interns - male (46)	09 (19.57%)	16 (34.78%)	02 (4.35%)	06 (13.04%)
Interns - female (34)	03 (8.82%)	12 (35.29%)	03 (8.82%)	00 (0%)
Post graduates - male (23)	04 (17.39%)	11 (47.83%)	02 (8.69%)	14 (60.87%)
Post graduates - female (11)	02 (18.18%)	06 (54.55%)	01 (9.09%)	00 (0%)

Table 7: Causes responsible for depression, anxiety and stress among junior doctors

Questionnaires	Number of subjects	Total Percentage (%)
Frequent calls during night shift	114	100
Long working hours	114	100
Heavy workload	105	92.11
Fear of committing clinical errors	88	77.19
Multiple responsibilities	102	89.47
Tension with other staffs	85	74.56
Expectation of senior doctors	107	93.86
Unequal sharing of duties	97	85.09
Sleep deprivation	82	71.93
Less/minimal holidays or rest	99	86.84

DISCUSSION

There are very few studies done to assess the stress levels among junior doctors and no such study was reported from south India. Our study for the first time comprehensively analyzed not only the prevalence and severity of depression, stress and anxiety among junior doctors but also analyzed the various causes responsible for the stress as perceived by the junior doctors along with the drugs used to mitigate them.

In this study, stress scores were higher in post graduates whereas anxiety and depression scores were higher in interns. The higher stress scores in postgraduates can be explained by higher responsibilities, more frequent night duties of post graduates compared to interns. This finding falls in line with previous study done by Sharma et al.¹⁶ On the other hand, the fresh interns often get more excited and get more anxious towards facing the clinical scenarios when they were exposed to it. This could be the majority

factor which determines the higher anxiety scoring when compared to the post graduates.

Overall, female junior doctors had higher anxiety and depression score compared to males. This is compatible with previous studies which showed that generally females have higher depression and anxiety levels than male junior doctors.^{9,10} This is also consistent with other studies which concluded that female junior doctors are more likely to experience depression.¹⁷ It was observed that junior doctors suffering from depression feel guilty about sharing their emotional state with others or are reluctant to receive treatment.¹⁸ In another study, it was found that almost half of depressed junior doctors reported a family history of depression.¹⁹ Valko and Clayton found that 30% of junior doctors showed depression just a year after their graduation.²⁰

The total mean stress among junior doctors was found to be 7.57 ± 3.62 and the males showed more stress than the female junior doctors that was in contrast to other studies which demonstrated that females perceived a higher level of stress than males.²¹ Our findings were also inconsistent with an international study, in which females reported more stress than males during their postgraduate training years.²² In our study, the male post graduates showed more stress than the male interns which was in line with a study that showed the stress levels among resident doctors were more compared to their interns.²³ A study conducted in Goa Medical College reported 80% prevalence of stress among junior doctors.²⁴ There were many studies that indicate higher stress levels among resident doctors.²⁵ But only a few reports have been published about stress and depression levels among interns.²⁶

In our study, majority of junior doctors (40.35%) were having severe and extremely severe anxiety level, when compared to those (11.40%) who experienced severe and extremely severe depression and those (9.65%) who had severe and extremely severe stress which was consistent with the other studies stating that marked amount of anxiety was found among the junior doctors.²⁷

In our study, alcohol was exclusively used by males to overcome stress and anxiety and it was the most common psychotropic substance used. This is not a surprising outcome since alcohol is one of the socially-acceptable psychotropic substance worldwide.²⁸ Excessive alcohol use can be a reflection of depression. More specifically, it can be a way of dealing with depression.²⁹ Also it was found that anti-anxiety drugs were the most common psychotropic drugs used by female junior doctors. International studies suggest that 50-80% of night duty interns have at least one prescription for psychotropic medication. Among anti-depressants, SSRI were more commonly used compared to tricyclic antidepressants (TCAs). Even though all anti-depressants on the market are potentially effective, a major reason for such widespread use of SSRIs is their safety and tolerability relative to TCAs. Females are found to use more psychotropic drugs in a sense to fight their depression compared to male students.³⁰ Sedative-hypnotics were also used to overcome insomnia as sleep deprivation was also one of the important factors in causing stress among junior doctors. Emergency medicine interns report substantial use of several classes of hypnotics to aid in shift work. Despite anecdotal reports, use of prescription stimulants appears rare and is notably less common than use of sedatives and non-prescription stimulants.

The present study showed that frequent calls during night duties and the long working hours were the most important factors for the junior doctors to cause stress compared to heavy work load. This is in contrast with the results of study done by Tofta et al where excessive workload was the important source of stress in junior doctors.³¹ In addition, careers in medicine have been known to be more stressful.³²

Despite the effort to cut off the working hours in recent years, it is still a regular practice for post graduates to work more hours in a week. Night duties are taken usually one in three or four nights. They often stay late to finish the day's work. Patient numbers and patient turnover rate were also high, thus adding to the work pressure. Fatigue and sleep deprivation leads to deterioration in judgment, reaction time, as well as physical and psychological stress, thus adversely affecting work performance.³³ Reducing working hours, increasing workplace flexibility, balanced duty scheduling, providing refreshing halls to relax during late working hours are some measures to reduce stress among the junior doctors.

In our study, there are few limitations such as small sample size and reporting bias which might have happened due to the subjective interpretations. We have also not taken family history of depression, anxiety and stressful events into account.

CONCLUSION

The study shows prevalence of higher stress scores among post graduates compared to interns. Overall females

perceived a higher level of stress than male junior doctors. As far as severity is concerned anxiety showed higher severity compared to depression and stress among the junior doctors. Frequent calls during night duties and late working hours are the leading causes responsible for depression, anxiety and stress among junior doctors. Alcohol in males and benzodiazepines in females were the most common drugs to get relief from stress among the junior doctors. Reducing working hours and increasing workplace flexibility are some measures to reduce stress among the junior doctors.

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