



# Rate of Depression, Anxiety and Stress among Interns/House Officers in Nigeria

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## Abstract

**Background** Medical school is one of the most academically and emotionally demanding programs. The mandatory house job and internship year adds to the already high level of stress associated with medical school. The amount of time and effort invested is considerable. This dedication could be harmful to the young trainees' health, causing worry, despair, and stress. This study was undertaken to determine the rate of anxiety, depression, and stress among interns and house officers in Nigeria.

**Materials and Methods** This is a descriptive cross-sectional survey in which 138 participants were conveniently recruited. The study used a self-report questionnaire with two sections that took approximately 10 minutes to complete. The first section collected sociodemographic information of the participants and the Depression, Anxiety, and Stress Scale (DASS-21) was used in the second segment to assess depression, anxiety, and stress.

**Results** The rate of depression, anxiety, and stress among the participants in this study is 37.3, 42.5, and 15.7%, respectively. In this study, only duration of training has significant association with depression and stress ( $p < 0.05$ ). However, all other socio-demographic variables showed no significant association with depression, anxiety, and stress ( $p > 0.05$ ).

**Conclusion** The significantly high level of depression, anxiety, and stress found among the participants revealed that depression, anxiety, and stress are of public mental health concern. These may have negative effects on cognitive functioning, learning, and patient care.

## Keywords

- ▶ anxiety
- ▶ depression
- ▶ stress
- ▶ intern
- ▶ house officer

## Introduction

Although clinical training aims to produce competent medical and allied health professionals to treat the sick and advance

medical knowledge, it is one of the most academically and emotionally demanding programs.<sup>1</sup> The mandatory house job and internship year further compounds the stress related to clinical training. The time and commitment devoted are

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extensive. This commitment may harm the young trainees' well-being, precipitating anxiety, depression, and stress. Studies have identified a high prevalence of depression and anxiety among young medical professionals.<sup>2</sup>

Stress is a feeling of emotional pressure resulting from the body's reaction to life events.<sup>3</sup> As medical interns and house officers progress with their training, they face challenges such as academic pressures, competition with peers, lack of leisure time, and exposure to patients' suffering. These challenges make the training more stressful. High levels of stress harm physical and mental health.<sup>4</sup> In 2011, 31% of 42 house officers in teaching hospital reported high stress levels. Several studies have reported depression, anxiety, and cardiovascular diseases to be adverse outcomes of stress.<sup>5,6</sup>

Depression is a mood disorder that affects how a person feels, thinks, and handles activities, such as sleeping or working.<sup>7</sup> The World Health Organization<sup>8</sup> estimates that more than 264 million people are affected globally. Symptoms of depression may include slowness of thought, concentration problems, and indecisiveness. These symptoms may cause academic challenges for young clinical professionals.<sup>9</sup>

The National Health Service, Scotland<sup>10</sup> defines anxiety as "a feeling of unease, such as worry or fear, which can be mild or severe." Symptoms of anxiety include headache, paraesthesia, fasciculations, and shortness of breath, palpitations, tachycardia, chest pain, and tremors. Recent studies reported a prevalence of anxiety (60.7–63.7%), depression (42.9%), and stress (57.1%) among house officers working in Malaysia.<sup>11</sup> It is worthy of note that these may lead to personal or professional image harm. Negative impact may include diminished commitment, substance abuse, suicide ideation, clinical incompetency, medical errors, and poor job performance. These unwanted consequences will eventually affect the quality of care offered to patients.<sup>12</sup>

Many studies have investigated the prevalence of anxiety, depression, and stress among medical interns and house officers in developed countries. However, there is insufficient information about such study in a developing country, such as Nigeria. Therefore, this study was carried out to investigate the rate of anxiety and depression among interns and medical house officers in Nigeria. Also, to assess the relationship between demographic characteristics of interns and medical house officers and their perceived stress level, as well as the relationship between perceived stress levels and rate of anxiety and depression among interns and medical house officers in Nigeria.

## Methods

This was a descriptive cross-sectional survey aimed at determining the rate of anxiety, depression, and stress among interns and house officers in Nigeria. In this study, purposive sampling technique was used to recruit participants into this study. Also, all consenting interns and house officers available at the time of the survey were included and interns or house officers not available at the time of the survey were excluded from the study.

The sample size was determined using the formula:

$$n = Z^2pq/d^{213}$$

where  $n$  = the desired sample size;  $Z$  = standard normal deviation set at 1.96, which corresponds to the 95% confidence interval;  $p$  = prevalence of depression from a previous study in Nigeria among pharmacy students which was 44.6%;<sup>14</sup>  $q$  = complimentary probability = 1.0,  $p = 1.0 - 0.446 = 0.554$ ; and  $d$  = the degree of accuracy (precision) set at 0.05 (acceptable margin error).

$$n = (1.96)^2 \times 0.446 \times 0.554 / 0.05^2; n = 194$$

194 + 17% (nonresponse rate from Abdul Rashid et al, 2019 study) = 227. Therefore, the estimated sample size was 227.

A self-report questionnaire consisting of two sections was used. The first part collects sociodemographic data such as age, gender, marital status, profession, institution of training, and duration of internship training. The second section measures depression, anxiety, and stress using the Depression, Anxiety, and Stress Scale (DASS-21).<sup>15</sup> This is a 21-item scale that is easy to apply in both clinical and nonclinical settings and is used to measure the negative emotions of individuals in the most recent week. Each subscale contains seven items. Participants were asked to respond on how closely the items applied to them in the past week on a four-level Likert scale, 0 through 3 points. The higher the score, the higher the level of negative emotions. Items 3, 5, 10, 13, 16, 17, and 21, items 2, 4, 7, 9, 15, 19, and 20, and items 1, 6, 8, 11, 12, 14, and 18 represent depression, anxiety, and stress, respectively. Scores obtained need to be multiplied by 2 to calculate the final score. Recommended cutoff scores for conventional severity labels (normal, moderate, severe) are as follows:

For depression: Normal 0 to 9, mild 10 to 13, moderate 14 to 20, severe 21 to 27, and extremely severe 28+

For anxiety: Normal 0 to 7, mild 8 to 9, moderate 10 to 14, severe 15 to 19, and extremely severe 20+

For stress: Normal 0 to 14, mild 15 to 18, moderate 19 to 25, severe 26 to 33, and extremely severe 34

The instrument was pretested to establish its psychometric property among the intended population and Cronbach's alpha of 0.91 was obtained. Those used for pretesting were excluded in the main study and the responses used in the pretesting were also excluded in the main analysis.

Ethics approval was sought and obtained from the University College Hospital Research Ethics Committee, Ibadan (UI/EC/21/0265). The data collection was made through e-questionnaire. The purpose of the study and the statement of informed consent were provided to the participants together with the online questionnaire (Google Form). The link was sent to interns and house officers of various training institutions and they were asked to forward it to their WhatsApp groups or to any interns' house officers they know in any training institution. A reminder link was regularly sent to increase response rate. Data collection was done from July 10, 2021 to October 13, 2021.

Data was analyzed using SPSS version 20 software package and summarized using a descriptive statistic of frequency and percentage. An inferential statistic of chi-square test was used to find association between prevalence of anxiety,

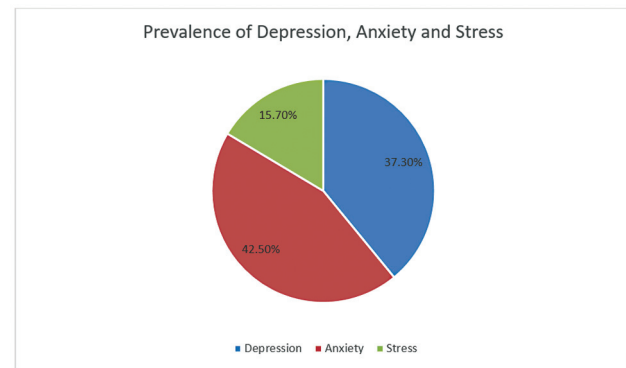
depression, and stress and age, gender, profession, and duration of internship training. Probability level was set at 0.05.

## Results

One hundred and thirty-eight responses were received during the data collection. However, four responses were excluded because the participants were not interns or house officers under consideration in this study. Therefore, only 134 responses were analyzed giving a response rate of 37.2%. ► **Table 1** showed that Majority, 77 (57.5%), of the respondents were within the age range of 20 to 25, while 55 (41.5%) were within 26 to 30 years and only 2 (1.5%) were above 30 years. Of the gender, male, 73 (54.5%), were slightly more than female, 61 (45.5%). With regards to marital status majority were single, 123 (91.8%), with only 11 (8.2%) married. Considering profession, majority were from physiotherapy, 59 (44%), followed by medical lab science, 29

**Table 1** Socio-demographic variables of the participants

Variables	n	%
<b>Age category</b>		
20-25	77	57.5
26-30	55	41.5
> 30	2	1.5
<b>Gender</b>		
Male	73	54.5
Female	61	45.5
<b>Marital status</b>		
Single	123	91.8
Married	11	8.2
<b>Profession</b>		
Dentistry	4	3
Medical lab science	29	21.6
Medicine	18	13.4
Nursing	7	5.2
Optometry	1	0.7
Pharmacy	14	10.4
Physiotherapy	59	44.0
Radiography	2	1.5
<b>Months of training</b>		
1-4 months	38	28.4
5-8 months	36	26.9
9-12 months	47	35.1
On extension	13	9.7
<b>Region of training institution*</b> (*17 missing responses)		
North	46	34.7
South	71	52.9



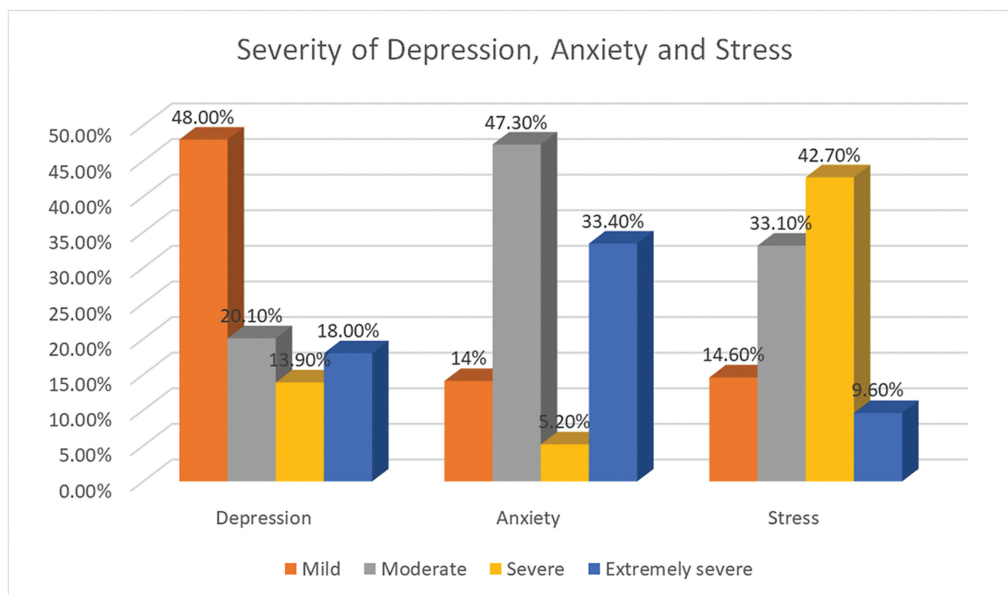
**Fig. 1** Prevalence of depression, anxiety, and stress.

(21.6%), and medicine, 18 (13.4%). When it comes to month of internship training, majority were in the last 4 months, 47 (35.1%), followed by those in the first 4 and 8 months of the training, 38 (28.4%) and 36 (26.9%), respectively, with only few (9.7%) on extension. Seventy-one (52.9%) were doing the training in southern part of the country with 46 (34.7%) in the north and 17 (12.5%) missing responses.

The prevalence of depression, anxiety, and stress among the participants in this study were 37.3, 42.5, and 15.7%, respectively (► **Fig. 1**). It is important to note that, out of the 37.3% depressed respondents, most of them were mildly depressed (48%) followed by those that are moderately depressed (20.1%), extremely severe (18%), and severely depressed (13.9%), respectively ► **Fig. 2**. Also, out the 42.5% respondents with anxiety, majority were having moderate anxiety (47.3%), 33.4% with extreme anxiety, and 14.1 and 5.2% with mild and severe anxiety, respectively. For the 15.7% stressed respondents, majority were severely stressed (42.7%) with 33.1% moderately stressed, 14.0% mildly stressed, and 9.6% extremely severely stressed. Also, ► **Table 2** showed that only duration of training has significant association with depression and stress ( $p < 0.05$ ). However, all other sociodemographic variables showed no significant association with depression, anxiety, and stress ( $p > 0.05$ ). Finally, as it can be seen in ► **Table 3**, depression, anxiety, and stress possess strong positive linear relationship with one another ( $p < 0.05$ ). This result implies an increase in one variable will result into an increase in the other variable.

## Discussion

A statistically significant relationship was found between the duration of training and depression, anxiety, and stress among the Nigeria house officers/interns. This could be probably due to the fact that the participants that are rounding up with their programs are expected to have experienced more depressing factors than those that are just starting their programs. Although there are conflicting evidences, results from this study shows that sociodemographic attributes such as sex, marital status, and age had no significant relationship with the reports of depression, anxiety, and stress.



**Fig. 2** Severity of Depression, Anxiety and Stress.

**Table 2** Association between socio-demographic variables and each of Depression, anxiety and stress; *n* = 134

Variables	$\chi^2$ /exact	<i>p</i> -value
<b>Depression</b>		
Age category	1.21	0.59
Gender	0.21	0.65
Marital status	0.16	0.69
Profession	4.73	0.73
Months of training	9.47	0.02*
Region of training institution	7.22	0.18
<b>Anxiety</b>		
Age category	0.33	1.00
Gender	0.03	0.88
Marital status	0.56	0.45
Profession	6.47	0.48
Months of training	4.60	0.21
Region of training institution	7.78	0.14
<b>Stress</b>		
Age category	3.43	0.15
Gender	0.20	0.65
Marital status	1.12	0.29
Profession	8.71	0.22
Months of training	8.51	0.03*
Region of training institution	3.78	0.58

Some reports have revealed that female health care practitioners are more likely to report depression, anxiety, stress, and dissatisfaction with work,<sup>16,17</sup> while others support the claim of this study, finding no relationship between

**Table 3** Relationship among depression, anxiety and stress: *n* = 134

Variables	<i>r</i>	<i>p</i> -value
Depression-Anxiety	0.72	0.00*
Depression-Stress	0.78	0.00*
Anxiety-stress	0.79	0.00*

\*= significant at *p* < 0.05.

gender and reports of depression among resident doctors.<sup>18,19</sup> More so, as regards the marital status, report from the study done among resident doctors at Tehran, Iran, documented that married physicians were significantly more depressed than single ones. The authors in this finding had attributed the difference in marital status to financial pressures and additional responsibilities usually associated with marriage. Whereas some support the claim of this study, claiming that marital status did not have any effect on the stress scores among the Saudi interns.<sup>20</sup> However, it has been shown that other sociodemographic characteristics have no relationship with reports of depression, anxiety, and stress. This resonates with the results obtained from this study. Our outcome in respect to marital status may also be accounted for by the small sample size of house officers/interns who were married (123 single against 11 married).

Although a significant percentage of interns/house officers reported being depressed or anxious (37.3 and 42.5%, respectively), and less than half of them reported being stressed (15.7%). This implies that the depressive and anxiety symptoms may have been caused by other factors other than job-related stress. These may include attitude of superiors, the demand of job on social and family life, dealing with death and terminal illness, unrealistic expectations of others, and accommodation problems.

On the contrary, this rate of depression among house officers/intern could be relatively high (37.3%) compared to that recorded among resident doctors (17.3%) in the South Eastern part of Nigeria.<sup>19</sup> This increase could be associated with some hospitals owing house officers/interns salaries as well as the strike crisis in the health sector in the country. It is also worthy of note that, the prevalence of anxiety among interns/house officers is considerably lower than the report of Ahmed et al.<sup>21</sup> in a similar study but among different population as Ahmed et al studied the frontline health workers during the coronavirus disease 2019 pandemic.

Similarly, unlike the 73% report of high levels of stress among interns in Saudi Arabia by Abdulghani et al,<sup>22</sup> this study recorded a low stress prevalence level (15.7% reported being stressed). However, Abdul Rashid et al<sup>23</sup> reported a similar prevalence of depression among house officers (38.4%), and a slightly higher prevalence of anxiety (53%) and stress (26%) among house officers. A job stress study conducted among junior doctors (house officers, medical officers, and residents with less than 5years working experience) in the University College Hospital (UCH) Ibadan, Nigeria revealed a 32% stress report.<sup>24</sup> This is twice the result obtained in this study. This wide difference may be attributed to the wider scope of the study in terms of participants and study population.

The percentage of participants who reported being depressed is slightly lower when compared with the depression report (41% incidence) among medical students in Taif ( $n = 181$ ) by Alzahrani.<sup>25</sup> This might be because of relief of some school stressors such as academic work and examinations or financial stressors following salaries received as house officers and interns or due to difference in the environment and sociodemographic characteristics of the participants. However, Abdulghani et al<sup>26</sup> who examined the stress level among medical students and stress level among medical interns in Saudi Arabia reported a higher report of severe stress levels (34.9% among medical interns; 25% among medical students). The difference may also be simply related to difference in sample size ( $n = 134$ ).

## Limitations

This study has a few drawbacks, despite the fact that it gives useful information on depression, anxiety, and stress. For starters, as we did not clearly recruited participants based on quota system from each specialty and the total number of participants was small, as such, the result cannot be generalized to all interns and house officers even though participants came from across all the geopolitical zones of the country. Also, as with all cross-sectional research, causality between the identified factors and depression and anxiety symptoms could not be established. In several fields, such as optometry, radiography, and dentistry, the sample size was quite small. Additionally, only 134 responses were gotten from the calculated 194 minimum sample size despite the use of 95% confidence interval.

Moreover, because this study was limited to interns and house officers, the results cannot be applied to all medical

facilities in Nigeria. Despite the fact that this study was conducted with interns/house officers in Nigerian large tertiary hospitals, the etiology of depression, anxiety, and stress was not discovered. In this study, response distortion is also considered a constraint. Volunteers may favor the extreme or moderate response style, particularly on a questionnaire's rating scale. One of the known disadvantages of self-administered questionnaires is negative affectivity bias. The correlations between depression, anxiety, and stress and the outcome variables may be significantly inflated as a result of this.

Furthermore, the sole metric used in this investigation was the DASS-21. DASS severity ratings are based on mean population scores acquired from large, highly varied groups, despite the fact that DASS-21 has strong psychometric qualities. It is only designed to be used as a screening test for depression, anxiety, and stress, and should not be used to replace a comprehensive psychiatric evaluation for diagnosis purposes.

As a result, implementing stratified random sampling, increasing the study's sample size, and performing a reliability test to eliminate information bias are all feasible routes for future research.

## Conclusion

The outcome of this study revealed that depression, anxiety, and stress are public mental health concern among the Nigerian house officers and interns as a significantly high level of depression, anxiety, and stress were found among the participants. These may have negative effects on cognitive functioning, learning, and patient care. Hence, house officers/interns need support and subsequent interventions to cope with stress.

### Funding

None.

### Conflicts of Interest

None declared.

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