INTRODUCTION
Stress as a term came into use from engineering and other physical sciences. These sciences consider stress to involve an application of enough force to an object or system to distort its original structure. The term has been defined in different ways because of the complex nature of stress itself. Seyle in 1936 first coined the word stress and described it as the non-specific response of the body to any demand for change. Job stress has, however been defined by Centers for Disease Control (CDC) as the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources or needs of the worker.

There is good evidence to show that doctors are at higher risk of stress than the general population because being a doctor is physically and emotionally demanding. The modern medical workplace is a complex environment, and doctors respond differently to it, some finding it stimulating and exciting, whereas others become stressed and burned out from the heavy workload. The medical workplace provides an environment where new skills are continually being learned, both as a result of medical knowledge evolving and because a doctor’s work changes, in part due to career development and progression through different jobs. The medical training process may be promoting an unhealthy lifestyle. While going through training, physicians are pushed to endure sleep deprivation, which can result in both cognitive impairment and emotional fragility. In addition, during both medical school and residency, physicians become introduced to the medical mentality of distancing from patients, taking on more and more work without complaint, and learning to compartmentalize feelings.

Keywords: Doctors, Job stress, Job satisfaction, Mental health

ABSTRACT
Introduction: Doctors respond differently to their complex work environment, some find it stimulating while others find it stressful. This study aimed to assess the prevalence and correlates of stress among junior doctors in a teaching hospital in Southwest Nigeria.

Methodology: A descriptive cross sectional survey of all junior doctors employed at the University College Hospital, Ibadan was carried out. Information was collected with a structured pretested questionnaire from 253 doctors. Descriptive statistics were generated. T-test, chi square and logistic regression analyses were conducted using SPSS version 16. Statistical significance was set at 5%.

Results: Mean age of respondents was 29.9 (±4.1) years, 61.3% were males, 59% had spent less than 5 years in medical practice, and 34.8% were married. Majority (79.4%) were resident doctors. Prevalence of stress, job dissatisfaction and poor mental health were 31.6%, 15.4% and 9.9% respectively. Age, gender, years of medical practice, religion, ethnicity and marital status were not significantly associated with job stress (p>0.05). Doctors who were stressed were more likely to be dissatisfied with their jobs (OR=2.33; CI=1.08-4.04) and to have poor mental health (OR=3.82; CI=1.47-9.95) than those who were not stressed.

Conclusion: The prevalence of stress in this study is high, and job dissatisfaction and poor mental health have been implicated as determinants of stress. As such, there should be an improvement in doctors’ welfare, health care facilities and delivery.
doctors include night calls, long hours of work, monotony of the job, less time for leisure, poor pay, poor working condition, etc.³

There is growing interest in and awareness of the importance of the psychosocial work environment for the delivery of high quality care. Job stress has been associated with poor mental and physical health.⁶,⁷ Physicians under stress are more likely to treat patients poorly, both medically and psychologically and are also more prone to make errors of judgment.⁸ Doctors have higher degree of psychological morbidity,⁹ suicidal tendencies and depression than the general population.¹⁰

There is dearth of documented research on the sources of stress among doctors in Nigeria. Eliciting the prevalence and causes of stress among UCH doctors will help in establishing intervention.

MATERIALS AND METHODS
A descriptive cross-sectional study was conducted among junior doctors at the University College Hospital, Ibadan. The hospital is located in the ancient South Western Nigerian city of Ibadan. It was established in 1952 to train medical students, undergraduate and postgraduate, provide hospital services and advance the frontiers of medical teaching and research. The hospital has fellowship programmes in all the major clinical disciplines including: internal medicine, surgery, paediatrics, obstetrics and gynaecology, general medical practice, community medicine, otorhinolaryngology, ophthalmology, psychiatry, anaesthesia, radiology, radiotherapy, dentistry and laboratory medicine.

A list of junior doctors (house officers, medical officers and residents) in UCH was obtained from the secretariat payroll records and questionnaires were self administered to all 160 resident doctors and 154 house officers and medical officers. Data was obtained using a structured self-administered one hundred and six-item questionnaire which was adapted from General Health Questionnaire (GHQ-12),¹¹ general practitioner job stress inventory¹² and job satisfaction scale.¹³

The main dependent variable was job stress. Questions on job stress were adapted from an article by Cary Cooper et al on job stress among general practitioners using the general practitioner job stress inventory.¹² Stress scores were calculated by assigning numerical values to the responses on a scale of 1-4, with 1 being no stress and 4 being a source of extreme stress. Job stress was dichotomised: scores ≤ 2 were categorized as ‘not stressed’ while scores ≥3 were categorized as ‘stressed’. Independent variables were age, gender, marital status, designation, department, ethnicity, religion, residence, mental health and job satisfaction. Job satisfaction was assessed on a nine-item likert scale using the job satisfaction scale¹³ and scores were dichotomized into ‘satisfied with job’ and ‘not satisfied with job’. Mental health was assessed with the GHQ-12¹⁴ using the scoring format of 0-0-1-1. The GHQ-12 has been validated in Nigeria by Gureje & Obikoya¹¹ and has been widely used in Nigeria.¹⁵,¹⁶ A cut off point of >2 was indicative of poor mental health while scores ≤ 2 was indicative of good mental health.

T-test was used to investigate association between age and job stress. Chi square test was used to investigate associations between categorical variables (gender, marital status, designation, department, ethnicity, religion, residence, job satisfaction and mental health) and job stress. Logistic regression was done to determine factors that significantly contribute to stress. All consenting doctors were included in the study while doctors on leave, outside posting or otherwise unavailable could not be studied.

RESULTS
Characteristics of doctors
Eighty-two percent of house officers and medical officers (126/154) and 79.4% of junior residents (127/160). A total of 253 questionnaires were analysed out

| Variables         | N (%) |
|-------------------|-------|
| Sex               |       |
| Male              | 155 (61.3) |
| Female            | 98 (38.7) |
| Total             | 253 (100.0) |
| Marital status    |       |
| Not married       | 165 (65.2) |
| Married           | 88 (34.8) |
| Total             | 253 (100.0) |
| Ethnicity         |       |
| Yoruba            | 159 (62.8) |
| Igbo              | 58 (22.9) |
| Hausa             | 10 (4.0) |
| Other             | 26 (10.3) |
| Total             | 253 (100.0) |
| Religion          |       |
| Christianity      | 220 (87.0) |
| Islam             | 30 (11.8) |
| Others            | 3 (1.2) |
| Residence         |       |
| Within UCH        | 137 (54.4) |
| Outside UCH       | 115 (45.6) |
| Total             | 252 (100.0) |
of the 300 questionnaires distributed, giving a response rate of 84.3%. Table 1 shows the socio demographic characteristics of respondents. The mean age of respondents was 29.93 (±4.11) years. About two-thirds of the respondents (155) were males and majority [220 (87.0%)] were Christians. With regards to marital status, 165 (65.2%) of the doctors were not currently married (i.e. widowed, separated or never married). The number of doctors who lived within the hospital premises [137 (54.4%)] was slightly higher than those who lived outside UCH [115 (45.6%)].

Of all respondents, 127 (50.2%) were resident doctors and 201 (79.4%) had spent less than 5 years in medical practice. The surgery and medicine departments had the highest proportion of doctors: 124 (49.0%) and 110 (43.5%) respectively as shown in Table 2.

Table 2: Job characteristics of doctors

| Variable                              | N (%)  |
|---------------------------------------|--------|
| **Department**                        |        |
| Surgery                               | 124 (49.0) |
| Medicine                              | 110 (43.5) |
| Laboratory medicine                   | 8 (3.2)  |
| Radio diagnostic therapeutics         | 11 (4.3)  |
| **Total**                             | **253 (100.0)** |
| **Designation**                       |        |
| House officer                         | 93 (36.8)  |
| Medical officer                       | 33 (13.0)  |
| Junior resident                       | 127 (50.2) |
| **Total**                             | **253 (100.0)** |
| **Duration of medical practice**      |        |
| ≤5                                    | 201 (79.4) |
| ≥6                                    | 52 (20.6)  |
| **Total**                             | **253 (100.0)** |

Table 3: Factors associated with stress in the work environment

| STRESSORS                                     | Number of doctors who reported stress (n) | Percentage of doctors who reported stress (n/N; N=253) |
|-----------------------------------------------|------------------------------------------|-----------------------------------------------------|
| Demands of job and patients’ expectations    | 103                                      | 40.7%                                               |
| Fear of assault during night calls among doctors | 65                                      | 25.7%                                               |
| Increased demand by patients and relatives for second opinion from hospital specialists | 116                                      | 45.8%                                               |
| No appreciation of your work by patients     | 80                                       | 31.6%                                               |
| Worrying about patients’ complaints          | 155                                      | 61.3%                                               |
| Finding a locum outside UCH                  | 70                                       | 27.7%                                               |
| Twenty-four hour responsibility for patients’ lives | 166                                      | 65.6%                                               |
| Taking several samples in a short time        | 166                                      | 65.6%                                               |
| Unrealistically high expectations by others of your role | 187                                      | 73.9%                                               |
| **Interruptions**                            |                                         | **68.6%**                                           |
| Coping with phone calls during night and early morning | 162                                      | 36.0%                                               |
| Night calls                                  | 164                                      | 64.8%                                               |
| Interruption of family life by telephone     | 152                                      | 60.1%                                               |
| Emergency calls during surgery hours         | 151                                      | 59.7%                                               |
| Dealing with problem patients                | 203                                      | 80.2%                                               |
| Remaining alert when on call                 | 190                                      | 75.1%                                               |
| **Practice administration**                  | 155                                      | **65.7%**                                           |
| Hospital referrals and paperwork             | 160                                      | 63.2%                                               |
| Conducting surgery                           | 114                                      | 45.1%                                               |
| Working environment                          | 184                                      | 72.7%                                               |
| Time pressure                                | 211                                      | 83.4%                                               |
| **Work: home interface and social life**     |                                         | **55.0%**                                           |
| Demands of your job on family life           | 192                                      | 75.9%                                               |
| Dividing time between spouse and patients    | 145                                      | 57.3%                                               |
| Demands of your job on social life           | 199                                      | 78.7%                                               |
| Lack of emotional support at home, especially from spouse | 83                                       | 32.8%                                               |
| **Dealing with death and dying**             |                                         | **76.7%**                                           |
| Daily contact with dying and chronically ill patients | 189                                      | 74.7%                                               |
| Dealing with terminally ill and their relatives | 184                                      | 72.7%                                               |
| **Medical responsibility for friends and relatives** | 158                                      | **62.5%**                                           |
| Dealing with friends as patients             | 150                                      | 59.3%                                               |
| Dealing with relatives as patients           | 128                                      | 50.6%                                               |
| **Exams**                                    |                                         | **83.0%**                                           |
| The thought of examination                   | 192                                      | 78.9%                                               |
| Writing examination                         | 192                                      | 75.9%                                               |
| Attitude of my superiors                    | 198                                      | 78.3%                                               |
| Accommodation                               | 178                                      | 70.4%                                               |
| Lack of recreation                           | 183                                      | 72.3%                                               |
Factors associated with stress

Table 3 shows the factors associated with stress. A high proportion of doctors [211 (83.4%)] stated time pressure as the commonest source of stress, followed by dealing with problem patients [203 (80.2%)], demand of job on social life [199 (78.7%)], attitude of superiors (198; 78.3%), the thought of exams and writing exams [192 (75.9%)], demand of job on family life [192; 75.9 %] and remaining alert when on call [190 (75.1%)]. An almost equal number of doctors reported stress in having daily contact with dying and chronically ill patients [189 (74.7%)] and in having to deal with the terminally ill and their relatives [184 (72.7%)]. Many of these junior doctors [187 (73.9%)] also reported that the unrealistically high expectations by others of their role was a source of stress for them. Similar proportion of doctors reported stress about the working environment [184 (72.7%)] and the lack of recreation [183 (72.3%)]. Quite a number of the doctors [178 (70.4%)] reported securing an accommodation as a source of stress. Some doctors also reported stress on some job demands such as

| Sociodemographic characteristics | Stressed n (%) | Not stressed n (%) | Total n (%) | X² | p value |
|----------------------------------|----------------|-------------------|-------------|----|---------|
| Mean age (years)                 | 29.39 (±3.81)  | 30.16 (±4.23)     | t-test value=1.359 | 0.175 |
| Sex                              |                |                   |              |    |         |
| Male                             | 45 (29.0)      | 110 (71.0)        | 155 (100)   | 1.240 | 0.266   |
| Female                           | 35 (35.7)      | 63 (64.3)         | 98 (100)    |     |         |
| Marital status                   |                |                   |              |    |         |
| Single                           | 51 (30.9)      | 114 (69.1)        | 165 (100)   | 0.111 | 0.739   |
| Married                          | 29 (33.0)      | 59 (67.0)         | 88 (100)    |     |         |
| Ethnicity                        |                |                   |              |    |         |
| Yoruba                           | 50 (31.4)      | 109 (68.6)        | 159 (100)   | 5.608 | 0.132   |
| Igbo                             | 19 (32.8)      | 39 (67.2)         | 58 (100)    |     |         |
| Hausa                            | 6 (60.0)       | 4 (40.0)          | 10 (100)    |     |         |
| Others                           | 5 (19.2)       | 21 (80.8)         | 26 (100)    |     |         |
| Religion                         |                |                   |              |    |         |
| Christianity                     | 69 (31.4)      | 151 (68.6%)       | 220 (100)   | 0.341 | 0.559   |
| Islam                            | 11 (36.7)      | 19 (63.3)         | 30 (100)    |     |         |
| Residence                        |                |                   |              |    |         |
| Within UCH                       | 43 (31.4)      | 94 (68.6)         | 137 (100)   | 0.018 | 0.894   |
| Outside UCH                      | 37 (32.5)      | 78 (67.8)         | 115 (100)   |     |         |

Table 5: Bivariate analysis of job characteristics and stress

| Job characteristics            | Stressed n (%) | Not stressed n (%) | Total n (%) | X²  | p value |
|--------------------------------|----------------|-------------------|-------------|-----|---------|
| Department                     |                |                   |             |     |         |
| Surgery                        | 45 (36.3)      | 79 (63.7)         | 124         | 2.834 | 0.242   |
| Medicine                       | 31 (28.2)      | 79 (71.8)         | 110         |     |         |
| Laboratory disciplines & radio diagnostic therapeutic | 4 (21.1) | 15 (78.9)        | 19          |     |         |
| Designation                    |                |                   |             |     |         |
| House officer                  | 33 (35.5)      | 60 (64.5)         | 93          | 4.289 | 0.117   |
| Medical officer                | 14 (42.4)      | 19 (57.6)         | 33          |     |         |
| Resident doctor                | 33 (26.0)      | 94 (74.0)         | 127         |     |         |
| Number of years of practice    |                |                   |             |     |         |
| ≤5                             | 67 (33.3)      | 134 (66.7)        | 201         | 1.327 | 0.249   |
| ≥6                             | 13 (25.0)      | 39 (75.0)         | 52          |     |         |
taking several samples in a short time [166 (65.5%)], 24-hour responsibility for patients’ lives [166 (65.5%)] and taking night calls [164 (64.8%)].

Much fewer doctors reported stress about fear of assault [65 (25.7%)], finding a locum [70 (27.7%)], non-appreciation of their work by patients [80 (31.6%)] and lack of emotional support at home especially from spouse [83 (32.8%)].

About 80 (31.6%) doctors were classified as stressed. However only 39 (15.4%) were not satisfied with their job. When mental health scores were computed, about 25 (9.9%) of doctors were classified as having poor mental health status. This is shown in Fig. 1.

Table 4 shows the bivariate analysis of sociodemographic characteristics and job stress. Age of respondents, gender, marital status, religion, ethnicity and residence were not significant predictors of job stress (p>0.05).

Table 6: Bivariate analysis of job satisfaction and mental health against job stress

| Variable                  | Stressed n (%) | Not stressed n (%) | Total n (%) | X²   | p value |
|---------------------------|----------------|--------------------|-------------|------|---------|
| Satisfied with job        |                |                    |             |      |         |
| Yes                       | 58 (27.1)      | 156 (72.9)         | 214 (100)   | 13.104 | <0.001  |
| No                        | 22 (56.4)      | 17 (43.6)          | 39 (100)    |      |         |
| Mental health             |                |                    |             |      |         |
| Good                      | 63 (27.6)      | 165 (72.4)         | 228 (100)   | 16.980 | <0.001  |
| Poor                      | 17 (68.0)      | 8 (32.0)           | 25 (100)    |      |         |

Table 7: Logistic regression analysis of job stress against job satisfaction and mental health

| Variables                  | Odds Ratio | 95% CI for exp(B) | p value |
|---------------------------|------------|-------------------|---------|
| Satisfied with job        |            |                   |         |
| Yes*                      | 1          |                   |         |
| No                        | 2.33       | 1.08              | 5.04    | 0.032  |
| Mental health             |            |                   |         |
| Good*                     | 1          |                   |         |
| Poor                      | 3.82       | 1.47              | 9.95    | 0.006  |

Fig. 1: Proportion of doctors with job stress, job dissatisfaction and poor mental health
The department a doctor belonged to, his designation and number of years of practice did not significantly affect stress status (p>0.05) as shown in Table 5.

A higher proportion of doctors (56.4%) who reported that they were not satisfied with their job reported being stressed (p<0.001) and a higher proportion who had poor mental health (68.0%) also reported being stressed (p<0.001).

The results are as shown in Table 7. The study found that doctors who were not satisfied with their job were about twice as likely as those who were satisfied with their job to report stress (OR=2.33; CI=1.08-4.04). Also, doctors with poor mental health were almost four times as likely as those with good mental health to report stress (OR=3.82; CI=1.47-9.95).

**DISCUSSION**

Approximately 32% of doctors in this study reported job stress. Higher prevalences of 48% and 55% have been reported among doctors in Karachi, Pakistan and among Dutch specialists respectively. A higher proportion of doctors also reported job satisfaction similar to that found among Dutch specialists. However, lower prevalences of job satisfaction were reported in studies done among doctors in tertiary hospitals in Benin, Nigeria and Karachi, Pakistan respectively. The prevalence of poor mental health in this study was 9.9%. A higher prevalence of 14.9% was reported by Issa et al. among doctors in a tertiary hospital in Nigeria.

Although, some studies reported that older doctors, single and female doctors have higher levels of stress, this study found no significant associations between job stress and sociodemographic characteristics. Higher proportions of non-indigenes reported job stress in this study but this was not statistically different from indigenes; this may be due to the fact that they are away from home.

The major sources of stress in this study were time pressure, dealing with problem patients, the attitude of superiors, dealing with death and dying patients and the thought of examinations. This could be attributed to the fact that the doctors in this study are young in the medical profession and are still in training, and therefore, write examinations, are prone to superiors’ wrong attitude and are also yet to get used to dealing with death and dying patients. Although interruptions with family life, lack of recreation, accommodation and work environment were also reported as sources of stress they did not rate very high in this study unlike some other studies that implicated demands of the job and patients’ expectations, interference with family life, constant interruptions at work and home, financial constraints and practice administration as the major sources of job stress.

Overall, this study revealed that the significant predictors of stress in the study population were job dissatisfaction and poor mental health. Doctors who were not satisfied with their job were twice as likely to be stressed as those who were satisfied. Surprisingly, this study showed a low proportion of doctors who were not satisfied with their job. This may be due to the general resilience of Nigerians to adverse environmental and social conditions.

Poor mental health was also associated with job stress, similar to reports by other studies. The perception of “heavy” work load was associated with psychiatric morbidity among doctors in a tertiary hospital in Nigeria. Doctors are known to conceal poor mental health for fear of stigma or of losing a medical career. The culture within the medical profession that doctors can cope with strenuous situations also promotes this attitude of concealing poor mental health.

**CONCLUSION**

It has been shown that job stress is common among doctors. Majority of doctors reported some form of stress about the attitude of their superiors, and so, superiors in the medical field should be educated on the effect their attitude may have on their subordinates and therefore, show some understanding.

In order to combat negative stressors in the physicians’ work environment, enhancement initiatives should be considered both at the individual, group, and structural level. There needs to be a culture change within the profession for doctors and their employers to pay closer attention to how doctors deal with the demands of the job, how they look after their own mental health and attain wellbeing and a sense of balance between their working and personal lives. There is a great need to offer personally targeted competence development plans. Successful resources used by physicians to manage the stress of everyday medicine should be identified. Institution of stress management clinics may be utilised as control measures. Doctors are a key group to ensure a well-functioning health care system and therefore, need to be paid attention to.

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