European Journal of Clinical and Experimental Medicine

ONLINE FIRST



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**Article type**: Original Article

**Received**: 15 December 2023

**Accepted**: 15 March 2024

**Published online**: 26 April 2024

**eISSN**: 2544-1361

**Eur J Clin Exp Med**

**doi**: 10.15584/ejcem.2024.3.3

# Prevalence and predictors of job stress among healthcare workers in secondary health centers in a Nigerian City

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## ABSTRACT

**Introduction and aim.** Stress is prevalent in all aspects of our lives and it seems particularly overwhelming in the workplace. This study identified prevalence and factors associated with job stress among healthcare workers in public secondary health facilities in the Ibadan metropolis, Nigeria.

**Material and methods.** The study was a cross-sectional study. Two hundred and sixty-nine healthcare workers were recruited over three months. The respondents were recruited using the systematic sampling techniques.

**Results.** The age range of the participants was 20–59 years with a mean age of 39.28(SD 9.39).The prevalence of job stress among physicians was 42.1%, health management staff 31.3%, pharmacists 28.6%, nurses 23.5%, and laboratory personnel 23.1%. Most participants 162(61.1%) had functional families. Participants from polygamous families were about 70% less likely to report job stress compared with those from monogamous setting (OR=0.3, 95%CI 0.07–0.9). Participants from dysfunctional families were about 2 times more likely to report job stress compared to those with functional families. OR=2.0, 95%CI (1.09–3.56).

**Conclusion.** Compared with nurses, this study demonstrated a higher prevalence of job stress among physicians and other healthcare workers. Family type and family support were predictors of job stress among healthcare workers. The outcome of this study would be used as a source of information for practice

and policy making for health facilities in Nigeria, and some places in Africa, with the aim of planning improved conditions for health workers through appropriate job stress management.
**Keywords.** healthcare, job stress, predictors, prevalence, workers

## Introduction

Stress is a situation where the human's homeostasis is threatened or the individual perceives a situation as threatening either emotionally or physically. It is a subjective phenomenon and an anxiety-based syndrome, which manifests differently in different persons and hence, the lack of a stereotyped definition.[1]According to the stress framework system, there are three kinds of stress; sustress (inadequate stress), eustress (good stress), and distress (bad stress). Eustress may have health benefits, but both sustress and distress may lead to the impairment of normal physiological functions and could result in pathological conditions.[2] A strong challenge on the homeostasis produces distress (stress) which triggers a stress response and the consequent damaging effects. Stress can therefore be described as the adverse psychological and physical reactions that occur in an individual as a result of his or her inability to cope with the demands being made on him or her.[3] Stress is a universal and inevitable component of life, and hence, some degree of stress is not harmful. It is found in all aspects of our lives; it seems particularly overwhelming in the workplace.[4] According to the World Health Organization(WHO), stress, especially that relating to work, is the second most frequent health problem, impacting one third of employed people in the European Union.[5] Job stress has been defined by the Center 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.[6] It is a subjective experience and the predisposing factors include previous life experiences, gender, genetic endowment, personality traits and age.[7]Job stressors may contribute to organizational inefficiency, high staff turnover, absenteeism due to sickness, decreased quality, and quantity of practice, increased costs of health care, and decreased job satisfaction.[1] Globally, the costs of job-related stress are estimated to be approximately $5.4 billion each year, second only to the most frequent occupational health problem, low back pain.[8]Inadequate staff to cover the different units is the most reported source of stress for healthcare workers in several studies, while emotional issues relating to patient death and dying is the second most reported. These findings are supported by studies in Malaysia and Jordan that revealed major sources of stress as work load and death and dying.[9]

Certain scientists showed that nurses are the backbone of the health industry.[10]They develop closer relationship with the patients more than any other healthcare personnel and are crucial to the smooth running of any hospital. This enormity of work that nurses have to contend with results in stress which is a major cause of concern for many nurses at work.[11] Also, medical doctors often go through some stress related to their profession while carrying out their duties.[12] Several studies have shown that there is a higher level of stress among doctors as compared to the general population.[13] Rates of stress are elevated in all doctors,

regardless of the setting in which they work, but junior and female doctors are particularly at risk. The stress management program will help to reduce the job stress, create job effectiveness, and have a good work–life balance.[14]

In Nigeria, there is limited health related studies in this area, despite the level of the industrial disharmony in the health sector, increasing complaints in service delivery in health institutions and increasing evidence of impact of stress on health workers. The prevalence of psychosocial stress among health workers in a mission hospital in South-Western Nigeria, was reported to be 26.2%.[15] The WHO has viewed stress as a global epidemic as stress has recently been observed to be associated with 90% of visits to physicians.[16] The most common negative consequences of job stress are physical injuries, headaches, back pain, inability to concentrate, poor judgment, irritability, use of drugs and cigarette, absenteeism, increased number of accidents and inability to organise.[17] Recent studies have indicated that job stress has a major effect on individual physiology, psychology, and behavior, for example, job performance.[18]What are the determinants of job stress among healthcare workers in public secondary health facilities? Job stress has been recognized as a major risk factor for the development of physiological and psychological problems among employees of modern work organizations including healthcare workers.[19]

## Aim

This study aimed to identify the prevalence and predictors of job stress among healthcare workers in public secondary health facilities in Ibadan metropolis in order to suggest policies and guideline to manage job stress among healthcare workers. In addition, research on family dynamics is still inadequate and family support of healthcare workers were assessed in this study. The exploration of family dynamics of the participants in this study has made it different from the other studies on job stress.

## Material and methods

### *Study setting*

The study was conducted among Healthcare workers in Government-owned secondary health facilities in Ibadan, Oyo state, Nigeria. Ibadan is located about 125 kilometers inland from Lagos. The population of the city is approximately 3,800,000 according to 2006 census estimates. Ibadan is made up of 11 local government areas and has ten State public secondary health facilities within her metropolis. The total health workforce for the secondary health facilities in Ibadan metropolis is 1,395.

### *Scope of the study*

The scope of the study covered hospital job stress and included all categories of workers involved in the delivery of health care.

***Study population***

The study population was healthcare workers in the State public secondary health facilities, within Ibadan metropolis.

***Study design***

The study was a hospital-based cross-sectional study and was conducted from July to September 2021.

Inclusion criteria: Healthcare workers at the designated public secondary health facilities within Ibadan metropolis who consented to participate in the study.

Exclusion criteria: These included pregnant health workers, because of their vulnerability and obvious confounder, and health workers with hemoglobinopathy, as their clinical state could ordinarily be stressful.

***Sample size determination***

The Cochrane formula below was used for sample size determination.[20] This is for populations that are large (≥10,000).

$$n_0 = \frac{Z^2pq}{d^2}$$

where $n_0$ is the minimum sample size.

Z is the Standard normal deviate, usually set at 1.96, at 95% confidence interval.

p is the prevalence rate of job-related stress. A prevalence of 26% was reported in a study among healthcare workers at a mission hospital in South West Nigeria.[15]

q is 1 – p, and, the desired level of precision was 0.05.

Sample size

$$n_0 = \frac{1.96^2 \text{ x } 0.26 \text{ x } (1- 0.26)}{(0.05 \text{ x } 0.05)}$$

$n_0$=296.

Allowing for a 10% non-response, the minimum sample size ($n_0$) required for this study was (29.6+296)=325.6 (326) participants.

The finite population correction factor was then applied because the population to be studied was less than 10,000. The study population was 1,395. And for a finite population of less than 10,000, then the adjusted sample size was calculated below:

$$n = \frac{n_0N}{n_0 + (N - 1)}$$

n is the minimum sample size

N is finite population size (<10,000) =1,395

$n_0$ is the sample size with no correctional factor

$$n = \frac{326 \text{ x } 1,395}{326 + (1,395 - 1)} = \frac{454,770}{1,720}$$

n=265. This was the minimum sample size for this study.

***Sampling techniques***

The sampling technique involved five steps:

*Step one: calculation of total population of health workers*

The population of all health workers in the Secondary Health facilities in Ibadan metropolis was taken and the total workforce for each facility and the grand total were calculated. The grand total was 1,395 health workers.

*Step two: stratification*

For the purpose of this research, healthcare workers were divided into the modified six broad categories according to the WHO 2013 Global Atlas of the Health Workforce.[21] The broad groups are Physicians and Dentists (Specialists and Generalists), Nursing and Midwifery personnel, Pharmaceutical personnel, Laboratory health workers, Health management and support workers, and other health workers (Dieticians and Nutritionists, Medical assistants, Physiotherapists, Medical trainees, Interns, Respiratory therapists, operators of medical and dental equipment).

*Step three: proportional allocation of study participants to health centers*

Each facility was allotted study participants using a stratified proportionate method, based on each facility's staff strength, using the sample size, as shown inTable1. For Ring Road State Hospital, the study participants; 280/1395×265=53.

*Step four: calculation of study participants for professional groups*

The study participants for each professional group were also proportionately calculated for each facility, using their number in the facility, the staff strength, and the number of study participants already allotted to the facility. For example, at the Ring Road State Hospital, the total staff strength was 280, and 53 participants were allotted to the facility. Since there are 23 Doctors in the facility, the number of Physicians recruited at the facility was:

$$\frac{23 \text{ x } 53}{280} = 4$$

The number of doctors recruited at Jericho Specialist Hospital was $\frac{17 \text{ x } 33}{173} = 3$

The total population of health workers at Jericho Specialist Hospital was 173. Thirty-three participants were allotted to the facility and the total number of doctors was 17 (Table 1).

**Table 1**. Study participants required per each public secondary health facility

| Facility | Study population per facility | Calculation | Number of respondents |
|---|---|---|---|
| Ring Road State Hospital | 280 | 280×265 / 1395 | 53 |
| Adeoyo Maternity Hospital | 408 | 408×265 / 1395 | 77 |
| General Hospital, Moniya | 90 | 90×265 / 1395 | 17 |
| Oni Memorial Children Hospital | 121 | 121×265 / 1395 | 23 |
| Government Dental Centre | 57 | 57×265 / 1395 | 11 |
| Jericho Specialist Hospital | 173 | 173×265 / 1395 | 33 |
| Jericho Nursing Home | 110 | 110× 265 / 1395 | 21 |
| Maternal and Child health Hospital | 77 | 77×265 / 1395 | 15 |
| St Peter's Maternity Hospital | 61 | 61×265 / 1395 | 12 |
| Secretariat Clinic | 18 | 18×265 / 1395 | 3 |
| Total | | | 265 |

*Step five: systematic random sampling techniques*

Their nominal rolls were accessed, and this served as a sampling frame for data collection. The sampling interval was calculated for each professional group in each facility. For Doctors at Ring Road State Hospital, the total number of doctors was 23 and 4 was recruited, then the sampling interval, K=23/4=5.7. The first patient was selected by simple random technique by the use of Microsoft Excel 2016 and every 6th patient was selected until the required study participants were recruited. The same formula was applied to other professional groups in all the study facilities, having proportionately calculated the number of study participants for each professional group in the health facilities, the total number of study participants for each professional group, making up the required sample size was shown in Table 2.

***Study instruments***

*A pretested study questionnaire*

The questionnaire was pretested on 30 health workers chosen randomly among some of the public secondary health facilities namely Adeoyo Maternity Teaching Hospital, Ring Road State Hospital, and Jericho Specialist Hospital, Ibadan to ensure there is no ambiguity in its content.

The structured questionnaire consists of:

1. Socio-demographic data and family characteristics

This section contains information on the socio-demographic characteristics of participants including age, sex, marital status, family size, family type, family stage, religion, tribe, occupational group, and duration of employment in the civil service.

2. Medical history

This section assessed respondent's past and present clinical history, to rule out chronic disabilities like sickle cell disease and people with chronic pain outside work. A menstrual history was also obtained. The mandatory pre-employment medical records of respondents were checked, to retrieve their hemoglobin genotype.

**Table 2**. Study participants required for each professional group per facility*

| **Professional group** | **RRSH** | **AMTH** | **JNH** | **AREMO** | **Dugbe** | **Apata** | **OMCH** | **Moniya** | **JSH** | **Sec Clin** | **Total** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Doctors | 4 | 5 | 1 | 1 | 1 | 1 | 2 | 1 | 3 | - | 19 |
| Nurses/midwives | 23 | 32 | 7 | 3 | 1 | 5 | 9 | 5 | 11 | 1 | 97 |
| Pharmacy | 1 | 1 | 1 | – | – | 1 | 1 | 1 | 1 | – | 7 |
| Laboratory staff | 5 | 7 | 3 | 1 | – | 1 | 3 | 1 | 3 | 1 | 25 |
| Other health workers | 8 | 18 | 2 | 2 | 5 | 2 | 3 | 4 | 8 | – | 52 |
| Health Mgt support workers | 12 | 14 | 7 | 5 | 4 | 5 | 5 | 5 | 7 | 1 | 65 |

* RRSH – Ring Road State Hospital, AMTH – Adeoyo Maternity Teaching Hospital, JNH – Jericho Nursing Home, Aremo – St Peter's Maternity Hospital Aremo, Dugbe – Government Dental Centre Dugbe, Apata – Maternal and Child Health Hospital Apata, OMCH – Oni Memorial Children Hospital, Moniya – General Hospital Moniya, JSH – Jericho Specialist Hospital, Sec Clin – Secretariat Clinic

*Perceived job-related stress scale(Job-Demand control scale)*

The job contents questionnaire embedded with the Job-Demand-Control-Model was used to assess psychological job demand, job control, and social support among respondents. The Cronbach alpha coefficients acceptable for decision latitude and psychological job demands are 0.70 and 0.72, respectively while it is 0.86 for social support.[22] This portion of the instrument uses the occupational stress questionnaire, otherwise called 'job contents questionnaire'. It divides job strain into four modalities: high job strain, low job strain, passive job, and active job; based on psychological job demand and decisional latitude. The section contains three subsections which include psychological job demand with five questions, decisional latitude (job control) with six questions, and social support at work with four questions. The combination of the psychological job demand and the decisional latitude (job control) was used to determine stress levels among study participants. The median values were used to divide the study participants into four groups as documented in previous studies.[23]

*Assessment of job satisfaction (job satisfaction scale)*

This section contains four parts measuring job satisfaction among respondents.[24]They responded with very dissatisfied, dissatisfied, satisfied, and very satisfied to each statement, with a scale of one to four. The score from the four items was summed up, and the median value was used to categorize respondents' view on their job satisfaction into low and high.

*Assessment of family functioning and support*

The family APGAR questionnaire is designed to measure family functioning. It was used to measure family support for respondents in a previous study.[25] It is a five-item questionnaire developed to assess family support using five parameters of family functioning. It allows three possible responses (2, 1, 0) to each of the five parameters of adaptation, partnership, growth, affection, and resolve. The total score ranging from zero to ten was used to range respondents' satisfaction as no, low or high satisfaction with family function, and their families were classified respectively as either severely dysfunctional(0–3), moderately dysfunctional(4–6) or functional family(7–10).

***Data analysis***

The data collection lasted over three months. Data collected were cleaned and data analysis was done using the Statistical Package for Social Sciences (SPSS) version 23 (IBM, Armonk, NY, USA). Findings were presented in tables and all were interpreted. The Chi-square test was used to assess the association between two categorical variables. The level of significance was put at ≤5% ($p \leq 0.05$). Logistic regression was used to assess the predictors of job stress.

***Ethical clearance***

Ethical clearance was obtained from the Ethical Committee of the Ministry of Health, Oyo state, Nigeria and written informed consent was obtained from every subject, prior to participation. The reference number for ethical approval is AD 13/479, 2089[C].

**Results**

***Socio-demographic characteristics of the study participants***

Table 3 shows the demographic characteristics of healthcare workers in public secondary health facilities in Ibadan metropolis. Out of the 265 subjects, the mean age of the participants was 39.28 years, with a standard deviation (SD) of 9.39.Most participants, 33.6% were between 30 to 39 years of age, while the rest belonged to other age group categories. Most respondents, 83.8%, were from monogamous settings, 12.1% were from polygamous settings, 4.2% were single parents.

**Table 3**. Socio-demographic characteristics of the studied health workers (n=265)

| **Characteristics** | | **Number** | **Percentage (%)** |
|---|---|---|---|
| **Gender** | Male | 54 | 20.4 |
| | Female | 211 | 79.6 |
| **Age group, years** | 20 to 29 years old | 45 | 17 |
| | 30 to 39 years old | 89 | 33.6 |
| | 40 to 49 years old | 86 | 32.5 |
| | 50 to 59 years old | 45 | 17 |
| **Mean age (SD)** | 39.28 (9.39) | | |
| **Marital Status** | Single | 56 | 21.1 |
| | Married | 209 | 78.9 |
| **Educational Status** | University graduate | 172 | 64.9 |
| | Post-secondary | 68 | 25.7 |
| | Secondary | 22 | 8.3 |
| | Primary School | 3 | 1.1 |
| | | | |
| | | | |
| Occupational Groups | Doctors | 19 | 7.2 |
| | Nurse/Midwives | 102 | 38.5 |
| | Pharmaceutical personnel | 7 | 2.6 |
| | Laboratory personnel | 26 | 9.8 |

| | | | |
|---|---|---|---|
| | Other health workers (physiotherapist, dietician, social workers, ward aids, laundry staff, cleaners | 63 | 23.8 |
| | Health management and support workers (admin staff, account, medical records, security, ambulance drivers) | 48 | 18.1 |
| Family Type | Monogamous | 222 | 83.8 |
| | Polygamous | 32 | 12.1 |
| | Single parents | 11 | 4.2 |
| Family Size | Two members | 15 | 5.7 |
| | Three members | 32 | 12.1 |
| | Four members | 110 | 41.5 |
| | Five members and above | 108 | 40.8 |

***Pattern of job stress among the health workers in secondary health facilities in Ibadan***

Table 4 shows the pattern of job stress among healthcare workers in public secondary health facilities in Ibadan, Nigeria. Majority of the participants, 183(69.1%) reported no job stress, while 82(30.9%) reported job stress and this is the prevalence of job stress among public secondary health care workers in Ibadan metropolis. Of the no job stress category, 14.3% reported their job as passive, 17.4% had low job strain, and 37.4% reported their job scheduled as active job.

**Table 4.** Pattern of job stress among the health workers (n=265)

| **Characteristics** | | **Number** | **Percentage** |
|---|---|---|---|
| **Job stress groups** | | | |
| | Job stress | 82 | 30.9 |
| | No job stress | 183 | 69.1 |
| **Job stress levels** | | | |
| | Job stress (High job strain) | 82 | 30.9 |
| | No job stress | 0 | 0 |
| | Passive job | 38 | 14.3 |
| | Low job strain | 46 | 17.4 |
| | Active job | 99 | 37.4 |
| **Job demand** | | | |

| | | |
|---|---|---|
| Low | 84 | 31.7 |
| High | 181 | 68.3 |
| **Job control** | | |
| Low | 120 | 45.3 |
| High | 145 | 54.7 |
| **Social support at work** | | |
| Low | 125 | 47.2 |
| High | 140 | 52.8 |

**Association between job stress and socio-demographic characteristics of the respondents**

As shown in Table 5, job stress was commoner among age group 30 to 39 with 44.9% having job stress while 25.6% of age group 40 to 49 reported job stress. The prevalence of job stress among physicians was 42.1%, other health workers 42.9%, health management and support staff 31.3%, pharmaceutical personnel 28.6%, nurses and midwives 23.5%, and laboratory personnel 23.1%. Out of the 222 respondents that came from a monogamous setting, 34.7% reported job stress, while 9.4% of the 32 respondents from a polygamous setting had job stress, while 18.2% of the 11 single parents had job stress.

**Table 5**. Association between job stress and socio-demographic characteristics of the respondents

| **Characteristics** | | **Stress** | | **No stress** | | **$X^2$(df)** | **P** |
|---|---|---|---|---|---|---|---|
| | | Number | % | Number | % | | |
| **Gender** | Male | 15 | 27.8 | 39 | 72.2 | 0.318 | 0.573 |
| | Female | 67 | 31.8 | 144 | 68.2 | (1) | |
| **Age group, years** | 20 to 29 years old | 9 | 20 | 36 | 80 | 12.733 | 0.005* |
| | 30 to 39 years old | 40 | 44.9 | 49 | 55.1 | (3) | |
| | 40 to 49 years old | 22 | 25.6 | 64 | 74.4 | | |
| | 50 to 59 years old | 11 | 24.4 | 34 | 75.6 | | |
| **How long have you been in service?** | Less than 5 years | 25 | 30.5 | 57 | 69.5 | 9.641 | 0.022* |
| | 5 to 9 years | 26 | 46.4 | 30 | 53.6 | (3) | |
| | 10 to 14 years | 15 | 28.8 | 37 | 71.2 | | |
| | 15 years and above | 16 | 21.3 | 59 | 78.7 | | |
| **Marital status** | Single | 12 | 21.4 | 44 | 78.6 | 3.008 | 0.083 |
| | Married | 70 | 33.5 | 139 | 66.5 | (1) | |
| Educational status | University graduate | 47 | 27.3 | 125 | 72.7 | 4.721 | 0.094 |
| | Post-secondary school | 23 | 33.8 | 45 | 66.2 | (2) | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Secondary or less | 12 | 48 | 13 | 52 | | |
| Occupational groups | Doctors | 8 | 42.1 | 11 | 57.9 | 8.690 (5) | 0.122 |
| | Nurse/Midwives | 24 | 23.5 | 78 | 76.5 | | |
| | Pharmacists | 2 | 28.6 | 5 | 71.4 | | |
| | Laboratory personnel | 6 | 23.1 | 20 | 76.9 | | |
| | Physiotherapist,dietician | 27 | 42.9 | 36 | 57.1 | | |
| | Admin staff and others | 15 | 31.3 | 33 | 68.8 | | |
| Family type | Monogamous | 77 | 34.7 | 145 | 65.3 | 9.259 (2) | 0.010* |
| | Polygamous | 3 | 9.4 | 29 | 90.6 | | |
| | Single parents | 2 | 18.2 | 9 | 81.8 | | |
| Family size | Family size of 2 or 3 members | 16 | 34.0 | 31 | 66 | 1.194 (2) | 0.551 |
| | Family size of 4 members | 30 | 27.3 | 80 | 72.7 | | |
| | Family size of 5 members and above | 36 | 33.3 | 72 | 66.7 | | |

***Association between job stress and family support among study participants***

Table 6 shows the association between job stress and family support among respondents. Overall, there was a statistically significant relationship between job stress and family support. Out of the 9 respondents with highly dysfunctional families, 5 (55.6%) reported job stress while 40 (42.6%) of the 94 respondents with dysfunctional families reported job stress whereas only 37 (22.8%) of the 165 respondents with functional families had job stress.

**Table 6**. Association between job stress, job satisfaction and family support among the respondents

| **Characteristics** | | **Stress** | | **No stress** | | **$X^2$(df)** | **P** |
|---|---|---|---|---|---|---|---|
| | | Number | % | Number | % | | |
| **Levels of family support** | Functional family | 37 | 22.8 | 125 | 77.2 | 13.459 (2) | 0.001 |
| | Highly dysfunctional family | 5 | 55.6 | 4 | 44.4 | | |
| **Characteristics** | | **Stress** | | **No stress** | | | **P** |

| | | n=82 | % | n=183 | % | $X^2$(df) | |
|---|---|---|---|---|---|---|---|
| **Levels of job Satisfaction** | Low | 21 | 29.2 | 51 | 70.8 | 0.146 (1) | 0.702 |
| | High | 61 | 31.6 | 132 | 68.4 | | |

***Logistic regression analysis of variables affecting level of job stress***

Table 7 shows the binary logistic regression analysis of variables affecting level of job stress. Overall, participants from polygamous families and having functional families were protective against job stress. Participants from polygamous families were 70% less likely to report job stress compared to those from monogamous setting. OR=0.3, 95%CI (0.07- 0.9). Participants from dysfunctional families were about 2 times more likely to report job stress compared to those with functional families OR=2.0, 95%CI(1.09 - 3.56).

**Table 7.** Binary logistic regression analysis of variables affecting job stress among healthcare workers*

| **Job stress** | | **Odds ratio** | **(95%CI)** | **P** |
|---|---|---|---|---|
| Age group, years | 20 to 29 years old | Reference | | |
| | 30 to 39 years old | 2 | (0.72–5.65) | 0.183 |
| | 40 to 49 years old | 1.4 | (0.41–4.88) | 0.587 |
| | 50 to 59 years old | 2.3 | (0.47–11.54) | 0.297 |
| How long have you been in service? (In years) | Less than 5 years | Reference | | |
| | 5 to 9 years | 1.4 | (0.58–3.36) | 0.455 |
| | 10 to 14 years | 0.8 | (0.27–2.14) | 0.605 |
| | 15 years and above | 0.5 | (0.13–1.64) | 0.235 |
| Family type | Monogamous | Reference | | |
| | Polygamous | 0.3 | (0.07–0.9) | 0.033 |
| | Single parents | 0.5 | (0.07–2.6) | 0.374 |
| Family support | Functional family | Reference | | |
| | Highly dysfunctional family | 4.1 | (0.82–20.85) | 0.085 |
| | Dysfunctional family | 2 | (1.09–3.56) | 0.024 |

* Dependent variable: job stress, predictors: family support, family type

**Discussion**

***Summary of main findings***

The age range 30 to 39 years had the largest subjects in the study with 33.6% of the study participants and was mostly affected by job stress with 44.9% reporting job stress. The prevalence of job stress in this study

was 30.9%, higher in female (31.8%) participants than the males (27.8%)and high among physicians. Also, the prevalence of job stress was found to be higher among married respondents (33.5%) as against 21.4% reported among the unmarried, single respondents and respondents from monogamous family reported more job stress than other family types. The type of family was also a predictor of job stress. The prevalence of job stress was lower among those who had spent at least 15 years in service. The prevalence of musculoskeletal pain was 54.3%, and 38.9% of the respondents believe their work schedule caused their musculoskeletal pain. Respondents from highly dysfunctional families were more likely to report job stress compared to those with functional families. The family support was also a predictor of job stress.

***Interpretation of findings and comparison with existing literatures***

From this study, the prevalence of job stress among physicians was high which was similar to the findings from a study among health workers in Korea where the prevalence of job stress was highest among the physicians.[26] This suggests that the prevalence of stress among physicians is high in our environment, as seen in many other studies. A United States of American study also reported that higher-status healthcare workers, physicians, and nurse practitioners are more likely than their colleagues to report work-life conflict, irregular work hours, and heavy work pressure.[27]These stressors explain an appreciable amount of the higher levels of burnout found among physicians and nurse practitioners. Collectively, the results lend support to "the stress of higher status" hypothesis and provide insights into the job demands and mental health issues confronted by today's medical workforce.[28] Physicians have to cope with decision-making on administrative and emotional issues at work and at home. Respondents within the age group 30 to 39 years were mostly affected by job stress in this study. However, this is in contrast to the findings in a similar study among health workers in Oyo state, Nigeria where respondents aged less than 30 years were mostly affected but similar to that among medical workers in China where respondents aged 31 to 40 years were mostly affected.[15,29] The higher stress level in the relatively younger age groups could be explained by the fact that those are the most productive ages when individuals have to cope with the demands of managing spouses, children, and aged parents along with the demands of the workplace. The prevalence of job stress in this study was higher in female participants than in their male counterparts. The finding was similar to a study conducted among health workers in Southeast Nigeria, where the prevalence of stress was higher in females than in male participants.[30] The female preponderance may have to do with family demands, emotional issues with patients, and other workplace demands.

In this study, the prevalence of job stress was found to be higher among married respondents than single respondents. This is contrary to some previous studies where job stress was found to be more common among single healthcare workers.[31] However, the finding was similar to that of a study of healthcare workers when caring for COVID-19 patients in China, where married health workers were found to have higher levels of stress.[32] It follows that marital status may have varying effects across studies and geographical

locations on the ability to cope with work stress. Married health workers could be deriving emotional support from their spouses and thus able to douse the job tension after the days' work while single health workers may be free from the pressure of coping with additional responsibilities at the home front. However, COVID-19 pandemic would add to the level of stress among the sujects.[33] Married health workers might however had a higher prevalence of job stress, as found in this study, due to the fact that they are confronted with other demanding responsibilities at the home front. In this study, respondents from monogamous families reported higher level of job stress than other family types. This finding was consistent with the findings in a study among hospital nurses in a tertiary health centre in Nigeria where depersonalization was associated with a monogamous family setting and smaller family size.[34] Higher levels of stress among health workers in a monogamous setting may be explained on the basis of inadequate social support as compared to those from a polygamous setting.

Job stress improves with the number of years in service according to this study. Respondents that had spent between five to nine years in service had the highest level of job stress which is least among those who had spent 15 years or more in service. Job stress is likely going to be commoner among younger workers due to inexperience, inadequate orientation, poor coping strategies for stressful workplace demands, and unmet needs after a few years in service. With longer years in service, they would have adjusted and have better coping mechanisms. The finding was similar to the reports of other studies on health workers in other places.[35] The prevalence of musculoskeletal pain was high in this study. This finding was similar to that of a systematic review of the evaluation of the prevalence of musculoskeletal disorders in nurses.[36] Repetitious movements, awkward postures, and high force levels were the three primary risk factors that have been associated with work-related musculoskeletal disorders. The nursing profession in particular, and healthcare work in general, is considered as physically and psychologically demanding, and a risk factor for musculoskeletal disorders.[37] Generally, studies have shown that musculoskeletal problems are particularly common in healthcare workers who are in direct contact with patients.[38] In this study, the prevalence of job stress was highest among the highly dysfunctional families and lowest among the functional families. Social support is an important protective factor for psychological resilience that alleviates mental stress and lifts psychological barriers.[39]

***Implications for education and training***

Job stress awareness should be incorporated into the training curriculum of health care workers, right from their training days and the need to pro-actively take steps to prevent its damaging effects.

***How this study might affect research, practice or policy***

The outcome of this study would be used as a source of information for practice and policy making for health facilities in Nigeria and some places in Africa, with the aim of planning improved conditions for

health workers through appropriate job stress management. Family physicians should use available opportunities to explore family dynamics during routine visitations by health workers in view of their being predictors of job stress. The findings would serve as the basis for future research work involving healthcare workers in health facilities. This study has helped to determine job stress prevalence among healthcare workers in public secondary health facilities. It also broadened knowledge about gender and socio-demographic considerations, as well as differential response by different professional group to job stress. The knowledge obtained from this study would therefore be beneficial, both to the health workers and the practice population accessing health care in the facilities.

***Study strengths and limitations***

This study was a cross-sectional study by design, which means findings may not be a reflection of causal relationships of job stress among health workers. However, the findings would help in the care of both the health care workers and their practice population, by serving as a data base for further studies. It was a public secondary health facility-based study, so the findings are representative of health care workers in these facilities and may not completely be a true reflection of other categories of healthcare workers at other levels of healthcare delivery. Additionally, most of the subjects were females which showed that there are more female health workers, mostly nurses and other professionals in the employment of Oyo State in Nigeria. The study showed that the factors associated with job stress among healthcare workers cannot be limited to work characteristics such as work overload, shortage of manpower, poor incentives, poor social support, row conflict, career progression, lack of reward system etc., but also linked to certain socio-demographic characteristics of the workers.

***Suggestions for further studies***

There is need for further studies to understand the concept, predisposition, features, effect and possible coping strategies of job stress among other cadres of health care workers apart from the current emphasis on nurses. Future research on work-related stress should be bigger, multi-centered and involve health care workers at the different levels of health care delivery, that is, primary, secondary and tertiary, in order to discover which level of health care poses the greatest risk of job stress among health workers and help health administrators to channel resources appropriately

**Conclusion**

This study demonstrated the fact that job stress is common among healthcare workers and that there is a need for prompt attention to prevent its debilitating effect on the health of the healthcare workers. Unlike several other studies that reported nurses as the most stressed group of healthcare workers, this study was able to demonstrate higher prevalence of job stress among physicians and other healthcare workers. The

study showed that age, number of years in service, family type and family support were associated with job stress among healthcare workers. The study also showed that family type and family support were predictors of job stress.

## Declarations


### *Funding*

This research did not receive any specific grant from funding agencies in the public, commercial or not-for-profit sectors.


### *Author contributions*

Conceptualization, D.F.O, I.A.A, F.A.O and T.H.I; Methodology, D.F.O, I.A.A, F.A.O and T.H.I.; Software, D.F.O, I.A.A, F.A.O and T.H.I; Validation, D.F.O, I.A.A, F.A.O and T.H.I; Formal Analysis, D.F.O, I.A.A, F.A.O and T.H.I; Investigation, D.F.O, I.A.A, F.A.O and T.H.I; Resources, D.F.O, I.A.A, F.A.O and T.H.I; Data Curation, D.F.O, I.A.A, F.A.O and T.H.I ; Writing – Original Draft Preparation, D.F.O, I.A.A, F.A.O and T.H.I ; Writing – Review & Editing, D.F.O, I.A.A, F.A.O and T.H.I; Visualization, D.F.O, I.A.A, F.A.O and T.H.I; Supervision, I.A.A, F.A.O and T.H.I; Project Administration, D.F.O, I.A.A, F.A.O and T.H.I; Funding Acquisition, D.F.O, I.A.A, F.A.O and T.H.I.

### *Conflicts of interest*

The authors declare that there is no conflict of interest.

### *Data availability*

The datasets generated during and/or analysed during the current study are not publicly available due to the caveat for ethical approval that the responses of the respondents would be kept confidential. However, they would be available from the corresponding author on reasonable request.

### *Ethics approval*

Ethical clearance was obtained from the Ethical Committee of the Minis0try of Health, Oyo state, and written, informed consent was obtained from every subject, prior to participation. The reference number for ethical approval is AD 13/479, 2089[C].

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