

## Job Stress and Psychological Health of Female Doctors and Nurses/Miwives in Selected Tertiary Hospitals in Ibadan, Nigeria.

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### Abstract

#### Introduction

People in caring professions often handle human problems at the expense of losing their psychological balance. Research has shown that female health workers bear the brunt of the negative effects of job stress because of the dual roles of child rearing and being in employment foisted on them by society. This study therefore aimed to measure job stress and psychological health of female doctors and nurses/midwives in two tertiary hospitals in Ibadan.

#### Methods:

A hospital-based, comparative, cross-sectional survey was conducted from February to July 2016, involving use of standardized, self-administered instruments. Information was obtained on socio-demographics, job characteristics and psychological health (GHQ-28) Systematic and total sampling techniques were employed to select 274 and 236 female nurses/midwives and doctors respectively from both hospitals. Data were analysed using descriptive and inferential statistics.

#### Results:

A total of 510 respondents participated in the survey. Mean age of doctors and nurses were  $32.21 \pm 6.34$  years and  $39.40 \pm 9.67$  years respectively. On average, doctors were significantly younger and more educated than nurses. Slightly higher proportion of doctors worked for more than forty hours per week, compared to the nurses. Overall, 250 (49.0%) of the respondents reported that they experienced high stress in their jobs. Nurses (56.6%) were significantly more likely than doctors (40.3%) to report high stress ( $p < 0.001$ ). About one-third of the doctors (36.9%) and nurses (34.3%) had poor psychological health ( $p = 0.547$ ). Among doctors, high job demand and poor social support were predictors of poor psychological health. Job stress and low job control significantly increased the odds for poor psychological health among nurses/midwives.

#### Conclusion

Interventions aimed at addressing the welfare and psychological needs of health care professionals should be promptly implemented by the hospital management, with a view to reducing psychological distress.

**Key words:** Job stress, psychological health, doctors, nurses/midwives, female

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### I. Introduction

Psychological health has been reported to be affected by job stress, which may result in psychological disorders. (Shigemi, Mino, Tsudai, Babazono, & Aoyamai, 1997) (Ofili, Asuzu, Isah, & Ogbiede, 2004) Chronic job stress, also known as “burnout” has also been linked with psychological illnesses. (Rousseau, 2011) The job-demand-control-support model suggests that job stress and subsequent psychological health problems result from the interaction of three types of job characteristics: job demand, job control/decision latitude, and job related social support. (Shigemi et al., 1997) Jobs with high demand and low control can lead to significantly higher rates of anxiety and depression. (HSE, 2008)

Worldwide more than one in three people in most countries report sufficient criteria for at least one form of stress in their jobs at some point in their lives. (Maxon, 1999) Job stress is estimated to be the biggest occupational health problem in the United Kingdom, after musculoskeletal disorders such as back problems. (Gray, 2000). Although data are limited, there are indications that job stress is also a problem of public health significance in low and middle-income countries, including Nigeria. In Africa, prevalence of job stress among health care workers has been reported to be on the increase, being as high as 28% in a study conducted among medical doctors working in public hospitals in South Africa. (Van Zyl, 2002) (Govender, Mutunzi, & Okonta, 2012)

Health care workers are faced with issues of increased patient activity, shortage of staff, team conflict, unclear work roles, heavy workload, increased supervisory responsibilities, lack of autonomy and fear of litigation (Fitzpatrick, 2002) (Calnan & Wainwright, 2001). Evidence from research has also revealed that job stress could impact on the general health and well-being of the health worker. (Tzeng, Chung, & Fan, 2009) (Owolabi, Owolabi, OlaOlorun, & Olofin, 2012). Psychological health problems due to job stress may also result in poor overall work performance among health workers and subsequently, reduced productivity. (Vanagas & Bihari-Axelsson, 2005). Bearing in mind the critical role being played by health care workers in ensuring delivery of optimal care to patients, job stress and its consequences need to be addressed. The existing body of evidence suggests that exposure of health care workers to very minimal/no stress tends to promote both patient and provider satisfaction. (Tzeng et al., 2009). Often people in caring professions handle human problems at the expense of losing their own psychological balance. Health professionals such as physicians, dentists, nurses and health technologists have also been reported to have higher than expected rates of substance use and suicide, as well as elevated rates of depression and anxiety linked to job stress. (NIOSH, 2008).

Female health workers are prone to experiencing the burnout phenomenon, sleep disorders and depression arising from job stress. (Estryn-Behar, Kaminski, & Peigne, 1990). Depression has been reported to be the most common and persistent psychological health problem in women. (WHO, 2015). Women by nature being caring people may be more likely vulnerable to health challenges arising from stress on the job. Within the health care profession, female health care workers, possibly due to their additional socially ascribed roles, appear to report higher levels of job stress when compared with their male colleagues. In a study conducted in Libya among physicians, job burnout was reported more among females than males. (Yeboah et al., 2014). Female health care workers tend to be responsible for managing the health care of others, inclusive of patients and close relatives, often neglecting their personal welfare and well-being. Society seem to hold on to the myth that health care workers do not have the right to be ill, as they are believed to be better equipped with the necessary information and knowledge required to be in optimal health at all times, but research has proven otherwise. (Piko & Piczil, 2006).

Being unable to fulfil her obligations as a professional may lead to job dissatisfaction and burnout syndrome. A dissatisfied worker will ultimately bring about reduced productivity and increased turnover rate for the organization, which will further cause a decline in the already weak health system due to lack of adequate human resources for health.

There is paucity of data on job stress surveys conducted only among female health care workers in Nigeria. Females are unique in that they also have socially ascribed roles at home that may add on to the stress at work. The nursing profession as is reputedly known is predominantly female. A major work role of the nursing profession includes running of shift duty, while that of the medical profession entails performing call duty and each of these roles tend to separate women from their families for a stipulated period. Work roles differ in the sense that after a period of night shift, nurses/midwives are given some days off work duty, while doctors continue working into the following day sequel to a night call duty without having the opportunity to rest in-between from the stress of a night call duty.

Nurses/midwives, probably due to their training and orientation have propensity for less control over their jobs viz when and how work roles are performed, compared to doctors who tend to exhibit higher control in terms of job control/decision latitude. Pertaining to salaries/remunerations, doctors usually earn more than nurses/midwives, which may just be the basis for disparities in socio-economic status and this could be an implicating factor in the existing conflict in the health sector, which may be affecting their psychological health unconsciously.

This study therefore seeks to examine job stress among female health care workers (doctors and nurses/midwives) in selected tertiary hospitals in Ibadan, and also explore its association with psychological health. Information from this study could also be used to initiate discussions around policy formulation and development, as well as provide education and encourage the involvement of relevant stakeholders on issues affecting the health and well-being of hospital workers in Nigeria.

## **II. Methodology**

### **Study areas:**

The study was conducted at two tertiary institutions located in Ibadan: The University College Hospital and Adeoyo Maternity Hospital.

The University College Hospital, Ibadan (UCH) is in the South western Nigerian city of Ibadan. The hospital was established by an act of parliament in 1952 in response to the training needs of medical and other health professionals, as well as to provide tertiary health care services to the general public. It was initially commissioned with 500 bed spaces but has grown to 850 bed spaces and 163 offices. It is the premier tertiary hospital and serves as a referral centre for institutions within Nigeria and sub Saharan Africa. It presently has staff strength of over 5,000 workers. The institution has in its employment 1,216 clinical nurses/midwives and

260 female doctors (150 resident doctors, 18 house officers, 15 medical officers, 17 hospital consultants and 60 honorary consultants).(UCH, 2014)

The hospital has 53 service and clinical departments and runs consultative outpatient clinics in over 50 subspecialties in addition to a virus research facility, Institutes of Medical Research and Child Health, among others. 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. It also runs schools of Nursing, Midwifery, Medical Laboratory Services and Health Records.(UCH, 2014)

The main job description of the doctor is to oversee the general management of patients (make diagnosis, conduct investigations and treatment), while the nurses/midwives offer support/assistance to the doctors in the management of patients by offering nursing care. Doctors usually perform overnight call duty and have to resume work the following day, while nurses/midwives undertake an 8-hourly shift duty (morning, afternoon or night). Night shifts are undertaken for four consecutive nights, after which the nurse/midwife is off duty from work for an average period of four to five days. About 98% of the nurses are female, while about 40% of doctors are female.

Adeoyo Maternity Hospital, Yemetu, Ibadan, established in 1928 is a government owned specialized service hospital in Nigeria. It is located in Ibadan North Local Government Area of Oyo state. The hospital was originally designed and functioned as a secondary health institution, but was upgraded to the level of a tertiary health institution in June, 2004. The hospital has 200 female nurses/midwives and 20 female doctors. It offers obstetrics, paediatrics, medical, surgical, emergency and out-patient services to patients. It also serves as a referral centre for many primary health centres and private clinics within Ibadan and environs. Doctors and nurses/midwives perform work roles according to their individual professions as is applicable in UCH.(AMTH, 2015)

**Study design:** A hospital-based comparative cross-sectional study.

**Study population:** Female doctors and nurses/midwives of the University College Hospital, Ibadan and Adeoyo Maternity Hospital, Yemetu, Ibadan formed the study population for this survey.

**Inclusion criteria:** Female medical doctors and nurses/midwives in selected departments who had been in the employment of the hospital for at least 6 months.

**Exclusion criteria:** The study excluded:

- Male doctors and male nurses/midwives
- Female members of staff on maternity leave or leave of absence during the period of data collection
- Non-regular staff (those whose contract/appointments must be renewed on a regular basis)
- Female members of staff who declined participation

**Sample size determination:**

The sample size was determined using the formula for sample size determination when comparing independent proportions.(Kirkwood, 1998)

$$n/\text{group} = \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2 [P_1(1-P_1) + P_2(1-P_2)]}{(P_1 - P_2)^2}$$

**Where**

n = Minimum sample size for each group

$Z_{1-\alpha/2}$  = Standard normal deviate corresponding to the probability of type I error ( $\alpha$ ) at 5% = 1.96

$Z_{1-\beta}$  = Standard normal deviate corresponding to the probability of making type II error ( $\beta$ ) of 20%. Power at 80% = 0.84

$P_1$  = Prevalence of 14.9% reported for psychological morbidity among medical doctors in University of Ilorin Teaching Hospital, Ilorin, Nigeria.(Issa, Yussuf, Olanrewaju, & Abiodun, 2014)

$P_2$  = Prevalence of psychological morbidity in a comparable population, 24.9% (Assumption of 10% difference in prevalence of psychological morbidity among the nurses/midwives)

$(P_1 - P_2)$  = Minimum difference in prevalence of psychological morbidity between medical doctors and nurses/midwives which will be considered significant = 10%

Therefore,  $P_1 = 14.9\%$ ;  $P_2 = 24.9\%$

$$n/\text{group} = \frac{(1.96 + 0.84)^2 [0.149(1.00-0.149) + 0.249(1.00-0.249)]}{(0.149-0.249)^2}$$

$$n/\text{group} = 246$$

Adjusting for a 10% non-response rate

$$N = \frac{100 \times N}{100-r} \quad \text{where } N = \text{sample size, and } r = \text{non-response rate}$$

$$N^1 = \frac{100 \times 246}{100-10}$$
$$= 273.3$$

Therefore, the minimum sample size was 273 per group =  $273+273= 546$

### **Sampling Technique**

A list of the female doctors and nurses/midwives was obtained from the human resources department of each hospital. A total survey of female doctors that met the eligibility criteria was conducted in order to acquire the required sample size for the doctors, who are fewer in number (260 in UCH and 20 in Adeoyo hospital) when compared with the nurses/midwives (791 and 200 in UCH and Adeoyo hospital respectively).

Nursing departments were selected purposively based on those departments involved in offering core clinical services to patients. Probability Proportional to Size (PPS) technique was employed to select nurses from these nine departments in UCH [Obstetrics and Gynaecology (O & G), Surgery, Paediatrics, Internal Medicine, Psychiatry, Community Medicine, Family Medicine, Accident and Emergency (A & E), and Dentistry]. As there are only four main departments in Adeoyo Maternity Hospital, probability proportional to size was also conducted to select nurses/midwives from the departments in the hospital, namely O & G, Paediatrics, A & E and Family Medicine. This is as shown in Tables A and B below.

A systematic random sampling technique was used to select female nurses to be interviewed from each selected department. The first individual was selected by randomly picking a number between one and ten, subsequently every third person was selected.

Total number of female nurses in both hospitals =  $791+ 200 = 991$

$$\text{Number of nurses sampled in UCH} = \frac{791 \times 273}{991} = 218$$

$$\text{Number of nurses sampled in Adeoyo hospital} = \frac{200 \times 273}{991} = 55$$

**Table A: Probability proportional to size for selected UCH nursing departments and sampling interval**

| Department                 |     | Number of nurses/midwives | Proportional Allocation to size | Number of nurses to be sampled (n) | Sampling Interval determination (N/n) | Sampling interval            |
|----------------------------|-----|---------------------------|---------------------------------|------------------------------------|---------------------------------------|------------------------------|
| Obstetrics and Gynaecology | and | 112                       | $\frac{112 \times 218}{791}$    | 31                                 | 3.6                                   | Every 3 <sup>rd</sup> Person |
| General Surgery            |     | 121                       | $\frac{121 \times 218}{791}$    | 33                                 | 3.6                                   | Every 3 <sup>rd</sup>        |
| Internal Medicine          |     | 134                       | $\frac{134 \times 218}{791}$    | 37                                 | 3.6                                   | Every 3 <sup>rd</sup>        |
| Paediatrics                |     | 163                       | $\frac{163 \times 218}{791}$    | 45                                 | 3.6                                   | Every 3 <sup>rd</sup>        |
| Psychiatry                 |     | 116                       | $\frac{116 \times 218}{791}$    | 32                                 | 2.7                                   | Every 2 <sup>nd</sup>        |
| Community Medicine         |     | 18                        | $\frac{18 \times 218}{791}$     | 5                                  | 3.6                                   | Every 3 <sup>rd</sup>        |
| Family Medicine            |     | 51                        | $\frac{51 \times 218}{791}$     | 14                                 | 3.6                                   | Every 3 <sup>rd</sup>        |
| Dentistry                  |     | 20                        | $\frac{20 \times 218}{791}$     | 6                                  | 3.3                                   | Every 3 <sup>rd</sup>        |
| A & E                      |     | 56                        | $\frac{56 \times 218}{791}$     | 15                                 | 3.7                                   | Every 3 <sup>rd</sup>        |
| Total                      |     | 791                       | 791                             | 218                                |                                       |                              |

**Table B: Probability proportional to size for Adeoyo hospital nursing departments and sampling interval**

| Department                 |     | Number of nurses/midwives | Proportional Allocation to size | Number of nurses to be sampled (n) | Sampling Interval determination (N/n) | Sampling interval            |
|----------------------------|-----|---------------------------|---------------------------------|------------------------------------|---------------------------------------|------------------------------|
| Obstetrics and Gynaecology | and | 141                       | $\frac{141 \times 55}{200}$     | 39                                 | 3.6                                   | Every 3 <sup>rd</sup> Person |
| Paediatrics                |     | 44                        | $\frac{44 \times 55}{200}$      | 12                                 | 3.6                                   | Every 3 <sup>rd</sup> person |
| Family medicine            |     | 5                         | $\frac{5 \times 55}{200}$       | 1                                  | 5                                     | 5 <sup>th</sup> person       |
| A & E                      |     | 10                        | $\frac{10 \times 55}{200}$      | 3                                  | 5                                     | Every 5 <sup>th</sup> person |
| Total                      |     | 200                       | 200                             | 55                                 |                                       |                              |

### Study Instruments

A self-administered, structured questionnaire was used for quantitative data collection.

The questionnaire was divided into five sections.

Section A: Socio-demographic and work characteristics

Section B: Prevalence of job stress and job stressors

Section C: Assessment of psychological health problems

Section D: Other health problems (including physical and physiological)

Section E: Coping strategies

### Data Collection

Data collection method involved the use of standardized, self-administered questionnaires. The questionnaires included the standardized job stress questionnaire (JSQ), (de Jonge, van Vegchel, Shimazu, Schaufeli, & Dormann, 2010) and the general health questionnaire (GHQ-28) for assessment of psychological health status.

### Pre-test of Data Collection Instrument

The questionnaire was pre-tested at Jericho Hospital in Ibadan (also recognized as a tertiary health institution in Oyo state) among 45 female nurses/midwives and 10 female doctors. The instrument was administered in English language because of the high educational level of respondents involved. This was analysed for instrument validity. No amendment was made on the questionnaire after analysis as it was found to be reliable. The Cronbach's alpha generated from the GHQ-28 scale was 0.891.

### **Training of Data Collectors**

Training of four female research assistants with at least Ordinary National Diploma (OND) Certificate was conducted over a period of two days. The training focussed on ethical conduct during and after the research, how to secure informed consent, objectives of the study, sampling procedure, interviewing skills, review of questionnaires for completeness and field supervision. The questionnaires were self-administered. Two female research assistants each were on stand-by in the hospitals to retrieve the questionnaires from respondents. The researcher accompanied the research assistants in conducting initial introductions and consent taking so as to gain easy access to the health professionals. They were also to ensure completeness of entries by respondents and render necessary assistance, if any difficulties were encountered.

### **Measurement of Variables**

#### *Dependent (outcome) variable*

Psychological health:

Psychological health was measured using a standard instrument, the General Health Questionnaire-28 (GHQ-28). The GHQ is a self-administered screening instrument designed to measure psychological health with high specificity and sensitivity.(Goldberg & Williams, 1988) The GHQ scale asks whether the respondent has experienced a particular symptom or behaviour in the past month. Each item is rated on a Likert-type scoring system (0-less than usual, 0-no more than usual, 1-rather more than usual, or 1-much more than usual.(Montazeri et al., 2003) The least score is 0 and the highest score is 28. Scores were added across the 28 items and a composite score generated.. Mean scores were calculated and compared between groups. The cut-off point for a probable psychological health problem is 4/5.(Gureje, 2002)(Swallow, Lindow, Masson, & Hay, 2003) Scores greater than 4 indicated an increased likelihood of poor psychological health. For the GHQ-28 subscales, scores of 1 and greater indicated any of psychosomatic symptoms, anxiety/insomnia, social dysfunction and severe depression. The main benefit of the GHQ-28 is that it is easy to administer, brief and objective. (Molina et al., 2006) It has been translated into 38 different languages and has also been used in a wide range of cultural settings,(Gibbon, Arevalo, & Monico, 2004) including Nigeria.(Ofili et al., 2004)

#### *Independent variables*

1. Socio-demographic characteristics –

Age - <35years; ≥35years

Occupation – Doctors; Nurse/midwives

Educational attainment – Secondary degree or higher; tertiary

Marital status – Currently married; Not currently married

Number of living children – None; At least one

Monthly income - <200,000 naira; ≥200,000 naira

2. Work characteristics – Basic qualification (in years) and length of service (in years) - ≤2years; 3-5 years; ≥6 years.

Call and shift duty– Yes; No

Number of hours worked per week (Less than 40 hours; 40 hours or more)

3. Job stress

This was assessed using the Karasek Job Stress Questionnaire –JSQ (DCSQ). The instrument is a 17-item questionnaire. Standardized score calculation of each of the three dimensions was performed to analyse data, attributing points to each response selected. The psychological demand and decision latitude (control) dimensions were given the following scores: (4) frequently, (3) sometimes, (2) rarely, and (1) never or almost never. The “social support in the workplace” dimension was given the following scores: (4) strongly agree, (3) agree (2) disagree and (1) strongly disagree. Demand-Control-Support Questionnaire (DCSQ) dimension scores were calculated by summing up the item scores by dimension; for psychological demands, scores ranged from 5 to 20, and for decision latitude scores ranged from 6 to 24. The four-point response options varied from “often” (four points) to “never” (one point). The "Social Support at Work" section consisted of six items, answered using a four-point Likert scale ranging from “strongly agree” to “strongly disagree” (obtainable scores from 6 to 24).

To compute overall job stress of respondents, median values of job demand and control were used to divide the subjects into two groups, namely: high stress and low stress groups. Respondents displaying a job demand higher than the median and job control/decision latitude lower than the median represented the high stress group. Those with a low job demand and high control/ decision latitude represented the low stress group.(Karasek & Theorell, 1990)

### **Data management**

Each questionnaire was reviewed by the researcher and research assistants for completeness during the data collection period. Incomplete questionnaires were immediately returned to respondents at point of collection to input any missing data/information. Also, at the end of each day, all questionnaires collected were further cross-checked for completeness, including reviewing the pattern of responses of each participant as recorded. Questionnaires were kept protected in a safe and only the researcher and research assistants had access to it.

### **Statistical Analysis**

Data were entered into the computer and analysed using SPSS version 20. Frequencies, proportions and percentages for categorical variables of interest were compared between female doctors and nurses, and appropriate tables and figures generated. Socio-demographic characteristics (i.e. marital status, occupation, educational attainment, rank/level, etc.) were reported as proportions. Quantitative variables such as age of respondents, basic qualification in years, number of living children and income were summarized using means, medians and standard deviations.

Inferential statistics were conducted using chi-square test to determine the association between the dependent/outcome variable (psychological health) and other categorical independent variables of interest, while the student t-test was used to compare quantitative variables such as age, length of service, number of living children and income. Thereafter, independent variables that were significant at 10% level of significance following bivariate analysis or were suggested to be important based on existing literature were included in a multivariate logistic regression model to identify factors associated with poor psychological health at the 5% level of significance.

### **Ethical Considerations**

Ethical approval was obtained from the Joint Institutional Review Committee (IRC) of the UCH and the College of Medicine, University of Ibadan. Administrative permission to conduct the study was obtained from the Chief Medical Director, University College Hospital and the Consultant- in- Charge, Adeoyo Maternity Hospital, Ibadan.

### **Informed Consent**

The purpose, content and implication of the research were explained to the participants. Written informed consent was obtained from the participants before administering the questionnaires. Participants were also informed that participation was voluntary, and they were free to decline participation or withdraw from the study at any time without reprisal or loss of benefit.

### **Confidentiality**

Data collected will be used only for research purposes and kept confidential on a password protected computer. Participants were assured of the confidential nature of responses and personal identifying information was not included in the data collection instrument to guarantee anonymity. The questionnaires were kept in a safe. Only the principal investigator and research assistants had access to the data.

### **Beneficence to Participants**

Findings from the study was presented to, and may be utilized by the hospital management to engage in discussions about providing appropriate interventions. Due to the high stress levels reported among members of staff, recommendations were made to the respective health institutions for inclusion of stress management training/workshops and employee assistance programmes in the work schedule. There was no direct monetary benefit for enrolling in the study.

### **Non-Maleficence to Participants**

The study caused no harm to the participants.

## **III. Limitations of the study**

The limitations of this study must be acknowledged. Firstly, the cross-sectional nature of the study could not allow for causal inferences to be drawn between the variables of interest i.e. between job stress and psychological health outcomes. Furthermore, the measures used were all self-reported, so a degree of biased reporting was possible. Finally, the wide confidence interval observed for some of the adjusted odds ratio indicates low precision and that more information may be needed on the associations with wide confidence intervals to guide appropriate intervention. However, the study emphasizes the importance of health care workers maintaining their health status while caring for the health of others

IV. Result

Socio-demographic characteristics of the respondents

Table 1 shows the socio-demographic characteristics of respondents by occupational group. A total of 510 respondents (doctors and nurses) participated in the survey. Two hundred and thirty-six (46.3%) were doctors, while 274 (53.7%) were nurses. The mean age of doctors was 32.21 ± 6.34 years, while the mean age of the nurses was 39.40 ± 9.67 years. On average, doctors were significantly younger (p<0.001), more educated (p<0.001) and more likely to report earning ≥#400000 (p<0.001) than nurses as shown in Table 1. Nurses were significantly more likely than doctors to be currently married (p=0.004) and to have living children (p<0.001).

Table 1: Socio-demographic characteristics of respondents

| Variable                         | Doctor<br>N=236<br>n (%) | Nurse<br>N=274<br>n (%) | Total<br>N=<br>n (%) | X <sup>2</sup> | p-value |
|----------------------------------|--------------------------|-------------------------|----------------------|----------------|---------|
| <b>Age group (years)</b>         |                          |                         |                      |                |         |
| ≤35                              | 170 (72.0)               | 93 (33.9)               | 263 (51.6)           | 73.664         | <0.001  |
| >35                              | 66 (28.0)                | 181 (66.1)              | 247 (48.4)           |                |         |
| Mean (SD) <sup>a</sup>           | 32.21 ± 6.34             | 39.40 ± 9.67            | 36.11 ± 9.05         | -9.407*        | <0.001  |
| <b>Ethnic group</b>              |                          |                         |                      |                |         |
| Igbo                             | 28 (11.9)                | 21 (7.7)                | 49 (9.6)             | 3.409          | 0.182   |
| Yoruba                           | 195 (82.6)               | 242 (88.3)              | 437 (85.7)           |                |         |
| Others                           | 13 (5.5)                 | 11 (4.0)                | 24 (4.7)             |                |         |
| <b>Religion</b>                  |                          |                         |                      |                |         |
| Christianity                     | 213 (90.3)               | 239 (87.2)              | 452 (88.6)           | 1.153          | 0.283   |
| Islam                            | 23 (9.7)                 | 35 (12.8)               | 58 (11.4)            |                |         |
| <b>Highest educational level</b> |                          |                         |                      |                |         |
| Tertiary/higher degree           |                          |                         |                      |                |         |
| Postgraduate                     | 152 (51.7)               | 193 (70.4)              | 315 (61.8)           | 18.861         | <0.001  |
|                                  | 114 (48.3)               | 81 (29.6)               | 195 (38.2)           |                |         |
| <b>Marital status</b>            |                          |                         |                      |                |         |
| Not currently married            | 93 (39.4)                | 75 (27.4)               | 168 (32.9)           | 8.313          | 0.004   |
| Currently married                | 143 (60.6)               | 199 (72.6)              | 342 (67.1)           |                |         |
| <b>Number of living children</b> |                          |                         |                      |                |         |
| 0                                | 100 (42.4)               | 49 (17.9)               | 149 (29.2)           | 49.212         | <0.001  |
| 1-3                              | 127 (53.8)               | 178 (65.0)              | 305 (59.8)           |                |         |
| ≥4                               | 9 (3.8)                  | 47 (17.2)               | 56 (11.0)            |                |         |

<sup>a</sup> Standard deviation \*t-test

Work characteristics of respondents

Table 2 shows the characteristics of the two occupational groups by work variables. In all, 201 (73.4%) nurses reported that the time since their basic qualification was ≥6 years, while 147 (62.3%) doctors reported a similar time frame (p<0.001). A higher proportion of nurses, (55.1%) had worked at least 6 years in their institution, compared to doctors (22.9%) (p<0.001). Majority of the nurses, 206 (75.2%) performed shift duty, compared to 38 (16.1%) doctors who ran shifts (p<0.001). A significantly higher proportion of doctors 198 (83.9%) performed call duty, compared with 22 (8.0%) nurses (p<0.001). A slightly higher proportion 223 (94.5%) of doctors worked for more than forty hours per week, compared to 239 (87.2%) of nurses.

Table 2: Work characteristics of doctors and nurses

| Variable   | Doctors<br>N=236<br>n (%) | Nurses<br>N=274<br>n (%) | Total<br>N=510<br>n (%) | X <sup>2</sup> | p-value |
|--|---------------------------|--------------------------|-------------------------|----------------|---------|
| <b>Time since basic qualification (in years)</b> |                           |                          |                         |                |         |
| ≤2   |                           |                          |                         |                |         |
| 3-5  | 67 (28.4)                 | 30 (10.9)                | 97 (19.0)               | 26.594         | <0.001  |
| ≥6   | 22 (9.3)                  | 43 (15.7)                | 65 (12.7)               |                |         |
|  | 147 (62.3)                | 201 (73.4)               | 348 (68.2)              |                |         |
| <b>Length of work in institution (in years)</b>  |                           |                          |                         |                |         |
| ≤2   |                           |                          |                         |                |         |
| 3-5  | 103 (44.6)                | 79 (28.8)                | 182 (36.0)              | 55.057         | <0.001  |



|                                 |            |            |            |         |        |
|---------------------------------|------------|------------|------------|---------|--------|
| ≥6                              | 75 (32.5)  | 44 (16.1)  | 119 (23.6) |         |        |
|                                 | 53 (22.9)  | 151 (55.1) | 204 (40.4) |         |        |
| <b>Shift duty</b>               |            |            |            |         |        |
| Yes                             | 38 (16.1)  | 206 (75.2) | 244 (47.8) | 177.359 | <0.001 |
| No                              | 198 (83.9) | 68 (24.8)  | 266 (52.2) |         |        |
| <b>Call duty</b>                |            |            |            |         |        |
| Yes                             | 198 (83.9) | 22(8.0)    | 220 (43.1) | 297.538 | <0.001 |
| No                              | 38 (16.1)  | 252 (92.0) | 290 (56.9) |         |        |
| <b>Work duration (per week)</b> |            |            |            |         |        |
| ≤40 hours                       |            |            |            |         |        |
| >40 hours                       | 13 (5.5)   | 35 (12.8)  | 48 (9.4)   | 7.850   | 0.005  |
|                                 | 223 (94.5) | 239 (87.2) | 462 (90.6) |         |        |

### Prevalence of job stress among doctors and nurses

Table 3 shows the overall prevalence of job stress among doctors and nurses. Overall, 250 (49.0%) of the respondents reported that they experienced a high level of stress in their jobs. Compared with 40.3% of the doctors, 56.6% of nurses reported high job stress ( $p < 0.001$ ).

Nurses were more likely to report high demand and low control jobs, while doctors were more likely to report low demand and low control jobs. Although there was a statistically significant difference between doctors and nurses on reported job demand, with nurses reporting higher job demand ( $p < 0.001$ ). Occupational groups did not differ regarding their reported job control or social support.

**Table 3: Prevalence of job stress, job demand, job control and social support among respondents**

| Variable              | Doctor<br>N=236<br>n (%) | Nurse<br>N=274<br>n (%) | Total<br>N=510<br>n (%) | X <sup>2</sup> | p-value |
|-----------------------|--------------------------|-------------------------|-------------------------|----------------|---------|
| <b>Job stress</b>     |                          |                         |                         |                |         |
| High stress           | 95 (40.3)                | 155 (56.6)              | 250 (49.0)              | 13.505         | <0.001  |
| Low stress            | 141 (59.7)               | 119 (43.4)              | 260 (51.0)              |                |         |
| <b>Job demand</b>     |                          |                         |                         |                |         |
| High                  | 73 (30.9)                | 151 (55.1)              | 224 (43.9)              | 30.091         | <0.001  |
| Low                   | 163 (69.1)               | 123 (44.9)              | 286 (56.1)              |                |         |
| <b>Job control</b>    |                          |                         |                         |                |         |
| Low                   | 143 (60.6)               | 148 (54.0)              | 291 (57.1)              | 2.240          | 0.135   |
| High                  | 93 (39.4)                | 126 (46.0)              | 219 (42.9)              |                |         |
| <b>Social support</b> |                          |                         |                         |                |         |
| Poor                  | 139 (58.9)               | 175 (63.9)              | 314 (61.6)              | 1.324          | 0.250   |
| Good                  | 97 (41.1)                | 99 (36.1)               | 196 (38.4)              |                |         |

### Psychological health of doctors and nurses

Table 4 shows the overall psychological health of doctors and nurses. Overall, about one-third of the doctors (36.9%) and nurses (34.3%) had poor psychological health.

**Table 4: Psychological health of doctors and nurses**

| Variable                    | Doctor<br>N=236<br>n (%) | Nurse<br>N=274<br>n (%) | Total<br>N=510<br>n (%) | X <sup>2</sup> | p-value |
|-----------------------------|--------------------------|-------------------------|-------------------------|----------------|---------|
| <b>Psychological health</b> |                          |                         |                         |                |         |
| Good                        | 149 (63.1)               | 180 (65.7)              | 329 (64.5)              | 0.362          | 0.547   |
| Poor                        | 87 (36.9)                | 94 (34.3)               | 181 (35.5)              |                |         |

### Association between socio-demographic characteristics and poor psychological health of respondents.

Table 5 depicts the bivariate analysis between socio-demographic characteristics and poor psychological health of doctors and nurses. There was a statistically significant difference between age group and psychological health. Younger nurses reported worse psychological health than older nurses ( $p = 0.016$ ).

**Table 5 Bivariate analysis of sociodemographic characteristics and psychological health of respondents**

| Variable                                 | Psychological health     |                         |                         |                        |
|--|--------------------------|-------------------------|-------------------------|------------------------|
|  | Doctors<br>Good<br>n (%) | Poor<br>n (%)           | Nurses<br>Good<br>n (%) | Poor<br>n (%)          |
| <b>Age group (years)</b>                 |                          |                         |                         |                        |
| ≤ 35                                     | 103 (61.7)               | 64 (38.3)               | 54 (56.3)               | 42 (43.8)              |
| >35                                      | 46 (66.7)                | 23 (33.3)               | 126 (70.8)              | 52 (29.2)              |
|  |                          | $\chi^2=0.522, p=0.314$ |                         | $X^2=5.847, p=0.016$   |
| <b>Ethnic group</b>                      |                          |                         |                         |                        |
| Yoruba                                   | 120 (61.9)               | 74 (38.1)               | 161 (66.3)              | 82 (33.7)              |
| *Others                                  | 29 (69.0)                | 13 (31.0)               | 19 (61.3)               | 12 (38.7)              |
|  |                          | $X^2 = 0.767, p=0.381$  |                         | $X^2 = 0.301, p=0.583$ |
| <b>Highest educational level</b>         |                          |                         |                         |                        |
| Tertiary/higher degree                   | 80 (66.1)                | 41 (33.9)               | 123 (63.4)              | 71 (36.6)              |
| Postgraduate                             | 69 (60.0)                | 46 (40.0)               | 57 (71.3)               | 23 (28.7)              |
|  |                          | $X^2=0.948, p=0.330$    |                         | $X^2 = 1.548, p=0.213$ |
| <b>Marital status</b>                    |                          |                         |                         |                        |
| Not currently married                    | 53 (58.9)                | 37 (41.1)               | 46 (59.0)               | 32 (41.0)              |
| Currently married                        | 96 (65.8)                | 50 (34.4)               | 134 (68.4)              | 62 (31.6)              |
|  |                          | $X^2 = 1.127, p=0.288$  |                         | $X^2=2.184, p=0.139$   |
| <b>Number of living children</b>         |                          |                         |                         |                        |
| None                                     |                          |                         |                         |                        |
| At least one                             | 60 (61.9)                | 37 (38.1)               | 30 (57.7)               | 22 (42.3)              |
|  | 89 (64.0)                | 50 (36.0)               | 150 (67.6)              | 72 (32.4)              |
|  |                          | $X^2 = 0.116, p=0.734$  |                         | $X^2=1.823, p=0.177$   |
| <b>Average monthly income (in naira)</b> |                          |                         |                         |                        |
| <200000                                  | 92 (63.9)                | 52 (36.1)               | 159 (65.7)              | 83 (34.3)              |
| ≥200000                                  | 57 (62.0)                | 35 (38.0)               | 21 (65.6)               | 11 (34.4)              |
|  |                          | $X^2=0.090, p=0.764$    |                         | $X^2=0.000, p=0.993$   |

\*Edo, Ishan, Ora, Igbo, Igarra, Hausa

Table 6 represents the bivariate analysis of the three job stress domains and psychological health. Doctors with high job demand were significantly more likely to experience poor psychological health, compared to nurses ( $p=0.021$ ). Similarly, doctors who experienced poor social support at work were significantly more likely to have poor psychological health, compared to the nurses ( $p<0.001$ ).

**Table 6 Bivariate analysis of job stress, job demand, job control, social support and psychological health of respondents**

| Variable              | Psychological health     |                        |                         |                        |
|-----------------------|--------------------------|------------------------|-------------------------|------------------------|
|                       | Doctors<br>Poor<br>n (%) | Good<br>n (%)          | Nurses<br>Poor<br>n (%) | Good<br>n (%)          |
| <b>Job stress</b>     |                          |                        |                         |                        |
| Low stress            | 90 (63.8)                | 51 (36.2)              | 75 (63.0)               | 44 (37.0)              |
| High stress           | 59 (62.1)                | 36 (37.9)              | 105 (67.7)              | 50 (32.3)              |
|                       |                          | $X^2 = 0.073, p=0.788$ |                         | $X^2 = 0.665, p=0.415$ |
| <b>Job demand</b>     |                          |                        |                         |                        |
| High                  | 54 (74.0)                | 19 (26.0)              | 100 (66.2)              | 51 (33.8)              |
| Low                   | 95 (58.3)                | 68 (41.7)              | 80 (65.0)               | 43 (35.0)              |
|                       |                          | $X^2 = 5.333, p=0.021$ |                         | $X^2 = 0.042, p=0.837$ |
| <b>Job control</b>    |                          |                        |                         |                        |
| Low                   | 94 (65.7)                | 49 (34.3)              | 103 (69.6)              | 45 (30.4)              |
| High                  | 55 (59.1)                | 38 (40.9)              | 77 (61.1)               | 49 (38.9)              |
|                       |                          | $X^2 = 1.053, p=0.305$ |                         | $X^2 = 2.173, p=0.140$ |
| <b>Social support</b> |                          |                        |                         |                        |

|      |            |                                 |            |                               |
|------|------------|---------------------------------|------------|-------------------------------|
| Poor | 103 (74.1) | 36 (25.9)                       | 123 (70.3) | 52 (29.7)                     |
| Good | 46 (47.4)  | 51 (52.6)                       | 57 (57.6)  | 42 (42.4)                     |
|      |            | X <sup>2</sup> =17.470, p<0.001 |            | X <sup>2</sup> =2.173,p=0.033 |

**Factors associated with poor psychological health of doctors**

Table 7 shows the multivariate analysis of factors associated with poor psychological health of doctors. Doctors who had high job demand had about three times higher odds of reporting poor psychological health than doctors who had low job demand [OR 2.557 (95% CI 1.057-6.185)]. Similarly, doctors who experienced poor social support at work had almost three times higher odds of having poor psychological health than those with good social support [OR 2.900 (95% CI 1.487-5.656)].

**Table 7 Multivariate logistic regression model showing factors associated with poor psychological health of doctors**

| Variables             | Odds ratio | 95% confidence interval | p-value      |
|-----------------------|------------|-------------------------|--------------|
| <b>Job demand</b>     |            |                         |              |
| High                  | 2.557      | 1.057 – 6.185           | <b>0.037</b> |
| Low                   | 1          |                         |              |
| <b>Social support</b> |            |                         |              |
| Poor                  | 2.900      | 1.487 – 5.656           | <b>0.002</b> |
| Good                  | 1          |                         |              |

**Factors associated with poor psychological health of nurses**

Table 8 shows the factors associated with poor psychological health of nurses. When other factors were adjusted for, job stress [OR 3.880 (95% CI 1.363-11.046)], experiencing low job control [OR 3.038 (95% CI 1.195-7.724)], as well as not utilizing any coping strategies [OR 1.842 (95% CI 1.020 – 3.323)] significantly increased the likelihood of having poor psychological health.

**Table 8 Multivariate logistic regression model showing factors associated with poor psychological health of nurses**

| Variables              | Odds ratio | 95% confidence interval | p-value      |
|------------------------|------------|-------------------------|--------------|
| <b>Job stress</b>      |            |                         |              |
| High stress            | 3.880      | 1.363 – 11.046          | <b>0.011</b> |
| Low stress             | 1          |                         |              |
| <b>Job control</b>     |            |                         |              |
| Low                    | 3.038      | 1.195 – 7.724           | <b>0.020</b> |
| High                   | 1          |                         |              |
| <b>Coping strategy</b> |            |                         |              |
| Not used               | 1.842      | 1.020 – 3.323           | <b>0.043</b> |
| Used                   | 1          |                         |              |

**V. Discussion**

More than half (51.6%) of the respondents were younger than 35 years of age. Findings were in corroboration with a study conducted among doctors and bank workers in Calabar where majority of respondents were less than 40 years of age.(Bello, Asuzu, & Ofili, 2013) Similar findings were also reported from a comparative study among female doctors and nurses in China, where majority of respondents were less than 30 years of age and a higher proportion were doctors.(Si-Ying, Huang-Yuan, Xiao-Rong, Yang, & Hong, 2011) This is logical in that these samples constituted more of interns and resident doctors, who are in training and majority have only recently graduated from medical school.

The overall prevalence of job stress among doctors and nurses in this study was 49.0%. Prevalence of 45% was documented in a study in Canada among health care providers where doctors and nurses had increased likelihood of job stress, compared to other health care workers.(Wilkins, 2007) Prevalence of job stress among the nurses was 55.6%, which is similar to findings from a study conducted among nurses in Ibadan metropolis in

which prevalence of job stress was 55.2%.(Mojoyinola, 2008) Prevalence of job stress among doctors in this study was 40.3%, which is also similar to findings of 48.7% from a study among physicians in Lagos University Teaching Hospital.(Oridota, Owolabi, Akanmu, Olajide, & Soriyan, 2014) The prevalence is however, higher than 26.2% obtained from a cross-sectional study in South western Nigeria among health workers at the Baptist Hospital, Ogbomosho.(Owolabi et al., 2012) The observed difference may be due to use of a smaller sample size in their study, and also the involvement of other cadres of health workers who may not experience the same level of stress as doctors and nurses/midwives. The fact that the Ogbomosho study was conducted in a private hospital setting, devoid of the protocols and bureaucracy associated with public health institutions, good working conditions, well organized staff, functional equipment and standard infrastructure may have accounted for the low prevalence of job stress. Reported job stress may be influenced by other lifestyle/environmental stressors not captured in the survey. In this case, it is expected that the stress associated with getting to work is least in Ogbomosho where doctors live on the hospital grounds and worst in Lagos due to traffic jams.

About 30% Of doctors and nurses experience poor psychological health based on report from the present study, corroborating findings obtained from tertiary centres in Nsukka, Eastern Nigeria(“Burn out and psychological distress among nurses in a Nigerian tertiary health institution,” n.d.), as well as the UK(Ramirez, Graham, Richards, Cull, & Gregory, 1996) and Taiwan.(Tzeng et al., 2009) Some studies, however reported much lower prevalence of poor psychological health among doctors; 14% in Benin(Ofili et al., 2004) and 14.9% in Ilorin.(Issa et al., 2014) In the cross-sectional study among health care workers in military hospitals of Taiwan, nurses had a slightly higher prevalence of 32.1% for poor psychological health, compared to doctors who reported 28.3% prevalence.(Tzeng et al., 2009) Varied prevalence obtained in cited references may be credited to the use of different cut-off points and terminologies for measuring psychological health by different researchers.

Age, though not a predictor of poor psychological health in this study, was found to be associated with poor psychological health among the nurses on bivariate analysis. This is in keeping with findings of young age being a predictor of poor psychological health as reported in the study among military health care workers in Taiwan.(Tzeng et al., 2009) These findings bring to the fore that younger health care workers and newly employed staff in tertiary hospitals may be in need of improved guidance and periodic re-orientation in order to prevent poor psychological health that may arise from stress on the job.

This study identified high job demand and low job control as predictors of poor psychological health among doctors and nurses respectively Also, high levels of social support at work from colleagues and supervisors have been found to be protective of poor psychological health among health care professionals.(Weinberg & Creed, 2000)(Estryn-Behar, Kaminski, Peigne, et al., 1990)

### **Limitations**

Firstly, the cross-sectional nature of the study could not allow for causal inferences to be drawn between the variables of interest i.e. between job stress and psychological health outcomes. Furthermore, the measures used were all self-reported, so a degree of biased reporting was possible. However, the study emphasizes the importance of health care workers maintaining their health status while caring for the health of others

## **VI. Conclusion**

This study has shown that a higher proportion of the nurses had high job stress, compared to the doctors. Nurses were significantly more likely to report stress at work. About a third of doctors and nurses respectively had poor psychological health and might be needing further assessment. Findings from this study revealed that doctors were significantly more likely to experience poor psychological health compared to nurses. Doctors, due to their status and training tend to hide emotions and feelings and hesitate to disclose problems and challenges for fear of being victimized and stigmatized, unlike the nurses who enjoy stronger social support from their colleagues and supervisors. These pent-up emotions overtime could go on to cause psychological distress for the health worker.

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