OCCUPATIONAL STRESS AND HYPERTENSION AMONG HEALTH PROFESSIONALS IN OWERRI, IMO STATE

BY

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CERTIFICATION

This is to certify that this work '**Occupational Stress and Hypertension Among Health care Professionals in Owerri, Imo State'**, was carried out by **Amams Amarachi Jennifer (Reg. No: 20174082568)** in partial fulfillment for the award of Master of Public Health (MPH) Degree (Epidemiology and Biostatistics option) in the Department of Public Health, School of Health Technology, Federal University of Technology, Owerri, Imo State.

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DEDICATION

Dedicated to all the students who may wish to use this project work as a research base.

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TABLE OF CONTENT

CHAPTER THREE: MATERIALS AND METHIODS

CHAPTER FOUR: RESULT

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

Stress among health professionals is relatively common, and seemingly, this is a worldwide problem. Although prevalent, it is a major risk factor of hypertension. The main aim of this study is to determine the association between occupational stress and hypertension among health care professionals in Owerri, Imo State. The descriptive cross sectional study was carried out between November and December 2021 among health care professionals in Federal Medical Centre Owerri, Imo State Specialist Hospital, Federal Polytechnic Nekede Medical Centre, Federal University of Technology Owerri Medical Centre, Alvan Ikoku Federal. College of Education Medical Centre, and Holy Rosary Hospital Emekuku. Multistage, Stratified and simple random sampling techniques were used to select the 400 health care professionals who participated in the study. A pretested well structured questionnaire, a motech digital sphygmomanometer and a standard stress measuring scale (PSS) were used for data collection. Statistical package for Social Sciences (SPSS) version 21.0 was used to analyse the data. Hypothesis were tested using chi-square test and p-value <0.05 was considered to be statistically significant. Results indicated higher prevalence of stress (35%) than hypertension (15%). Females had same hypertension rate as males (15%). Age group 36-45 had higher hypertension rate (22.9%) than age group <25 with 0% hypertension rate. Lab. Technicians were more hypertensive (20%) than Lab. Scientist who had the least (3.3%) . PhD as highest level of education accounted for (16.7%) while Masters accounted for (13.6%). Highest rate of hypertension was recorded among the married respondents (17.3%). Those who had family history of hypertension had higher hypertension rate (18.8%) than those with no family history of hypertension who had (9.6%). Although the findings showed that there is no direct association between occupational stress and hypertension, there is still need to educate the health care professionals on the stress coping strategies and the risk factors of hypertension to reduce to the barest minimum the occurrences.

Keywords: Occupational Stress, Hypertension, Health Professionals.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Stress is a multidimensional concept which is originally derived from the Latin word, “stringere” which refers to draw tight, to describe hardships and/or affliction (Ismail et al, 2010). It often occurs when individuals’ physical and emotion do not match or cannot handle their job demands, constraints, and/or opportunities. Occupational or Work-related stress therefore, is the response people may have when presented with work demands and pressures that are not matched to their knowledge and abilities and which challenge their ability to cope (WHO, 2020). Stress occurs in a wide range of work circumstances but is often made worse when employees feel they have little support from supervisors and colleagues, as well as little control over work processes. There is often confusion between pressure or challenge and stress and sometimes it is used to excuse bad management practice.

Types of Stress

There are four major types of stress according to (Taylor, 1995) thus:

Chronic Stress

This can be seen as unrelenting demands and pressures for seemingly interminable periods of time. Chronic stress is the type that wears the individual down day after day and year after year with no visible escape. It grinds away at both emotional and health of the individual leading to breakdown and even death.

Acute Stress

This type of stress is the most common and most recognizable form of stress. It is the kind of stress which the individual knows exactly why he is stressed; he was just in a car accident; the school nurse just called him, a bear just ambled onto his campsite.

Traumatic Stress

It is a severe stress reaction that results from a catastrophic event or intense experience such as a natural disaster, sexual assault, life-threatening accident, or participation in a combat.

Episodic Acute Stress:

This is a situation where the individual's life experiencing this kind of stress is very chaotic, out of controlled and they always seem to be facing multiple stressful situations.

Occupational stress is the psychological loads (i.e. stress) carried by a person while working. Life without stress is no life, but life with excessive stress is taxing life. Stress that facilitates working performance is eustress (i.e. favorable stress) and stress that inhibits working performance is distress (i.e. unfavorable stress). The most stressful event as perceived by workers globally was their work (59%), then followed by finances (44%) and customers (37%) . Various stressors contribute to stress at work which include long working hours, harassment, unsafe working environment, conflict of interest with colleagues, lack of job autonomy, poor career prospect, working in isolation, and poor support from administrator. Evidence shows that excessive stress at work is significantly associated with health problems, for examples depression, metabolic syndrome and heart disease. As a result, these consequences could lead to declined work output, organizational dysfunction, and raised absenteeism. Because of the complex nature of stress, many stress models have been proposed to deal with the issues of stress and ways of individual responded to them. Several relevant stress models are discussed**.**

Changes in the nature of work have resulted in increasing work-related stress in people in developing countries. Work stress is at present already acknowledged as one of the epidemics of modern working life. It is associated with a number of disease conditions, such as hypertension, cardiovascular diseases, affective disorders, depression, disturbed metabolism (risk of Type II diabetes) and musculoskeletal disorders.

Hypertension is one of the major public health problems and it is prevalent all over the world. Hypertension, sometimes called arterial hypertension, is a chronic medical condition in which the blood pressure in the arterial is elevated, prompting the heart to work harder than normal to circulate blood through the blood vessels (Gibson, 2009). According to Deepa et al, 2003, hypert ension is the fourth contributor to premature death in developed countries and the seventh in dev eloping countries. Predominantly, hypertension is an asymptomatic cardiovascular condition and the diagnosis is usually made at routine medical examinations or when there are any complications. Health workers ironically take it for granted that they are staff without minding to check their blood pressure periodically, since the silent killer is said to be asymptomatic. Hypertension is characterized by rise in arterial blood pressure of the individual. It is one of the important risk factor for cardiovascular mortality accounting to 20-30% of all deaths (Reddy and Prabhu, 2005). It remains silent without any symptoms but causes continuous damage to person's cardiovascular system. For the same reason WHO has given the name "SILENT KILLER" as the disease does not cause any harm by itself but predisposes to other cardiovascular diseases like stroke, myocardial infarction etc. It is a major risk factor for cardiovascular disease, chronic renal disease and stroke (WHO, 1992). Blood pressure (BP) is summarized by two measurements, systolic and diastolic which depends whether the heart muscle is contracting (systole) or relaxed between beats (diastole).Normal BP at rest is within

the range of 100-140mmHg systolic (top reading) and 60-90mmHg diastolic (bottom reading). High blood pressure is said to be present if it is persistently at or above 140/90mmHg (Gibson, 2 009). Maclead, (2006) classified hypertension as essential, primary or secondary.

1) Primary (Essential) Hypertension**:** about 90-95% of all hypertension cases are categorized as "Primary Hypertension", which means high blood pressure with no underlying medical cause (Greenhalgh et al.,2009). It is also called idiopathic hypertension (Alan,1993)-a hypertensive condition where no single cause can be identified.(2) Secondary Hypertension:

The remaining 5-10% of the cases is called secondary hypertension which caused by other are caused by other conditions that affect the kidneys, arteries heart or endocrine system (Greenhalgh et al., 2009). Secondary hypertension results from an identifiable cause (Alan, 1993).

1.2 Statement of Problem

Universally, hypertension is a major public health problem. The rapid rise of hypertension represents one of the major health challenge to global development in this century. This growing challenge threatens economic and social development as well as the lives and health of millions of people. Retrospective and prospective studies show that stress at work is linked to an increased risk of hypertension. Observational studies of human populations show that occupatio nal stress is a source of life stress that can influence blood pressure levels (Radi et al., 2005).

Stress is one of the most severe occupational risks among health workers working in different health care settings, as well for health professionals working in Owerri. Health care job has been identified as an occupation that has high levels of stress, as this is a recognized problem among health care workers (Sharma et al, 2014)

Level of stress faced by these professionals has rendered most of them 'Wounded Healers'. The wounded healer syndrome sheds some light on the ways in which the helper is personally affected by the helping process (Corso, 2012).

As an NGO field woker at hospital level, I have observed over the years that health professionals undergo a lot of stress and most of them are hypertensive, to the extent of taking out sometime while attending to patients to take their hypertensive drugs . To this end, I deemed it feat to carry out this research in order to determine if relationship exist between occupational stress and hypertension among these health care professionals.

1.3.1. Objectives of the Study

1.3.1 General Objective of the Study

The main objective of the study is to determine the level of work stress and to explore the relationship between work stress and the presence of hypertension among health professionals in Owerri, Imo state.

1.3.2 Specific Objectives of the Study

To achieve the general objective of this study, the following specific objectives are considered thus:

Objective 1: To determine the relationship between level of stress experienced by health professionals and hypertension.

Objective 2: To determine the relationship between health related stressors and hypertension among health professionals in Owerri.

Objective 3: To determine the association between environmental stressors and hypertension among health professionalsin Owerri.

Objective 4: To determine the relationship between psycho-social stressors and hypertension among health professionals in Owerri.

1.4 Research Questions

The research question is posed:

1. Is there any association between levels of stress experienced by health professionals and hypertension?

2. Is there any relationship between health related stressors and hypertension?

3. Does relationship exist between environmental stressors and hypertension?

4. Is there relationship between Psycho-social stressors and hypertension?

1.5 Research Hypothesis

1.Hypothesis H_O: There is no association between levels of stress experienced by health care professionals and hypertension.

H_A: Association exist between levels of stress experienced by health care professionals and hypertension.

2. Hypothesis H_O: There is no relationship between health related stressors and hypertension among health care professionals in Owerri

H_A: There exist relationships between health related stressors and hypertension among health care professionals in Owerri

3. Hypothesis H_O: There is no relationship between environmental stressors and hypertension among health care professionals in Owerri .

H_A: Relationship exist between environmental stressors and hypertension among health care professionals in Owerri.

4. Hypothesis H_O: There is no relationship between environmental stressors and hypertension among health care professionals in Qwerri .

H_A: There is a relationship between environmental stressors and hypertension among health care professionals in Qwerri .

1.6 Significance of the Study

This study is expected to create awareness to health professionals in Owerri (between the age of 18-64 years).

This research will also benefit the staff and students of this institution, Federal University of Tec hnology Owerri, this is because if the environmenta, health related and psycho-social job stressors are properly managed, it will go a long way in reducing to the barest minimum the risk of work related high blood pressure. This research will also benefit other researchers, as it will serve as a research base for them.

1.7 Scope of the Study

This research focused on Occupational Stress and Hypertension among health care professionals in Owerri. It is deliminated to professional health workers including: secondary and tertiary hospitals in Owerri, Imo State.

1.8 Operational Definition of Some Terms

Hypertension: This ia persistent increase in the blood pressure of systolic of 140mmhg and or diastolic of 90mmhg in persons 15 years and above.

Stress: This can be defined as a process where environmental stimuli place undue strain on a human being, resulting in physiological changes that increase the risk of diseases.

Stressor: The actual or perceived threat to an organism.

Occupational Stress: Occupational or Work-related stress is the response people may have when presented with work demands and pressures that are not matched to their knowledge and abilities and which challenge their ability to cope (WHO, 2007).

Job strain: This is the combination of high job demands and low job decision latitude that may lead to negative physical health outcomes such as hypertension and cardiovascular disease (CVD).

Bournout : This is a state of emotional, physical and mental exhaustion caused by excessive and prolonged stress.

Sociodemographic variables of hypertension: They are non modifiable risk factors eg: age, sex, education, marital status, employment, income etc.

Biological /lifestyle variables of hypertension: They are modifiable risk factors like physical inactivity, family history, alcohol consumption, salt intake etc

Cardiovascular disease: Heart and blood vessel disease — also called heart disease — includes numerous problems, many of which are related to a process called atherosclerosis.

CHAPTER TWO

LITERATURE REVIEW

2.1 Conceptual Framework

In a medical or biological context stress is a physical, mental, or emotional factor that causes bodily or mental tension. Stresses can be external (from the environment, psychological, or social situations) or internal (illness, or from a medical procedure). Stress can initiate the "fight or flight" response, a complex reaction of neurologic and endocrinologic systems.

Stress can be broadly defined as the negative reactions people have to aspects of their environment. According to Mojoyinola (2008).

Stress is derived from the word “Stringi”, which means “to be drawn tight”. Stress is however, interpreted by each person differently. Since it is a feeling, that involves the emotions, it is not something entirely definable or describable. Despite efforts over the last half-century to define the term, no satisfactory definition of stress exists. Defining stress is much like defining happiness.Craig Hospital in 2013 saw stress as an inescapable fact of life. However, one recognizes the unpleasant, usually anxiety –related state, when one thinks of the term ‘stress’ as applying to us. Two aspects should be kept in mind. The first is that it is a ‘state’ – and therefore it is ideally not permanent. Secondly, when one is stressed, one is less likely to behave in the rational way compared to when one is calm. Essentially, stress is the emotional and physical response people experience when they perceive an imbalance between demands placed on them and their resources at a time to cope with the challenge. What this means is that one experiences stress whenever one is faced with an event or situation that one perceives as

challenging to their ability to cope (Brunero et al, 2006). Stress is not the events that surfaces our way itself but how we interpret them to be. So stress results from interpreting those events as dangerous, difficult, painful, or "unfair", and/or feeling that one does not have the resources to cope with them.

Stress is a universal and inevitable component of life, and hence, some degree of stress is not harmful. The term stress, as it relates to human experiences, has been in the scientific literature since the 1930s. Stress is found in all aspects of our lives; it seems particularly overwhelming in the job or the workplace.

2.1.1 Types of Stress

According to Taylor Shelley (1995) states that, there are four major types of stress and she explains them as follows:

2.1.1.1 Chronic Stress

She describes this type of stress as unrelenting demands and pressures for seemingly interminable periods of time. Chronic stress is the type that wears the individual down day after day and year after year with no visible escape. It grinds away at both emotional and health of the individual leading to breakdown and even death.

2.1.1.2 Acute Stress

This type of stress is the most common and most recognizable form of stress. It is the kind of stress which the individual knows exactly why he is stressed; he was just in a car accident; the school nurse just called him, a bear just ambled onto his campsite. It can also be something scary but thrilling, such as a parachute jump. Normally, the body rest when these stressful events cease and life gets back to normal because the effects are short-term. Acute stress usually does not caused severe or permanent damage to the body.

2.1.1.3 Traumatic Stress

It is a severe stress reaction that results from a catastrophic event or intense experience such as a natural disaster, sexual assault, life-threatening accident, or participation in a combat. Here, after the initial shock and emotional fallout, many trauma victims gradually begin to recover. But for some people, the psychological and physical symptoms triggered by the trauma do not go away, the body does not return to equilibrium, and life does not return to normal. This condition is known as post trauma stress disorder. Common symptoms of this type of stress are flashbacks or nightmares about the trauma, avoidance of places and things associated with the trauma, hyper vigilance for signs of danger and irritability and tension.

2.1.1.4 Episodic Acute Stress:

This is a situation where the individual's life experiencing this kind of stress is very chaotic, out of controlled and they always seem to be facing multiple stressful situations. They are always in a rush, always late, always taking on too many orojects, handling too many demands. Those who are prone to this type of stress include "TYPE A" Personality. If an individual is prone to episodic acute stress, he may not know it or admit it. Unfortunately, people with episodic acute stress may find it so habitual that they resist changing their lifestyle until they experience severe physical symptom. It is important to note that not all stress is negative or bad. For instance, in his early work on the topic of stress, Selye (1976) conceptualised two categories, namely good or desirable stress (eustress) and bad or undesirable stress (distress). Eustress is pleasant, or at least challenging, and can produce positive effects such as the maximisation of output and creativity. Ironically, without this positive type of stimuli, life can become stressful. Examples of positive stressors are: planning of a wedding ceremony; buying home for the first time; purchasing of a new car; planning for a baby; getting promoted on the job and going on vacations etc. It's

interesting to note that these stressors initially bring some feelings of tension and anxiety; however, these finally come up with the feelings of psychologically overwhelmed where we start enjoying each bit of activities.

In contrast, distress is evident when a person perceives himself or herself as having no ability to control a stressful event. Distress is likely to result in a loss of productivity and a decline in overall levels of well-being. Although everyone manifests a response to stress, reactions vary widely across individuals. Even at a physiological level, when confronted with a major stressor, some people experience a rapid increase in heart rate while others feel a tightness or knotting in the stomach or tension headaches (Johansson, Cavalini & Pettersson, 1996).

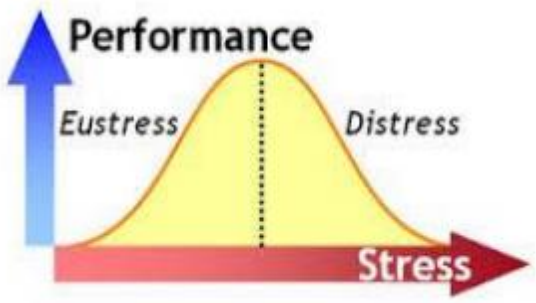

Figure 1: illustration of positive stress (eustress) and negative stress (distress) and their relationship with performance.

(Source: Ahmad et al, 2015)

Areas of the body affected by Stress

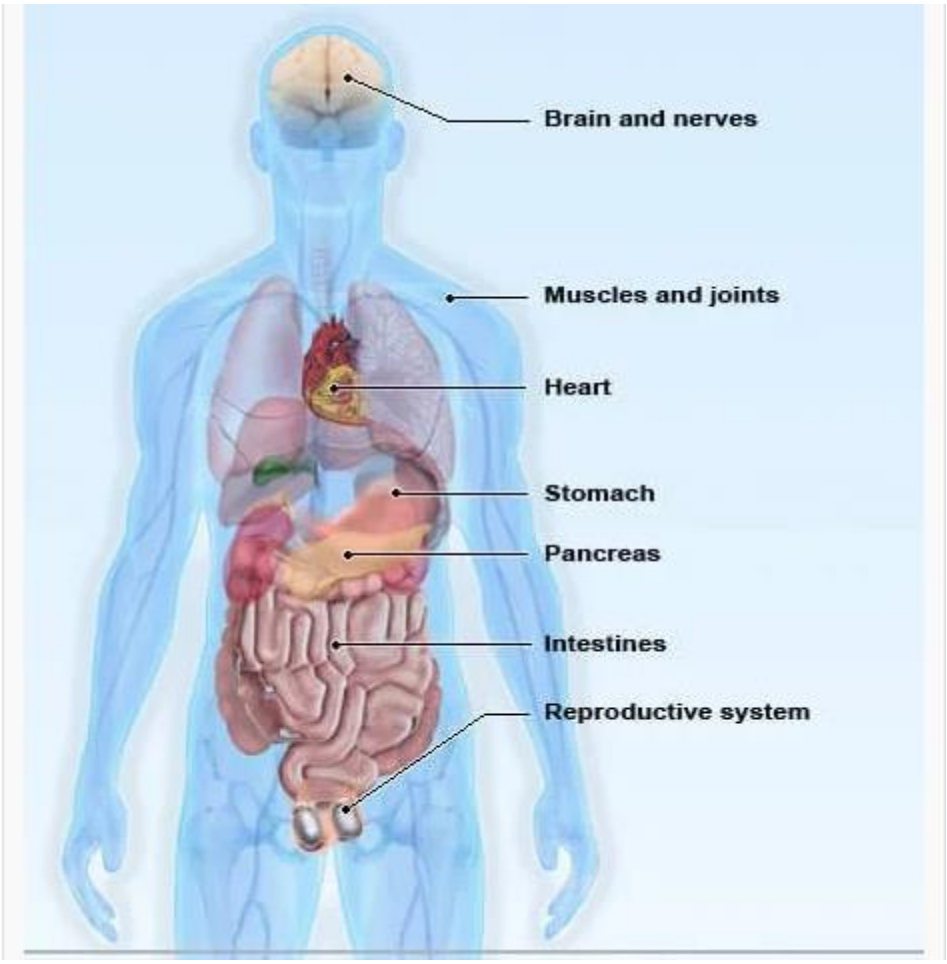

Figure 2: Areas of the body affected by stress

Source: (Shiel, 2014).

Occupational or Work-related stress therefore, is the response people may have when presented with work demands and pressures that are not matched to their knowledge and abilities and which challenge their ability to cope (WHO, 2007). Stress occurs in a wide range of work circumstances but is often made worse when employees feel they have little support from supervisors and colleagues, as well as little control over work processes. There is often confusion between pressure or challenge and stress and sometimes it is used to excuse bad management practice. Occupational stress is the psychological loads (i.e. stress) carried by a person while working. Life without stress is no life, but life with excessive stress is taxing life. Stress that facilitates working performance is eustress (i.e. favorable stress) and stress that inhibits working performance is distress (i.e. unfavorable stress). The most stressful event as perceived by workers globally was their work (59%), then followed by finances (44%) and customers (37%) . Various stressors contribute to stress at work which include long working hours, harassment, unsafe working environment, conflict of interest with colleagues, lack of job autonomy, poor career prospect, working in isolation, and poor support from administrator. Evidence shows that excessive stress at work is significantly associated with health problems, for examples depression, metabolic syndrome and heart disease. As a result, these consequences could lead to declined work output, organizational dysfunction, and raised absenteeism. Because of the complex nature of stress, many stress models have been proposed to deal with the issues of stress and ways of individual responded to them. Several relevant stress models are discussed

Occupational stress also known as work-related stress (WRS) is the harmful physical and emotional responses that occur when the requirements of job do not match the capabilities, resources, or needs of the worker in the work environment. Hospital work stress is a nosocomial stress characterized by stressors like; work over load, under-staffing, use of redundant

equipment, poor promotion, poor managerial relationship with staff, poor working environment, excessive/prolonged working hours, etc.

2.1.5 The Conceptual Model of Stress

Stress is defined either as a reaction or as a stimulus. As a reaction the meaning of stress is consubstantial with specific changes that human biological system is experiencing. As stimulus, the definition of stress is related to environmental events that cause those changes. The stressful events can be acute, chronic, remitting and continuous chronic form. Main Theories about Stress The theoretical models that have been formulated for interpreting stress are helping to identify stressors in a particular situation and predicting the possibility of an individual's adaptation to stressful situation. Three are the main theoretical approaches for stress, each one interprets stress differently either as a stimulus, as a response or as a transaction.

2.1.5.1 Stimulus Based Models: In these models the stress is interpreted as a stimulus, a life event or a group circumstances which may awakens normal and / or psychological reactions, which may increase the vulnerability of the individual to disease. According to Holmes, there are 43 life events or lifestyle changes, which can cause stress. According to this theory, both positive and negative life events are considered stressful.The scale of stressful life events is used to record the recent stressful experience of the individual, such as divorce, pregnancy, retirement .Ever since similar scales have been developed, however they should be used with caution, since the extent of stress, which is embodied to life events depends on the way in which is interpreted by the individual. Moreover, those scales must have been validated in the age and in the socioeconomic status, in addition they must have been cultural adapted

2.1.5.2 Response Based Models: In those theoretical models, stress is interpreted as a response. The definition of stress as a response was developed and described by Selye, who defined stress

as a nonspecific response of the body to any kind demands applied on it Selye's model is called General Adaptation Syndrome (GAS). Selyein order to differentiate the cause of stress from the response to this introduced the term ¨ stressor¨ naming so any factor can cause stress and affect the balance of the individual. Selye mentions, due the fact that stress is a state of the body, it can only observed within the changes occurring in it . This full body response general adaptation syndrome, (GAS) is manifested by releasing certain hormones, which resulted is changes in the structure and chemical composition of the body. Apart from the adaption of the whole body, it is possible a portion reaction of the body or of an organ to take place. This response to stress is called local adaptation syndrome – LAS Transaction Based Models All theoretical models that interpret stress as a transaction are based on the theory of Lazarus, who focused on the fact that there are differences among people in interpretation of stress as a stimulus or as a response. None of the previous theories, according to Lazarus, could exactly explain which factors may lead some people to manage stress properly, while others are not, he stated that there is a lack in theories into the interpretation of the factors that help some people to adjust for a longer period than others in to a stressful stimuli . Despite the fact that Lazarus acknowledges certain environmental conditions as causes of stress for many individuals, however, points out that people and groups of people differ in sensitivity and vulnerability to certain types of events, as well as in the interpretation and in the respond to those events. For the interpretation of the diversity among individuals that are experiencing similar stressful events, Lazarus model is taking into account the cognitive processes that mediate between stimulus and response, as well as the factors affecting these processes Lazarus cognitive evaluation theory focuses on the individual, the environment and on the simultaneous cognitive evaluation of environmental demands and stimulus response options .According to this theory, a number of external and

internal information arriving daily in the neurocognitive level of the body which are interpreted by the process of cognitive evaluation. Cognitive evaluation is the process of judgment by which, the level of adjustment methods available that each person has, is recognized. It includes identifying available resources and options, which will help the person to negotiate with potential or actual demands. Upon the initial requirements evaluation, some can be assessed as irrelevant, and other as very stressful or as positive. Stress according to this theory is a process in which requirements outweigh the adaptive capacities of the individual. The requirements can be either external or internal. In second stage, the evaluation is about the identification of sources and options that the individual has at his disposal. The reassessment is necessary and is the process of continuous redefinition of cognitive evaluation.Factors that influencing the evaluation of the identification can divided into intrinsic and directly related with the individual. Intrinsic factors can include the intensity of external sources, the directness of conflict and doubt. Factors that are related with the individual are motivations, characteristics, beliefs, cognitive resources and skills.

2.1.6 The Work Stress Process

To fully understand the phenomenon of work stress, it is necessary first to document the process that most commonly occurs for workers in this situation. The model shown in Figure 1 has been developed to depict the most negative scenario or trajectory that could be expected for an individual who is experiencing work stress. The personal experience of work stress at the level of the individual worker is represented by the solid line. Highlighted in bold and arrowed boxes in the model are the factors (i.e., points, pressures and events) that are likely to contribute to the stress process from the time the individual enters an employment relationship. Although not represented in the model, it is assumed that individuals could exit the employment relationship at any time. However, assuming they do not exit, there will be significant points of pressure on that

relationship, represented by small circles. The model also represents the three major phases of management, namely primary, secondary and tertiary, and assumes that changes in the management of work stress at any point in the process could shift the trajectory to a more positive direction. For instance, primary prevention strategies implemented early in the development of a new employment relationship could prevent the experience of stress and, thus, prevent the decline in performance. Similarly, a decline in performance, if managed successfully at the secondary stage, need not continue to a point of disengagement and appropriate tertiary management could enable a worker to return to the workplace effectively. This review will focus on the work stress process, as depicted in the model. The factors that contribute to the stress process will be examined in more detail and the management strategies that are most commonly implemented at each stage of the model will be outlined. Prior to examining these factors, the work stress process depicted in the model will be described fully.

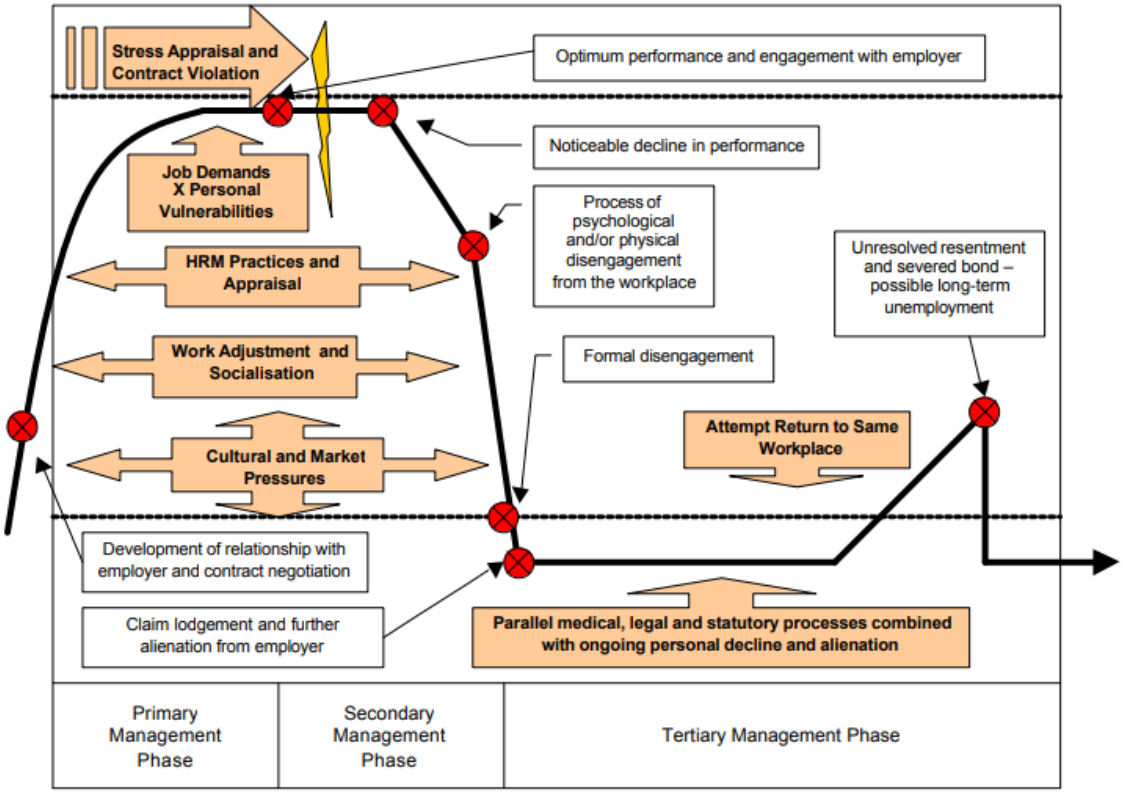

Figure 3: The Work-related Stress Process: of the Negative Trajectory

Source : (Kendall, 2000)

Any movement into employment involves a match between an employer or organisation and an employee. As many researchers have agreed, both the job itself and the person, bring vulnerabilities and characteristics that contribute to the stress process (Kenny, 2000). For instance, research has clearly acknowledged the fact that some individuals have a predisposition towards negative thinking or affect, have fewer coping resources than others or an inability to utilise effective coping strategies (Netmeyer, 2000). Although vulnerabilities are important, there is a growing presence of people in the workforce who already have a psychiatric condition or have experienced psychological difficulties in the past. Any attempt to manage and eliminate the 'risk' of psychological injury by screening employees for vulnerability will impact negatively on

the humanistic movement towards fairer and more equitable employment practices. Rather than screening for vulnerability and focusing negatively on workers, it is important to understand the demands associated with particular jobs, in an effort to ensure that those demands are reasonable. Although jobs differ in the level of demand they place on individuals, research has identified a set of reasonably common pressures, role difficulties, conditions and negative events that are likely to contribute to the stress process. It is important to note that irrespective of the demands of particular jobs, stress seems to have become an inevitable part of working life in the current labour market. Trends in the global economy have altered the way in which the employee-employer relationship is defined and have escalated the demands placed on both parties. Many of these forces are unchangeable and non-negotiable. These broad influences have been labeled the organisational climate. Rather than focusing on either the worker or the job, most contemporary organisational theories have acknowledged Lewin's (1952) proposition that behaviour is a function of both factors. Stress cannot be attributed to the vulnerabilities of the person or the demands of the job/environment independent of each other. Instead, stress results from the degree to which the two fail to 'fit' together (Blau, 1981). The fit between the person and the environment can depend on how well the individual's skills and abilities match the practical job demands and requirements, or how well the individual's psychological and social needs are matched by the job environment. The greater the discrepancy, the greater the likelihood of work stress (Lofquist & Dawis, 1969). Researchers have questioned the notion that perfect fit is associated with the absence of work stress and clearly, this is unlikely (Dollard, 1996). Highly stressful work can be offset by the fact that some workers derive satisfaction from challenge, risk or change. Without these qualities, the person-environment fit would be deficient (Dollard, 1996). While the interaction between the worker and the job is an integral component of the

work stress process, this interaction occurs in the strong socialising context of work. In addition, certain types of workplace practices, coping strategies or vulnerabilities may be associated with different cultures. The process of socialisation itself is considered to be stressful, particularly during the first nine months or so when workers are attempting to define the expectations of their workplace (Nelson, 1987). In many cases, the expectations that accompany the culture may be unreasonable or conveyed in such a subtle manner that workers can only learn by trial and error, leaving them vulnerable to costly repercussions when cultural norms are inadvertently violated. According to Nelson (1987), socialisation failures leave new workers feeling alienated and stressed. In contrast, those who have been 'well socialised' may be less likely to experience stress in response to unreasonable demand

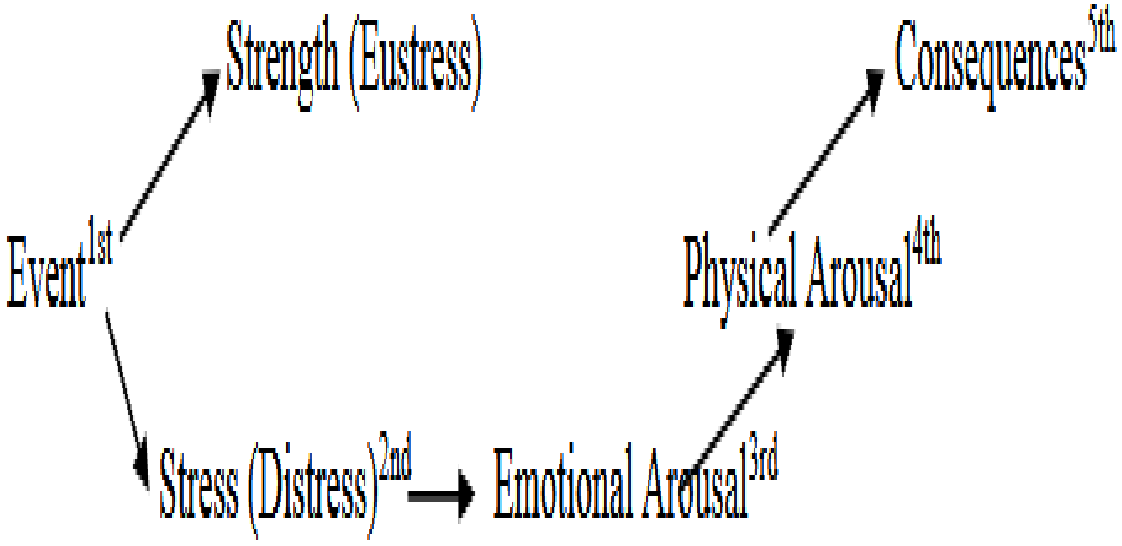

Figure 4: Illustration of Five (5) steps of stress process

(Source: Etim et al, 2015)

2.1.7 Factors Causing/Sources Of Stress At Work

Repetti (1990), McGronogle and Kessler (1990), Pervin (1992), agree with Arnold, Robertson and Cooper (1993) in talking about the causes or sources of stress. Arnold, Robertson and Cooper (1993), identified five major causes of work stress as: factors intrinsic to the job, role in the organistation, relationships at work, career development and organizational structure and climate.

2.1.7.1 Factors Intrinsic to the Job

They explained the factors intrinsic to the job to include:

i Poor Working Conditions:

This talks about the physical surrounding of the job which include high level of noise, high or low lighting, fumes, heat, poor ventilation systems, smells and all the stimuli which bombard a worker's senses and can affect his moods and overall mental state. Also, the physical design of the workplace comes under poor working condition. If an office is poorly designed, with personnel who require frequent contact spread throughout, it creates poor communication networks and develops in poor working relationships which can caused stress to employees.

ii Shift Work

This is where workers have jobs which require them to work in shifts, some of which involves working staggered hours, which affects a worker's blood temperature, metabolic rate, blood sugar levels, mental efficiency, sleep patterns, resulting in hypertension, mild diabetes and peptic ulcers.

iii. Long Hour

The longworking hours required by many jobs appear to take a toll on employees' health and also making them suffer a high rate of stress. This means many individual workers and some

medics who may have no sleep for thirty-six (36) hours or more may find that both their quality of work and they themselves suffer.

iv. Risk And Danger

A job which involves more risk and danger put employees in higher stress level. This is because when an employee is constantly aware of potential danger and he is prepared to react immediately, this results in rush, respiration changes and muscles tension which are all seen as potentially threatening o long-term health.

v. New Technology

The introduction of new technology into the work environment has required workers to adapt continually to new equipment, systems, and ways of working. Thus leading to a great source of pressure at work on the worker. For instance, a boss trained in the latest methods may be extra burden for an employee trained in the old ways and this may increase his stress level.

vi. Work Under-Load

This describes the problem of employees not being sufficiently challenged by their jobs. Job under-load is associated with repetitive routine, boring and under-stimulatingwork which causes a lot of stress for employees who find themselves in such situations. This means when employees are not given work which challenges their abilities and capabilities they suffer high level of stress.

vii. Work Overload

This is where the employee has too much work to do because of imposition of deadlines which often causes stress in employees.

2 .1.7.2 Role in the Organisation

When a person's role in an organization is clearly defined and understood, and expectations placed upon are clear stress can be kept to a minimum. However, this is not the case in many work sites. Arnold, Robertson and Cooper (1993) continued to explain Role in the organization to include:

i Role Ambiguity

This arises when employees do not know what is expected of them at the workplace and how their work performances are evaluated. That is, employees do not know how and where they fit into the organization and they are not sure of any reward no matter how well they may perform. According to Johns (1996) there is substantial evidence that role ambiguity can provoke stress. Lack of direction can prove stressful, especially for people who are low in their tolerance for such ambiguity.

ii Role Conflict

Employees experience a high rate of stress when two superiors are demanding conflicting things and when attending to one will mean they are disobeying the other superior. This makes employees confused and frustrated. For example, workers may often feel themselves torn between two groups of who demand different types of behaviour or who believe the job entails different functions. Luthans (2002) differentiates three major types of role conflict. One type is

the conflict between the person and the role. For example, a production worker and a member of a union are appointed to head up a new production team. This new team leader may not really believe in keeping close control over the workers and it would go against this individual's personality to be hardnosed but that is what the head of production would expect. A second type of intra role conflict creates contradictory expectations about how a given role should be played. Finally, inter role conflict results from differing requirements of two or more roles that must be played at the same time. For example, work roles and non-work roles are often in such conflict often feel themselves torn between two groups of who demand different types of behaviour or who believe the job entails different functions. Luthans (2002) differentiates three major types of role conflict. One type is the conflict between the person and the role. For example, a production worker and a member of a union are appointed to head up a new production team. This new team leader may not really believe in keeping close control over the workers and it would go against this individual's personality to be hardnosed but that is what the head of production would expect. A second type of intra role conflict creates contradictory expectations about how a given role should be played. Finally, inter role conflict results from differing requirements of two or more roles that must be played at the same time. For example, work roles and non-work roles are often in such conflict. Luthans (2002) is of the opinion that although all the roles that men and women bring into the organizations are relevant to their behavior, in the study of organizational behaviour the organizational role is the most important. Roles such as digital equipment operator, clerk team leader, sales person engineer, systems analyst, departmental head, vice president and chairperson of the board often carry conflicting demands and expectations. This author further stated that recent research evidence showed that such conflict could have a negative impact on performance and also be affected by cultural differences.

2.1.7.3 Responsibility in an Organization, there are basically two types of responsibility: Responsibility for people and responsibility for things such as budgets, equipment etc. Responsibility for people causes a lot of stress. Being responsible for people usually requires spending more time interacting with them, attending meetings and attempting to meet their needs, resolving conflicts and disputes between them and making unpleasant interpersonal decisions.

2.1.7.4 Relationship at Work

Dealing with bosses, peers and subordinates can dramatically affect the way an employee feels. People, high on the need for relationships, work best in stable work teams where they can get to know each other well. It might be stretching the measure too far to suggest that someone high on this factor would suffer stress if they were working with a large number of others in circumstances, which did not allow relationships to form, but it is probable that they will not work as well as they might. On the contrary, when an employee experiences poor working relationship with superiors, colleagues and subordinates his stress level increases. This is because most employees spend so much time at the workplace and thereby poor working relationship can affect them adversely. It is more likely that they would avoid the problem of enforced intimacy by engaging in as few interactions as possible with others and by distancing themselves mentally, it not physically by various means. There are many people who do not like the idea that those relationships at work should be anything other than formal and strictly work related, even to the point of outside life not being discussed.

2.1.7.5 Career Development

Organizations have become flatter, meaning that power and responsibility now radiates throughout the organization. The work force has become more diversified. Jobs and careers get scarcer. For the person who had been determined to rise through an organization, the challenge had recently become greater. Opportunities to learn new skills are now becoming requirements. Career development causes a lot of stress to employees through their working lives. Staying the same is quickly becoming an inadequate approach to work. Lack of job security, fear of redundancy, obsolescence and numerous performance appraisals can cause pressure and strain. In addition the frustration of having reached one's career ceiling, or having been over promoted can result in stress.

2.1.7.6 Organisational Structure and Climate

When employees do not have sense of belonging in the organization, they lack adequate opportunities to participate. These make them feel unimportant which could lead to strain and job-related stress. However, Betts (1994) argued that the causes of work stress vary among individuals since they come from different backgrounds. That is to say, one form and level of stress may affect one person more than another. The two divisions are physical and psychological causes. He went further to state that, the physical causes include physical workload and physical environment – temperature, humidity, vibration etc. The psychological causes include mental workload and mental environment. On the other hand, Robbins (2004) identified the following as causes of stress at work**:**

i Economic Uncertainties When the economy is contracting, people become increasingly anxious about their job security and this could lead to an increase on their stress level

ii. Technological Uncertainties Innovations can make an employee's skills and experience obsolete in a very short time. Computers, robotics, automation and similar forms of technological innovation are a threat to many employees and therefore could caused stress.

iii. Organisational Leadership This represents the managerial style of the organizations senior executives. Many senior executives create a culture characterized by tension, fear and anxiety. They establish unrealistic pressures to perform in the short run, impose excessively tight controls and routinely dismiss employees who do not measure up to standard.

2.1.8 Symptoms And Effects Of Work Stress

Although it's easy to pinpoint the causes of stress in life, narrowing down the effects is not as simple. Understanding what stress is lets us see how it can negatively affect both the mental and physical health of employees. According to the CDC, stress "sets off an alarm" in the brain that prepares the body to defend against the stressor. The nervous system is put on alert, and hormones are released that sharpen senses, increase pulse, deepen respiration and tense muscles. This is commonly referred to as the "fight or flight" response. It's biologically programmed, which means humans have little or no control over it. When stressful situations are ongoing or unresolved, this response is constantly activated, causing wear and tear on different biological systems. Eventually, fatigue occurs and the immune system is weakened. This increases the risk of disease or injury.

Nevertheless, Blackwell (1998) stated that stress shows itself in a number of ways. For instance an individual who is experiencing a high level of stress may develop high blood pressure, ulcers and the like. These can be grouped under three general categories; Psychological, Behavioural and physiological symptoms.

2.1.8.1 Psychological Symptoms and Effectsof Work Stress

These are the major consequences of stress. Then mental health of employees is threatened by high levels of stress and poor mental health. Unlike the Physical symptoms, Psychological symptoms could also cause employees work performance to deteriorate. Anger, anxiety, depression, nervousness, irritability, aggressiveness, and boredom results in low employee performance, declines in self-esteem, resentment of supervision, inability to concentrate, trouble in making decision and job dissatisfaction. Also the psychological symptoms of stress can lead to burnout. Job burnout is a prolonged withdrawal from work which makes the sufferer devalue his work and sees it as a source of dissatisfaction.

2.1.8.2 Behavioural Symptoms and Effect of Work Stress

The behavioural signs of stress include eating more or less, cigarette smoking, use of alcohol and drugs, rapid speech pattern nervous fidgeting wenteeism from work, happing from job to job and causes performance to deteriorate.

2.1.8.3 Physiological Symptoms and Effects of Work Stress

These are changes in the metabolism that accompany stressors. The symptoms include increased heart rate, blood pressure etc. With this, the wear and tear on the body becomes noticeable and problematic. The effects of this are back pains, migraine headaches, insomnia, heart disease, hypertension, diabetes and even cancer which affect employees' productivity. Psychologically demanding jobs that give employers little control over work processes increase the risk of cardiovascular disease, according to the *Encyclopedia of Occupational Health and Safety*.

2.1.9. Other Effects of Occupational Stress

These signs are easy to recognize, but the effects of stress on chronic disease are less obvious because these ailments develop over time and can be caused by many different factors. However,

data is beginning to show that stress plays an important role in many common but serious health problems. According to the *Journal of Occupational and Environmental Medicine*, health care costs are nearly 50 percent higher for workers who report high levels of stress. The following are some of the long-term negative effects of stress.

- **Musculoskeletal disorders:** It is believed that stress increases the risk of back and upper-extremity musculoskeletal disorders.
- **Workplace injury:** There is also a concern that stressful working conditions can interfere with safety practices and increase the risk of injury at work.
- **Suicide, cancer, ulcers and immune function:** Some studies suggest that there is a relationship between workplace stress and these health problems, but more research is needed to draw firm conclusions.

2.1.9.1 Effect of work Stress on the Organization

The organizational consequences of work stress include the following:

i High Staff Turnover and Recruitment Costs

This is, perhaps the most common of the organizational consequences of stress. Stressed employees do not tend to enjoy their working working environment. While some may have the confidence to seek their employers help in combating then stress, others may feel they have no option but to leave the organization and remove themselves from stressful situation; sometimes as a result of medical advice. Also, employees who seek help may not receive the help they require and so choose to leave the organization. Unfortunately, many organizations make no attempt to ascertain the true reason for an employee resignation and so never realize that their organization has an issue with stress.

ii High Absenteeism and Presenteeism Levels

Stressed individuals tend to experience more illness and so take more time off due to illness. Abseteesism can also be the of staff feeling that they simply cannot cope with going into work so they attempt to escape the stressful situation by remaining in the safety of their own homes. In many instances, these staff will make it into work, but will not contribute much. They are physically present but psychologically they are elsewhere. This is known as presenteeism.

These factors are usually attributed to poor discipline on the employee's part where organizations recognise absenteeism and presenteeism as organizational consequences of stress , they are able to take corrective action, to the benefit of both staff and the organization, before things escalate out of control.

iii Reduced Productivity Levels

As exposure to to stress is prolonged and chronic fatique kicks in, it becomes more difficult for the employee to work in an optimum level . As fatique sets in, concentration and motivation levels drop. This leads to mistakes creeping into their work. It also takes longer to complete task. The quantity and quality of the employee's work begins to suffer. This lowers the productivity levels of the company.

iv Increased Health and Safety Issues

This is more common in workplaces which are more manual in nature . Employees tend to take more and suffer poorer concentration when they are stressed. This combination is a recipe for increased accidents which in turn increase litigation, insurance and medical costs for the organization.

v. Litigation

Organisations have a legal obligation to provide a safe and healthyworkplace for their employees. This can include adequate training, safe work practices, and a workplace free from bullying and harassment. Where an employee experiences stress due to the organisation failing to meet its legal obligations, the employee may seek a legal remedy. This may result in costly legal proceedings and damage to the organizations reputation. Of all the organizational consequences of stress, the one which best motivates organizations to take action is the threat of litigation.

vi Reputational Damage

The reputation of the organization is damaged by the culture of stress which can develop as a result of the failure to manage stress at both an organizational and individual level. It dosen't take long for a company to develop such a reputation ; though it can take a long time to loose this reputation. With reduced productivity levels and the decreased performance of staff a culture of poor customer service can develop.

vii Increased Training Cost

As a result of higher staff turnover, more induction courses are required. The organization may also have to spend more on interpersonal skills, health safety and stress management training.

The organizational consequences of stress arise due to the failure to manage stress at both the organizational and individual levels. A culture of stress can soon develop with many damaging consequences for the organization. Where such a culture has developed, there is no quick fix solution for the organization. The organizational consequences of stress are best avoided by management culture in the organization requiring the buy-in of both.

2.2 Hypertension Concept

In medical terms, hypertension is a blood pressure of 140/90mmhg (millimeters of mercury) or more based on at least two readings on separate occasions. (Mlunde, 2007). The term is used to mean the same medical condition with high blood pressure (HBP) (Egan et al, 2003). Ecologically, hypertension is regarded as a multi-factorial disease condition in which a myriad of physiological mechanism participate to elevate and maintain blood pressure (Beeves et al, 2001).Hypertension is also defined as a systolic blood pressure (SBP) of 140 mm Hg or more, or a diastolic blood pressure (DBP) of 90 mm Hg or more, or taking antihypertensive medication.Based on recommendations of the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7), the classification of BP for adults aged 18 years or older has been as follows:

- Normal: Systolic lower than 120 mm Hg, diastolic lower than 80 mm Hg
- Prehypertension: Systolic 120-139 mm Hg, diastolic 80-89 mm Hg
- Stage 1: Systolic 140-159 mm Hg, diastolic 90-99 mm Hg
- Stage 2: Systolic 160 mm Hg or greater, diastolic 100 mm Hg or greater.

In the developed world, about 330 million people have hypertension, as do around 640 million in the developing world. The World Health Organization rates hypertension as one of the most important causes of premature death worldwide and the problem is growing.81 In 2025 it was estimated there will be 1.56 billion adults living with high blood pressure.

High blood pressure is defined as a systolic blood pressure at or above 140 mmHg and/or a diastolic blood pressure at or above 90 mmHg. Systolic blood pressure is the maximum pressure in the arteries when the heart contracts. Diastolic blood pressure is the minimum pressure in the

arteries between the heart's contractions. Hypertension is a risk factor for coronary heart disease and the single most important risk factor for stroke. It causes about 50% of ischemic strokes and increases the risk of hemorrhagic stroke. Hypertension stresses your body's blood vessels, causing them to clog or weaken. Hypertension can lead to atherosclerosis and narrowing of the blood vessels making them more likely to block from blood clots or bits of fatty material breaking off from the lining of the blood vessel wall. Damage to the arteries can also create weak places that rupture easily or thin spots that balloon out the artery wall resulting in an aneurism.

It is commonly associated with other diseases such as stroke and myocardial infarction and its presence may antedate the onset development of stroke in a few or several years period (Bandasak, 2011). This is because, high blood pressure puts unnecessary strain on blood vessel walls, causing them to thicken and to deteriorate (Marcoux, 2000).

A rising blood pressure is usually accompanied by the onset and progression of renal diseases in diabetes. Among the risk factors for the development and progression of renal diseases in diabetes patients, hypertension has been notably identified (Weber et al, 2003). Hypertension is one of the most common non-communicable disease in Nigeria (Akinkugbe, 1992), and it is a major risk factor for stroke and other cardiovascular diseases (Castelli, 1984, Bandasak, 2011.

An aggressive treatment and control of hypertension is highly desirable preventing the progression of renal disease and subsequently stroke (Weber et al, 2003).

2.2.1 Signs And Symptoms Of Hypertension

Headache (particularly at the back of the head and in the morning), Altered vision (often flashing light), Vertigo, Tinnitus, Fainting episodes, Lightheadedness (fisher & William, 2005)

On physical examination, hypertension may be suspected on the basis of Hypertension retinopathy. Other signs of secondary hypertension include:

Truncal obesity, Insulin resistance, Moon facies, Buffalo lump and purple straie may suggest Cushing's syndrome, Abdominal brut indicates renal artery stenosis, Absent or delayed femoral artery pulses indicates aortic coarctation, Labile or paroxysmal hypertension accompanied by headache, Palpitation, Pallor, Perspirations should prompt suspicions of pheochromocytoma (fisher & Williams,2005), Unexplained irritability, Fatigue, Failure to thrive, Nosebleeds,

Blurred vision, Facial paralysis are indications of hypertension in infants and children (Allan,1993).

Other Signs And Symptoms are:

Feeling of malaise due to renal involvement, Hypertensive encephalopathy due to brain damage and dysfunction, Retinal papilloedema, Fundal hemorrhage and exudates are other signs of target organ damage, Chest pain may indicate heart muscle damage which sometimes progresses to (myocardial infarction and or aortic dissection), Breathlessness, cough and expectoration of blood stained sputum are signs of pulmonary oedema.

In pregnancy, visual disturbance (often flashing light), vomiting, headache, epigastric pain and oedema are signs of life- threatening eclampsia which is a hypertensive emergency.

2.2.2 Types Of Hypertension

There are two types of hypertension named as primary (essential) and secondary hypertension.
Distinction is often drawn between primary or essential and secondary hypertension (Munde, 2007).

The primary type is a type of hypertension that is not medically traceable to any obvious form of a disease as the preceding cause of the hypertension. Primary hypertension is mostly caused by

genetic, socio-economic and environmental factors. Hypertension can be regarded as secondary if it can evidently be traced from other diseases such as diseases of kidneys, arteries, heart, endocrine system.

The primary type is more common and was said to be the type of hypertension affecting up to 90% to 95% of hypertensive patients while the remaining up to 5% to 10% case and diseases was for the secondary type (WHO, 1999; Good friend 1983; Munde 2007).

2.2.3 Diagnosis/Investigations

Hypertension can be diagnosed on its patients based on persistently high blood pressure during measurements for the disease. In some cases, hypertension can be accessed via a complete medical history of the suspected patients. The hypertension assessments can be more commonly assessed using high blood pressure readings such as Sphygmomanometer instruments, 24 hours ambulatory blood pressure and pulse readings. The sphygmomanometer instrument may require up to three seperate measurements at one month interval which gives a measure of systolic and diastolic blood pressure readings. Diagnosis involves history and physical examination with interest in underlying risk factors and other symptoms.

Laboratory tests can be performed to identify the possible cause of secondary hypertension and its level of damage in the body. Additional tests for diabetes and high cholesterol levels usually performed because these conditions are additional risk factors for high blood pressure (Carreto & Oparils, 2000).

Serum creatine is measured to assess for the presence of kidney disease primarily to estimate glumerular filteration rate. Recent advocates are calling for use of Modification of Diet in Renal Disease (MDRD) formula to estimate glomerular filteration rate.

Testing of urine samples for protein is used as a secondary indicator of kidney disease.

Electrocardiogram (EKG/ECG) testing is done to check for evidence that the heart is under strain from high blood pressure and also show the thickening of the heart muscle. A chest X-ray or an echocardiogram may also be performed to look for signs of heart enlargement or damage.

Hypertension can also be measured using 24hours ambulatory or home monitoring devices based on International Hypertension Guidelines.

These tests, their readings and interpretations are summarized below:

Typical Tests Performed

System	Tests
Renal	Microscopic urinalysis, proteinuria, BUN and/or creatine
Endocrine	Serum sodium, potassium, calcium, TSH
Metabolic	Fasting blood glucose, HDL, LDL, & total cholesterol, triglycerides
Others	Haematocrit, electrocardiogram and chest radiograph

Source: Harrison's principles of internal medicine

2.2.4 Causes of Hypertension

In idiopathic/primary/essential hypertension, there is no identifiable cause for the condition. In addition to race, genetic background may also be important for there is a strong tendency for hypertension to run in families (Alan, 1993).

Moments of anxiety can cause transient rise of blood pressure, but it is impossible to state whether sustained hypertension is at all closely to psychological factors.

Numerous common genetic variants with small effects on blood pressure has been identified as well as some rare genetic basis of hypertension is still poorly understood (Greenhalgh et al, 2009). Many people with kidney disorder have secondary hypertension. The kidneys regulate the balance of salt and water in the body. If the kidneys cannot rid the body of excess salt and water, blood pressure goes up. Kidney infections, a narrowing of the arteries that carry blood to the kidneys renal artery stenosis and other kidney disorder can disturb the salt and water balance.

Cushing's syndrome (hypercortisolism) also causes excessive suprarenal activity and may be complicated by sustained hypertension.

Tumors of the pituitary and adrenal glands often increase levels of the adrenal gland hornones-cortisol, adrenalin, aldesterone, which can cause hypertension (Namara, 2003). Aldosterone secreting tumor of the Adrenal gland (Conn's syndrome) leads to excessive retention of salt and water, which may lead to hypertension (Alan,1993).

Coarctation of the Aorta-mechanical obstruction beyond the left subclavation artery is also responsible for hypertension (Alan,1993).

Endocrine causes of hypertension-Pre eclamptic toxaemia is now a much less important disease than formerly, but the contraceptive pills may cause hypertension in some women.

Pregnancy: many raised blood pressure in the first trimester usually indicate pre-existing hypertension (Alan,1993).

Phaeochromocytoma- Excessive production of pressor amines from this tumors of the adrenal medulla causes severe hypertension, which is often markedly fluctuating(Alan,1993).

Other conditions that can cause hypertension are: Blood vessel disease, Thyrod gland disorders, Some prescribed drugs, Alcoholism and Pregnancy (Greenhalgh et al, 2009), Obesity, Herbal remedies and Illegal drugs (Grossman, 2012).

2.2.5 Predisposing/risk factors

Even though the cause of most hypertension is not known, some people have risk factors that give them a greater chance of developing hypertension. Many of these risk factors can be changed to lower the chance of developing hypertension or as part of treatment program to lower blood pressure. Risk factors for hypertension include: (a) Age over 60 (b) Male sex (c) Race. These risk factors (a,b and c cannot be changed or anything done about it by the sufferer.(d) Heredity (e)Salt sensitivity (f) Obesity (g) inactive lifestyle (h)Heavy alcohol consumption and useof oral contraceptives are other risk factors (Damian, 2003). Hypertension is also a major risk factor for other conditions like stoke, myocardial infarction, heart failure, aneurysms of the arteries(e.g.aortic aneurysm), peripheral arterial disease and is a cause of chronic kidney diseases (Carreto & Oparil, 2000), early life events such as low birth weight, maternal smoking and lack of breast feeding are risk factors for adult hypertension though obscure (Lawlor & Smith,2005). Hypertension is a risk factor for renal injury ESRD and black men are at greater risk than White men for developing ESRD at every level of blood pressure (Grossman, 2012).

2.2.6 Complications of Hypertension

In pregnancy, Hypertension several serious complications which include: Vision loss, Cerebral oedema, Seizures/Convulsions, Renal Failure, Pulmonary oedema and Disseminated intravascular coagulation (a blood clotting disorder) (Fisher & Williams, 2005). Encephalopathy-a rare complication of severe High Blood Pressure, Retinal haemorrhage and Cerebral haemorrhage (Carreto & Opara, 2000). However, Steinmetz & Nickening, 2009 classified the complications of Hypertension into:

Complications affecting the heart:

These include left ventricular hypertrophy, diastolic dysfunction, abnormalities of blood flow due atherosclerotic coronary artery disease, cardiac arrhythmias etc. Individuals with left ventricular hypertrophy are at risk of stroke, heart failure and sudden death. Other complications are myocardial infarction (heart attack),and hypertensive cardiomyopathy (heart failure).

Complications affecting the brain:

It is a risk factor for brain infarction and haemorrhage. Hypertension is also associated with impaired cognition in an aging population (Loscalzo et al,2008).It leads to hypertensive encephalopataahy, focal neurologic signs and alteration in mental status. Hypertensive encephalopathy if untreated, may progress to stupor, coma, seizures and death within hours.

Complications affecting the eye

These include: hypertensive retinopathy with varying stages of degeneration-vasospasm, disruption of blood-retina barrier, necrosis of the smooth muscles and endothelial cells ,exudation of blood and lipids and retinal ischemia.

The exudative signs are non specific, since they are seen in diabetes and other conditions (Wong & Mitchell, 2004).

Complications affecting the kidneys

Hypertension is impaired in direct damage to the glumerular capillaries due to glumerular hyperprefusion, progressed into glumerulosclerosis, and later becomes ischemic and atrophic. Others include: fibrinoid necrosis of the afferent arterioles. This is culminated in hypertensive nephropathy.

Complications associated with diabetes

Diabetes has several complications of which one is hypertension. Outside diabetes, other factors that may increase high blood pressure include: Obesity, insulin resistance and high cholesterol levels. The hypertension often leads to heart failure, strokes, heart failure, loss of libido and poor blood circulation in the legs.

2.3 Emperical Studies

Many studies have been carried out on occupational stress and hypertension among health care workers both in Nigeria and other parts of the world. They include:

A study carried out by Akinwumi, Mojisola, Akintayo and Ayo (2012) on Work-related stress perception and hypertension amongst health workers of a mission hospital in Oyo State, south-western Nigeria .A total of 324 consenting health workers of the institution were administered the job demand-control questionnaire to assess work stress. The findings showed that the prevalence of high job strain was slightly higher in men (27.3%0 than in women (25.4%). The prevalence of hypertension among the subjects with high job strain was 42%. The highest percentage of high strain was found among the Pharmacy personnel. More than a quarter (26.2%) perceived themselves as stressed at work. A significant number of health workers in this study were affected by work related stress and perceived work stress was found to be significantly associated with higher hypertension prevalence. The single largest group of hypertensive subjects was seen among subjects with work stress.

Another study by Eleonu, Obasi, Nsonwu and Akaogu (2021) on Association of job stress and hypertension among nurses in Imo State, Nigeria revealed that : A closer proportion of both non hypertensive (22.63%) and hypertensive (22.1%) nurses feel tensed most time because of their job demand. A significant proportion (34.3%) of the hypertensive nurses stated that they feel

stressful working on night compared with 19.0% who are non hypertensive. Up to 21.8% of the non hypertensive nurses compared with 32.1% of the hypertensive nurses reported that most of the times, they deprive themselves from sleeping just to perform work task. In similar variation, 31% non hypertensive respondents responded that most of the time, their task at work make them feel frustrated compared to 42.1% of the hypertensive. The study indicated that work stress is related to hypertension among nurses.

Tekesadik, Mulat, Necho and Waja (2017) carried out a Hospital Based Cross-Sectional study in Addis Ababa Ethiopia to determine Occupational Stress and its Associated Factors among Health Care Professionals working at a setting of a Specialized Mental Hospital. The result of this study showed that 46% (95% CI: 41.7.51.7) of the health care professionals were having occupational stress.

Rengganis, Rakhimullah, and Garna (2019) carried out a cross sectional study in Indonesia to investigate the correlation between work stress and hypertension among Industrial workers . The measurement of work stress was obtained by Work Stress Questionnaire (WSQ). And categorized as workers with work stress and without work stress. The findings showed that: the prevalence of hypertension was significantly higher in workers with work stress. Therefore, significant correlation exist between work stress and hypertension among respondents.

A study by Ducher, Ceruti, Chatellier, and Fauvel (2006) on “Is high job strain associated with hypertension Genesis? Revealed that there is no global relationship between job strain and blood pressure levels. However, significant association exist between job strain and blood pressure in the subgroup of newly diagnosed hypertensive subjects exposed to high job strain

CHAPTER THREE

MATERIALS AND METHODS

3.1 Study Design

The study was a descriptive cross sectional study . A population based study that sought to study occupational stress and hypertension among health workers in Owerri, Imo State that was carried out between November and December, 2021. Also, in order to ensure the correctness and preciseness of the data generated, a standard Stress level measuring tool, Perceived Stress Scale (Marcatto et al, 2022) and a pretested self administered questionnaire were used to assess the participants level of occupational stress. Also a Motech digital sphygmomanometer (Model : BPU500) was used to measure their systolic and diastolic blood pressure to avoid bias.

3.2 Study Area

The study was conducted in Owerri Imo State, Nigeria. Owerri is the capital city of Imo State in Nigeria, set in the heart of Igbo land. It is also the state's largest city, followed by Orlu, Okigwe and Ohaji/Egbema. Owerri consists of three Local Government Areas including Owerri Municipal, Owerri North and Owerri West, it has an estimated population of about 1,401,873 as of 2016 and is approximately 100 square kilometres (40 sq mi) in area. Owerri is bordered by the Otamiri River to the east and the Nworie River to the south. The Owerri Slogan is *Heartland*. Owerri was the last of three capitals of the Republic of Biafra in 1969. The capital of the secessionist state was continuously being moved as Nigerian troops captured the older capitals. Enugu and Umuahia were the other capitals before Owerri. Present-day Owerri does contain some statuary memorializing the war, particularly in locations which suffered heavy bombing, but most war artifacts and history are located in the museum at Umuahia, Abia State.

On 5 April 2021, a mass prison break happened in Owerri, in which 1,844 inmates were released. It is alleged that the Eastern Security Network was responsible for the attack.

Owerri has an airport 23 kilometres (14 mi) southeast of the city, called the Imo Airport, located in Obiangwu, Ngor Okpala LGA. The Airport (Sam Mbakwe Airport) provides flight services to Abuja, Lagos, Port Harcourt, and Enugu. Right now, it serves as an alternate for Port Harcourt. Sam Mbakwe International Cargo Airport is now an International Cargo Airport. Some major roads that go through the city are; Port Harcourt Rd., Aba Rd., Onitsha Rd., and Okigwe road. Roads within the city are; Douglas Rd. , Weatheral Rd., Tetlow Rd., and Works Rd. Relief market is the main market in Owerri after the demolition of Eke Ukwu Owere.

Owerri sits in the rain forest and produces many agricultural products, such as yams, cassava, taro, corn, rubber for exports and palm products. Owerri also sits on huge crude oil and natural gas reserves like most of the Igbo land areas. It is known for its handicraft centres. Although there is as yet little industrial development, one factory produces galvanized sheet. Owerri has a tropical wet climate according to the Köppen-Geiger system. Rain falls for most months of the year with a brief dry season. The Harmattan affects the city in the early periods of the dry season and it is noticeably less pronounced than in other cities in Nigeria. The average temperature is 26.4 °C. One major food that is particular to the Owerri people is known as ofe owerri (ofe means soup, while Owerri is the capital of Imo state). It is sometimes referred to as the king of soup. Christianity is the dominant religion in Owerri. Catholics and Anglicans have the largest followings and Owerri is home to Assumpta Cathedral, the seat of the Roman Catholic Archdiocese of Owerri (Latin: Archidioecesis Overriensis) and the Seat of Wisdom Seminary. The archdiocese covers an area of 2,996 square kilometres. 670,986 of the 1.7 million people in the area are members of the Catholic Church...

Figure 5: Map of Owerri showing the areas and the three (3) LGAs

Source: Soluap Technologies, 2022

3.3 Inclusion Criteria

This study include health professionals (doctors, nurses, lab. Technicians, lab. Scientists, pharmacy technicians and pharmacists) aged 18 years and above, who are not pregnant, who gave their consent and are working in tertiary, and secondary hospitals in Owerri, Imo State.

3.4 Study Population

The study population was restricted to health care professionals as its aim is to study occupational stress and hypertension among health care professionals in Owerri, Imo State.

3.5 Sample Size and Sampling Methods

3.5.1 Sample Size Determination

The sample size was determined by this formula $\mathbf{n = (z\alpha)^2\, p \times q}$(Leslie Kish Formula, 1995)

$$\frac{}{(d)^2}$$

Where; Zα (Z score) = Standard normal deviate corresponding to the probability of making type 1 error (α) at 5% =1.96, Prevalence, P = 37% or 0.37 (adopted from a study in Iraq to determine the prevalence of pre-hypertension amonmg health workers), q = 1-p, Precision, d = 5%

$$n = \frac{(1.96)^2\ (0.37)\ (0.7)}{(0.5)^2}$$

n = 378.9 approximated to 398

Adjustment for population <10,000 using finite population correction

Formula

Assuming the total number of health care professionals in the selected tertiary and secondary hos pitals in Owerri is approximately 3800, from the record obtained from District Health Informatio n System [DHIS] 2019.

Adjusted sample size for population <10,000 = $\frac{n0\ N}{n0 + (N-1)}$

where n0 is the minimum sample size (398); N = total population (3800)

$N = \frac{(398)\ (3800)}{398 + (3800-1)} = \frac{1512,400}{4197} = 360$

Allowance for non-response rate using the formula N/1-NR; assuming a 10% non-response rate from the staff. The sample size thus becomes; 360/0.9 = 400. Therefore the total sample size is 400.

3.5.2 Sampling Methods

A multistage, stratified and simple random sampling techniques were used for data collection during the course of the study. At first, multistage sampling technique was used to draw out 6 hospitals from the three Local Government areas based on the hospitals that have larger number of staff. Stratified and simple random sampling were further used to draw out the number of respondents from each hospital using table of random numbers for the study. The health care workers were stratified according to their professional groups : nurses, doctors, pharmacists, pharmacy technicians, lab. scientists and lab technicians which amounted to 6 categories of health professionals. Respondents were then selected by simple random sampling using computer generated table of random numbers. There were lists of staff in each stratum in all the selected hospitals. The serial number was assigned to each staff as to mentain the order of the list. Using the computer generated table of random numbers, respondents were selected on daily basis from each stratum until the total sample size was reached for both secondary and tertiary hospitals. The following hospitals were selected for the study as follows:

Health facility	Frequency (N = 400)
Federal Medical Centre Owerri	124
Imo State Specialist Hospital	114
Federal Polytechnic Nekede Medica Centre	48
FUTO Medical Centre	50
Alvan Ikoku Federal College of Education Medical Centre	26
Holy Rosary Hospital Emekuku	38
Total	**400**

3.6 Instruments for Data Collection

The basic instruments used in the course of data collection were: a standard stress measuring tool known as Precieved Stress Scale (PSS), a pretested well structured questionnaire and a Motech digital sphygmomanometer (Model number: BPU5000). The method used was primary data collection, that is face to face interview with the health professionals and blood pressure measurement which was made after they were seated quietly for at least 5 minutes on a chair. The questionnaire consisted of 4 sections, 31 items and blood pressure reading.

Section A: Socio-demographic variables which are non modifiable risk factors of hypertension.

Section B: Biological and life style variables which are modifiable risk factors of hypertension.

Section C: Job related factors that can increase the risk of hypertension.

Section D: Precieved Stress Scale (PSS) Seeks to know how stressful your job has been for the past one month. Can also increase the risk of hypertension among health care professionals.

3.7 Validity of the Instruments

To ensure the face, construct, criterion and content of validity of the instrument, the questionnair e was structured in line with the specific objectives of the study and based on literature review. It was assessed by the researcher's project supervisor, who checked it for relevance and coverage of specific objectives and made appropriate corrections and suggestions. His input was utilized to effect some changes before the final copy of the instrument was produced. Also the Motech digital sphygmomanometer used in this study was checked and compared with that of other health workers by the researcher for accuracy.

3.8 Reliability of the Instrument

The test-retest method was used to test the reliability of the questionnaire using 10% of the sample size. The exercise was necessary because it enhanced the collection of relevant data, which also reduced bias. The analyzed data was reliable and the significant association set at $p<0.05$ with chi square test.

3.9 Administration of Instrument

Administration of the PSS stress scale and a standard questionnaire took place between November and December, 2021. The instrument was administered to the health professionals solely by the researcher after an informed consent was obtained. Also, the participants systolic and diastolic blood pressure were measured and written on the questionnaire by the researcher. It took one (1) month for the 400 questionnaires to be distributed in the 7 health facilities.

3.10 Method of Data Analysis

Data collected in this study was edited, coded and entered into Statistical Package for Social Sciences (SPSS) version 21.0.Frequency distribution tables and bar charts were generated for all

relevant variables, and were expressed as percentage of the distribution. Hypotheses were tested also using Chi-square test, and P-value less than 0.05 was considered to be statistically significant.

3.11 Ethical Consideration/Informed Consent

An approval was obtained from the research ethical committee of Public Health Department, School of Health Technology, Federal University of Technology, Owerri alongside a letter of Introduction issued from the administrative office of Public Health Department. Ethical approval was sought from department of Planning Research and Statistics, Imo State Ministry of health, and Heads of Clinical Services/ Heads of departments of FMC Owerri, Imo State Specialist Hospital, Federal Polytechnic, Nekede Medical Centre, FUTO Medical Centre, Alvan Ikoku Federal College of Education Medical Centre, and Holy Rosary Hospital Emekuku before the research commenced. The questionnaire was completed privately and anonymously (none of the respondents was identified by name at any point during data collection).

Verbal informed consent was obtained from all the participants before being allowed to participate in this study.

CHAPTER FOUR

RESULTS

This chapter presents the result of the data analysis from the questionnaire survey, blood pressure measurement and Percieved Stress Scale measurement used in determining occupational stress and hypertension among health care professionals in Owerri, Imo State.

4.1 Socio–Demographic Characteristics Of Health Care Professionals

Table 1, shows the Socio-demographic characteristics of the health care professionals. A total of 400 health professionals from six (6) different health facilities were selected for the study, comprising 120 (30.0%) males and 280 (70%) females. Majority of these health care professionals were between the age brackets of 26-35 (45%), while those between the ages of 55 and above (4.5%) had the least number of respondents.

Other Socio–demographic characteristics are shown in Table 1.

Table 1 : Socio-Demographic Characteristics of Respondents

Variance	Frequency (N=400)	Percentage (100%)
Gender		
Males	120	30
Females	280	70
Age group (years)		
<25	34	8.5
26-35	182	45
36-45	140	35
46-55	26	6.5
Above 55	18	4.6
Marital status		
Married	324	81
Single	76	19
Widowed	0	0
Educational attainment		
First degree	344	86
Masters	44	11
PHD	12	3.0

4.2 Biological And Lifestyle Factors Of Hypertension Among the Respondents

Table 2, shows the biological and lifestyle characteristics of health care professionals. It indicates that larger number 234 (58.5%) have family history of hypertension while lesser number of them 166 (41.5%) have no family history of hypertension. 294 (73.5%) consume salt moderately, 98 (24.5) consume little salt and few number 4 (1.0%) consume salt in excess. Among the health professionals, 8(2.0%) are past smokers, 2(.5%) are moderate smokers and 2 (.5%) heavy smokers.

Other Biological/Lifestyle factors are shown in Table 2.

Table 2: Biological/Lifestyle Factors Hypertension Among Health Care Professionals

Variance	Frequency (N =400)	Percentage (%)
Family history of hypertension		
Yes	234	58.5
No	166	41.5
Salt consumption		
Little	98	24.5
Moderate	294	73.5
Excess	4	1.0
Not at all	4	1.0
Cigarette smoking		
Heavy smoker	2	.5
Moderate smoker	2	.5
Past smoker	8	2.0
None smoker	388	97.0
Body Mass Index		
Under/Normal weight	246	61.5
Overweight	120	30.0
Obese	34	8.5
Alcohol consumption		
Moderate	64	16.0
Light	278	69.5
None	58	14.5

4. 3: Job Related Factors of Hypertension

Table 3, shows the job characteristics of the health care professionals, it indicates that 156 (39.0%) are nurses, 74 (18.5%) are doctors, 56 (14.0%) are pharmacist, and 62 (15.5%) are lab. Scientist.190 (47.5%) of the respondents have been employed for 10 years and above while 144 (36..0%) have been employed for less than 5 years. Considering monthly income, 134 (35.5%) earn between 50-100,000 while 38 (9.5%) earn < 50,000. Majority of the health care professionals 238 (59.5 %) work between 5-8 hours per day while few of them 8 (2.0%) work < 5 hours per day.

Other Job Related factors of hypertension are represented in Table 3.

Table 3: Job Related Factors of Hypertension Among Health Care Professionals

Variance	Frequency(N=400)	Percentage (100%)
Profession		
Nurse	156	39.8
Doctor	74	18.5
Pharmacist	56	14.0
Pharmacy. technician	22	5.5
Lab. Scientist	30	15.5
Lab. Technician	62	7.5
Duration of employment		
<5 years	144	16.5
5 – years	66	36.0
>10 years	190	47.5
Monthly income		
<50,000	38	9.5
50,000- 100,000	120	30
100,000- 2000,000	134	33.5
>200,000	108	27.0
Length of working hour		
< 5 hours	8	2.0
5-8 hours	154	59.5
>8 hours	238	38.5
Ofteness of night/weekend call duties		
All the time	26	6.5
Sometimes	302	18.0
Not at all	72	75.5
Health Related Stressors		
Sleep Deprivation	152	38.0
Frequently Missing Meals	182	45.5
Other	12	3.0
None	54	13.5
Environmental Stressors		
Inadequate Resources	160	40.0
Understaffing	198	49.5
Conflict among Colleagues	22	5.5
None	20	5.0

Psychosocial Stressors		
Fear of giving wrong treatment /wrong interpretation of result	78	19.5
Dealing with death	48	12.0
High expectations from Patients	162	40.5
Inadequate support from family and friends	38	9.5
None	74	18.5

4.4 Perceived Stress Scale (PSS)

Table 4.5 below revealed the perceived stress scale among participants in this survey. It indicates that in the last month, because of something that happened unexpectedly at work, A.122 (30.5%) were upset ‘fairly often’, 114 (28.5%) said they were ‘sometimes’ upset, 60 (15.0%) said ‘very often’, 56(14.0%) of the participants were ‘almost never upset, and 48 (12.0%) said .‘sometimes’. B.162 (40.5%) of the respondents ‘sometimes’ felt they were unable to control the important things in their life due to pressure at work, 94 (23.5%) said “fairly often”, 58 (14.5%) reported “never”, 48 (12.0%) reported ‘very often’, and 38 (9.5%) replied “almost never”.C. 124 (31.0%) of the respondents ‘fairly often’ felt nervous and stressed due to work overload in the last month, 106 (26.5%) said ‘sometimes’, 78 (19.5%) ‘very often’, 48 (12.0%) ‘ never’, and 44 (11.0%)’almost never’ felt nervous and stressed due to work overload in the last month.

Other Perceived Stress Scale Outcome are shown in Table 4.

Table 4: Perceived Stress Scale (PSS)

Variable (In the last month, how often)	Frequency (n=400)	Percentage (%)
Have you been upset because of something that happened unexpectedly at work?		
Never	48	12.0
Almost Never	56	14.0
Sometimes	114	28.0
Fairly often	122	30.5
Very Often	60	15.0
Have you felt you were unable to control the important things in your life due to pressure at work?		
Never	58	14.5
Almost Never	38	9.5
Sometimes	162	40.5
Fairly often	94	23.5
Very Often	48	12.0
Have you felt nervous and stressed due to work overload?		
Never	48	14.5
Almost Never	44	9.5
Sometimes	106	40.5
Fairly often	124	23.5
Very Often	78	12.0
Have you felt confident about your ability to handle your personal problems?		
Never	6	1.5
Almost Never	26	6.5
Sometimes	68	17.0
Fairly often	128	32.0
Very Often	172	43.0
Have you felt that things are going your way?		
Never	16	4.0
Almost Never	32	8.0
Sometimes	130	32.5
Fairly often	132	33.0
Very Often	90	22.5
Have you found that you could not cope with all the things that you had to do?		
Never	66	16.5
Almost Never	52	13.0
Sometimes	102	25.5
Fairly often	130	32.5

Very Often	50	12.5
Have you been able to control irritations in your life?		
Never	14	3.5
Almost Never	30	7.5
Sometimes	120	30.0
Fairly often	152	38.0
Very Often	84	21.0
In the last month, how often have you felt that you were on top of things?		
Never	38	9.5
Almost Never	28	7.0
Sometimes	112	28.0
Fairly often	140	35.0
Very Often	82	20.5
Have you been angered because of things that were outside your control?		
Never	40	10.0
Almost Never	48	12.0
Sometimes	132	33.0
Fairly often	122	30.5
Very Often	58	14.5
Have you felt difficulties were piling up so high that you could not overcome them?		
Never	68	17.0
Almost Never	96	24.0
Sometimes	80	20.0
Fairly often	98	24.5
Very Often	58	14.5

Figure 6 shows that 17% of the nurses have hypertension, 16% of doctors are hypertensive, 17.9% of pharmacist are hypertensive, 9.1% of the pharmacy technicians are hypertensive, 3.2% of the lab. Scientist have hypertension and 20.0% of the lab. technicians are hypertensive.

Figure 7 shows that 35% of the respondents had high stress, 59.5% had moderate stress and 5.5% had low stress.

Figure 8 shows that 15.7% of respondents who had high stress are hypertensive while 84.3% are not hypertensive, 15.1% of those that had moderate stress are hypertensive while 84.9% are not hypertensive. 9.1% of respondents with low stress are hypertensive while 90.9% are not hypertensive.

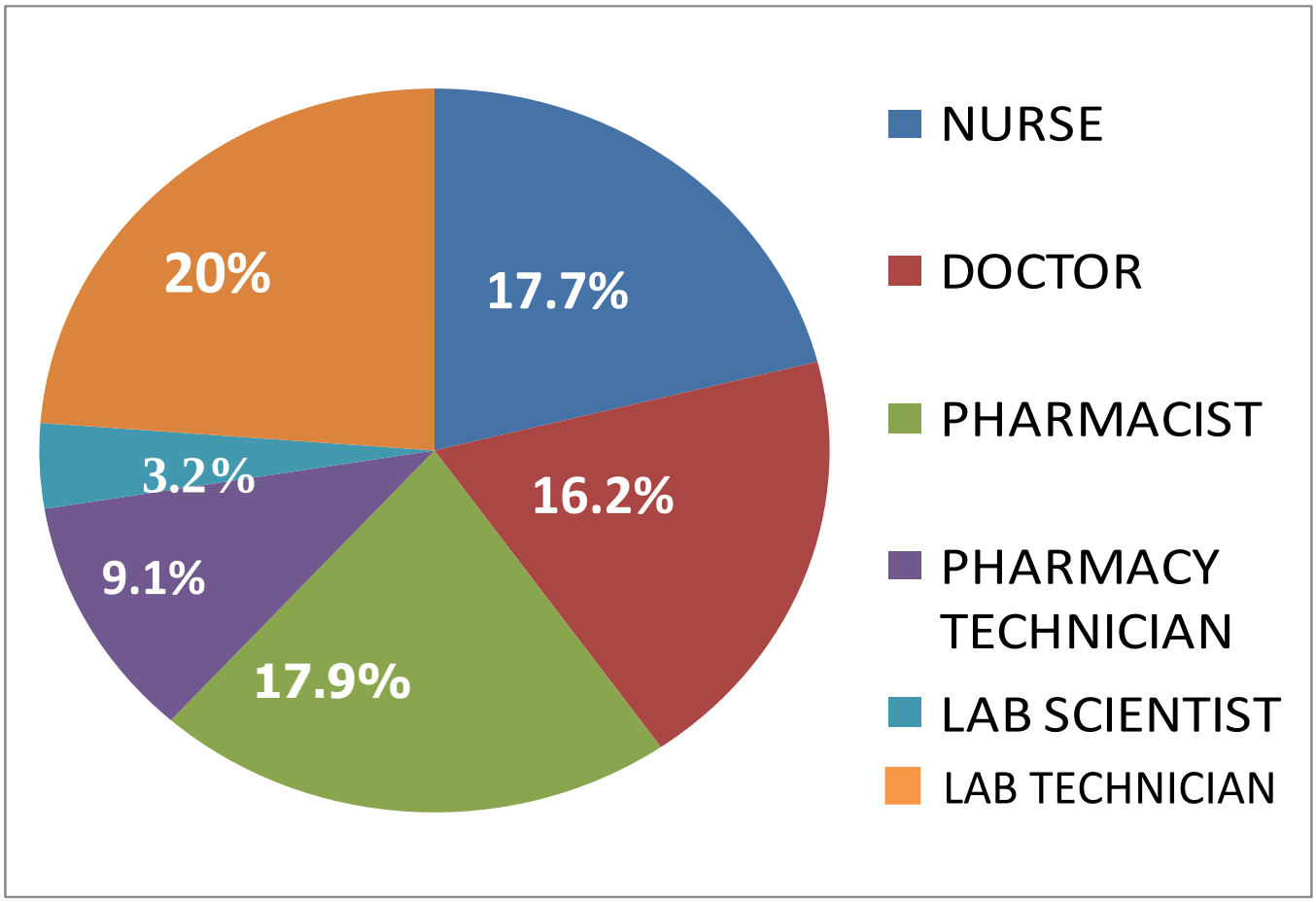

Figure 6: Hypertension status of health care professionals

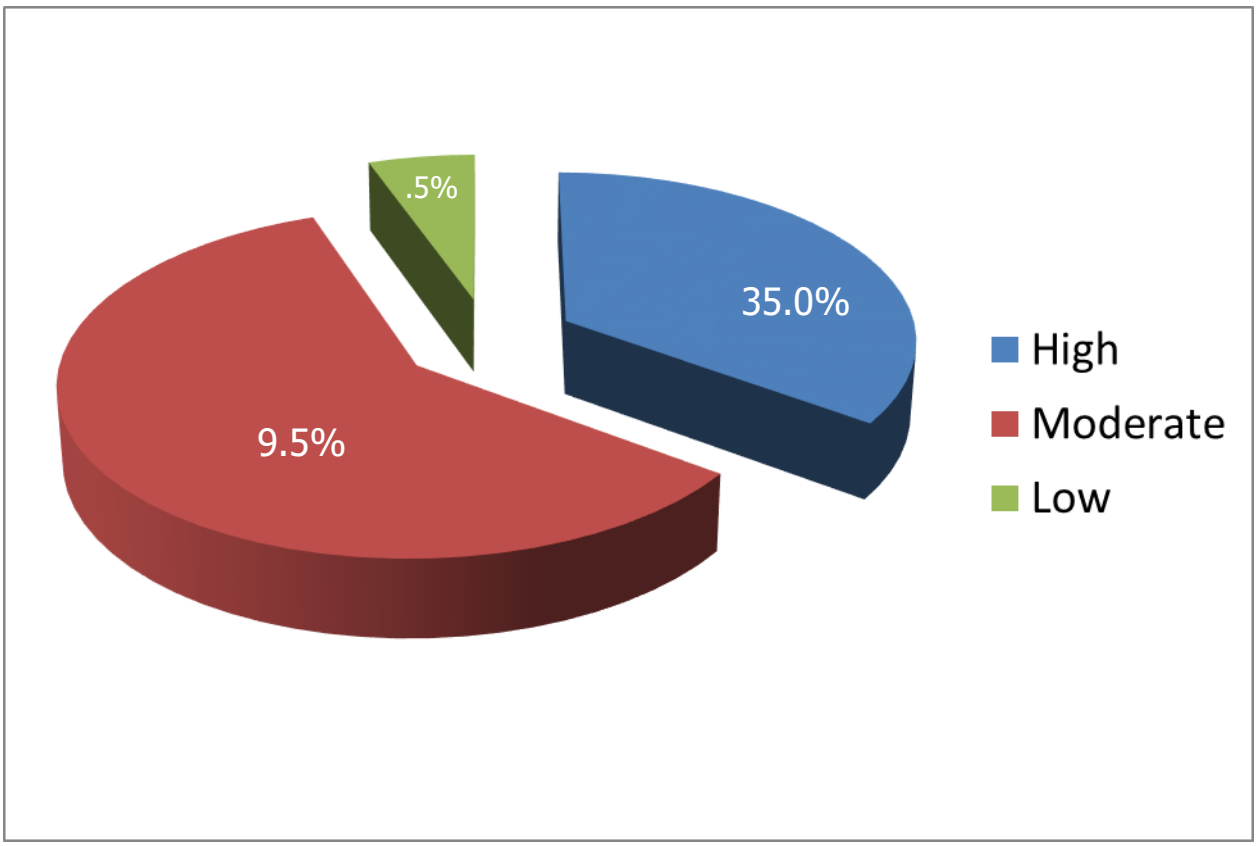

Figure 7: Perceived stress rating of the health care professionals

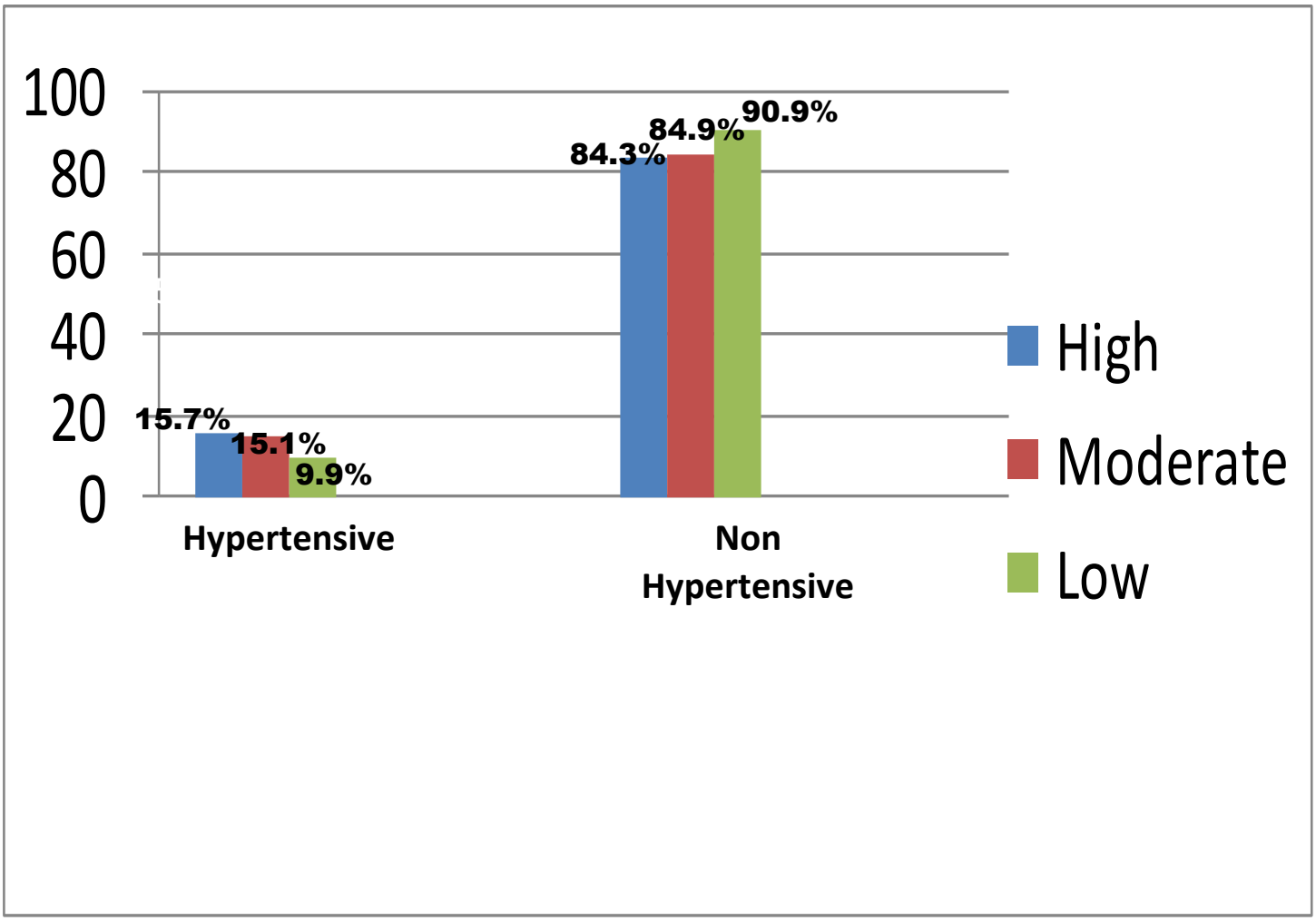

Figure 8: Perceived stress versus hypertension status of health care professionals

4.5 Relationship between level of Stress Experienced by Health Professionals and Hypertension

Table 5 shows the relationship between level of stress experienced by health care professionals and hypertension. Out of the 400 health care professionals sampled, 140 (35.0%) had high stress, 238 ((59.5%) had moderate stress and 22 (5.45%) experienced low stress. Of the 140 (35.0%) that encountered high stress, 22 (15.7%) were hypertensive while 118 (84.3%) were normotensive; of the 238 (59.5%) respondents who encountered moderate stress, 36 (15.1%) were hypertensive while 202 (84.9%) were normotensive; and of 22 (5.5%) that experienced low stress, 2 (9.1%) were hypertensive while 20 (90.9%) were normotensive. P-value = 0.718

Statistical analysis using pearson chi-square shows that there is no statistical significant relationship between levels of stress experienced by the health care professional and hypertension. Therefore, there is no relationship between level of stress and hypertension.

($X^2 = .661$, $p > 0.05$)

Table 5: Relationship between Level of Stress Experienced by Health Professionals and Hypertension

	HYPERTENSION STATUS		
Level of Stress	**Hypertensive(%)**	**Normotensive(%)**	**Total(%)**
High Stress	22 (15.7)	118 (84.3)	140 (35)
Moderate Stress`	36 (15.1)	202 (84.9)	238 (59.5)
Low Stress	2 (9.1)	20 (90.9)	22 (5.5)
Total	**60 (15)**	**340 (85)**	**400 (1000)**

Pearson chi-Square = .661, df =2, p-value = 0.718

4.6 Relationship Between Health-Related Stressors and Hypertension Among Health Care Professionals in Owerri

Table 6 shows the relationship between health-related stressors and hypertension among health professionals. Out of the 152 (38.0%) health professionals that encountered sleep deprivation, 28 (18.4%) were hypertensive while 124 (81.6%) were not hypertensive; of 182 (45.5%) respondents that frequently miss meals, 20 (11%) were hypertensive while 162 (89%) were normotensive; out of 12 (3.0%) that encountered other health –related stressors, 0 (0%) were hypertensive while 12 (100%) were normotensive, and out of 54 (13.5%) that did not experience any of the health-related stressors, 12(22.2%) were hypertensive while 42 (77.8%) were normotensive. P-value = 0.46

Statistical analysis using pearson chi-square shows that there is no statistical significant relationship between Health-related Stressors and hypertension among health care professionals. Therefore, there is no relationship between health-related stressors and hypertension.

($X^2 = 8.019$, $p > 0.05$)

Table 6: Relationship Between Health-Related Stressors and Hypertension Among Health Care Professonals

	HYPERTENSION STATUS		
Health Related- Stressors	**Hypertensive(%)**	**Normotensive(%)**	**Total (%)**
Sleep Deprivation	28 (18.4)	124 (81.6)	152 (38.0)
Frequently Missing Meal	20 (11)	162 (89)	182 (45.5)
Others	0 (0)	12 (100)	12 (3.0)
None	12 (22.2)	42 (77.8)	54 (13.5)
Total	**60 (15)**	**340 (85)**	**400 (100)**

Pearson chi-Square = 8.019, df = 3, P-value = 0.46

4.7: Relationship Between Environmental Stressors and Hypertension Among Health Care Professionals

Out of 160 (40.0%) respondents that encounter inadequate resources, 26 (16.25%) were hypertensive while 134 (83.75%) were normotensive; of 198 (49.5%) that encounter understaffin g 28 (14.1%) were hypertensive while 170 (85.9%) were normotensive; out of 22 (5.5%) that experience conflict among colleagues, 2 (9.1%) were hypertensive while 20 (90.9%) were normotensive; and of 20 (5.0%) that do not experience any of the environmental stressors, 4 (20%) were hypertensive while 16 (80%) were normotensive. P-value = 0.728

Statistical analysis using pearson chi square shows that there is no statistical significant relations hip between Environmental Stressors and hypertension among health care professionals. Therefore, there is no relationship between environmental stressors and hypertension.

($X^2 = 1.305$, $p > 0.05$)

Table 7 : Relationship Between Environmental Stressors and Hypertension Among Health Professionals

	HYPERTENSION STATUS		
Environmental Stressors	**Hypertensive(%)**	**Normotensive(%)**	**Total (%)**
Inadequate resources	26 (16.25)	134 (83.75)	160 (40.0)
Understaffing	28 (14.1)	170 (85.9)	198 (49.5)
Conflict among colleagues	2 (9.1)	20 (90.9)	22 (5.5)
None	4 (20.0)	16 (80.0)	20 (5.0)
Total	**60 (15)**	**340 (85)**	**400 (100)**

Pearson chi-Square = 1.305, df = 3, P-value = 0.728

4.8 : Relationship Between Psychosocial Stressors and Hypertension Among Health Care Professionals

Out of 78 (19.5%) respondents that are faced with the fear of giving wrong treatment, 4 (5.1%) were hypertensive while 74 (94.9%) were normotensive; out of 48 (12.0%) that are faced with the stress of dealing with death, 12 (25%) were hypertensive while 36 (75%) were normotensive; 28 (17.3%) out of 162 (40.5%) faced with the stress of high expectations from patients were hypertensive while 134 (82.7%) were normotensive; out of the 38 (9.5%) that experience inadequate support from family and friends, 6 (15.8%) were hypertensive while 32 (84.2%) were normotensive; and out of 74 (18.5%) respondents that did not encounter any of the psychosocial stressors, 10 (13.5%) were hypertensive while 64 (86.5%) were normatensive. P-value = 0.032

Statistical analysis using pearson chi square shows that there is statistical significant relationship between Psychosocial Stressors and hypertension among health care professionals. Therefore, there is relationship between psychosocial stressors and hypertension.

($X^2 = 10.536$, $p < 0.05$)

Table 8 : Relationship Between Psychosocial Stressors and Hypertension Among Health Care Professionals

	HYPERTENSION STATUS		
Environmental Stressors	**Hypertensive(%)**	**Normotensive(%)**	**Total (%)**
Fear of giving wrong treatment/ Wrong interpretation of results	4 (5.1)	74 (94.9)	78 (19.5)
Dealing with death	12 (25.0)	36 (75.0)	48 (12.0)
High expectations from patients	28 (17.3)	134 (82.7)	162 (40.5)
Inadequate support from family and friends	6 (15.8)	32 (84.2)	38 (9.5)
None	10 (13.5)	64 (86.5)	74 (18.5)
Total	**60 (15)**	**340 (85)**	**400 (100)**

Pearson chi-Square = 10.536, df = 4, P-value = 0.032

4.9 Bivariate Analysis of Socio-demographic Factors/Hypertension Status of Respondents

The result of Table 9 shows the bivariate analysis of socio-demographic factors. For respondents within the age range < 25 years, 0 (0%) was hypertensive while 34 (100.0%) were not hypertensive; for ages 26-35 years, 24 (13.2%) respondents were hypertensive while 158 (86.8%) were not hypertensive; for ages 36-45 years, 32 (22.9%) were hypertensive while 108 (77.1%) were not hypertensive; for ages 46-55 years, 2 (7.7%) were hypertensive while 24 (92.3%) were not hypertensive; and for respondents within the age range 55 years and above, 2 (11.1%) were hypertensive while 16 (.88.9%) were not hypertensive. This shows that there is no significant statistical association between age and hypertension status of health care professionals. ($x^2 = 14.551$, df = 4, P = 0.006).

Other Bivariate Analysis of Socio-demographic/Hypertension status of respondents are shown in Table 9.

Table 9 :Bivariate Analysis of Socio-demographic Factors and Hypertension status

Socio-demographic Factors	Hypertensive (%)	Non Hypertensive (%)	Total (%)	Chi Square	p-value
Age group					
<25	0(%)	34(100)	34(8.5)	14.551	0.006
26-35	24(13.2)	158(86.8)	182(45.5)		
36-45	32(22.9)	108(77.1)	140(35.0)		
46-55	2(7.7)	24(92.3)	26(6.5)		
Above 55	2(11.1)	16(88.9)	18(4.5)		
Gender					
Male	18(15.0)	102(85.0)	120(30.0	0.000	1.000
Female	42(15.0)	238(85.0)	280(70.0)		
Marital status					
Married	56(17.3)	268(82.7)	324(81.0)	6.977	0.008
Single	4(5.3)	72(94.7)	76(19.0)		
Highest level of Education					
First Degree	52(15.1)	292(84.9)	344(86.0)	0.094	0.954
Masters	6(13.6)	38(86.4)	44(11.0)		
PHD	2(16.7)	10(83.3)	12(3.0)		

4.10 : Bivariate analysis of Biological and Lifestyle factors/Hypertension status

Table 10 explains the relationship between biological / lifestyle factors and hypertension among health care professionals. This shows that among 102 (25.5%) dignosed of HBP, 32 (31.4%) were hypertensive while 70 (68.6%) were not hypertensive, for 298 (74.5%) that have not been diagnosed of HBP, 28 (9.4%) were hypertensive while 270 (90.6%) were not hypertensive. This means that there is statistical significant association between previous diagnosis of hypertension and hypertension status of health care professionals. (x^2 = 28.785, df = 1, p = 0.000). Among 38 (9.5%) respondents that check their blood pressure weekly, 6(15.8%) were hypertensive while 32 (84.2%) were not hypertensive; 16 (16.7%) of 96 (24.0%) that check their blood pressure monthly are hypertensive while 80 (83.3%) are not hypertensive; 30 (22.1%) of 136 (34.0) that check their blood pressure every 3-4 months were hypertensive while 106 (77.9%) were not hypertensive; 4 (11.8%) of 34 (8.5%) respondents that check their BP every 6 months were hypertensive while 30 (88.2%) were not hypertensive; 0 (0%) of 56 (14.0%) respondents that check their BP yearly were hypertensive while 56 (100%) were not hypertensive; 4 (10.0%) of 40 (10.0%) respondents that do not check their BP at all were hypertensive while 36 (90.0%) wer e not hypertensive. This shows that there is no statistical significant association between how often respondents check their PB and hypertention status. (x^2 = 16.488, df = 5, p = 0.006).

Other Bivariate analysis of Biological/lifestyle factors and hypertension status of respondents are shown in table 10

Table 10 : Bivariate Analysis of Biological/Lifestyle Factors/Hypertension status

Biological/Lifestyle factors	Hypertensive (%)	Non hypertensive (%)	Total (%)	Chi Square	pvalue
Previous HBP diagnosis					
Yes	32(31.4)	70(68.6)	102(25.5)	28.785	0.000
No	28(9.4)	270(90.6)	298(74.5)		
Blood Pressure check					
Weekly	6(15.8)	32(84.2)	38(9.5)	16.488	0.006
Monthly	16(16.7)	80(83.3)	96(24.0)		
Every 3-4 months	30(22.1)	106(77.9)	136(34.0)		
Every 6 months	4(11.8)	30(88.2)	34(8.5)		
Yearly	0(0%)	56(100)	56(14.0)		
None	4(10.0)	36(90.0)	56(14.0)		
HBP Family History					
Yes	44(18.8)	190(81.2)	234(58.5)	6.397	0.011
No	16(9.6)	150(90.4)	166(41.5)		
Symptoms Had					
Headache	4(11.1)	32(88.9)	36(9.0)	3.092	0.686
Blurry vision	6(13.6)	38(86.4)	44(11.0)		
Chest pain	8(21.1)	30(78.9)	38(9.5)		
Dizziness	26(17.1)	126(82.9)	152(38.0)		
Others	16(12.5)	112(87.5)	128(32.0)		
None	0(0)	2(100)	2(0.50)		
Extent of salt consumption					
Little	22(22.4)	76(77.6)	98(24.5)	6.669	0.083
Moderate	38(12.9)	256(87.1)	294(73.5)		
Excess	0(0)	4(100)	4(1.0)		

Not at all	0(0)	4(100)	4(1.0)		
Cigarette Smoking					
Heavy smoker	0(0)	2(100)	2(0.5)	13.099	0.004
Moderate	2(100)	0(0)	2(0.5)		
Past smoker	0(0)	8(100)	8(2.0)		
None	58(14.9)	330(85.1)	388(97.0)		
Body Mass Index					
Under/normal weight	30(12.2)	216(87.8)	246(61.5)	12.501	0.002
Over weight	18(15.0)	102(85.0)	120(30.0)		
Obese	12(35.3)	22(64.7)	34(8.5)		
Alcohol Consumption					
Moderate drinker	12(18.75)	52(81.25)	64(16.0)	0.854	0.653
Light drinker	40(14.4)	238(85.6)	278(69.5)		
None	8(13.8)	50(86.2)	58(14.5)		
Use of oral contraceptive					
Current user	2(50.0)	2(50.0)	4(1.0)	5.226)	0.153
Partial user	4(14.3)	24(85.7)	28(7.0)		
Past user	0(0)	8(100)	8(2.0)		
None	54(15.0)	306(85.0)	360(9.0)		

4.11 Bivariate Analysis of Job Related Factors/Hypertension status of Respondents

Table 11 shows the relationship between job-related factors and hypertension among health care professionals. This indicates that out of 156 (39.0%) nurses sampled, 28 (17.7%) were hypertensive while 128 (82.3) were not hypertensive; 12 (16.2%) of 74 (18.5%) doctors were hypertensive while 62 (83.8%)were not hypertensive; 10 (17.9%) of 56 (14.0%) pharmacist were hypertensive while 46 (82.1%) were not hypertensive; 2 (9.1%) of 22 (5.5%) pharmacy technicians were hypertensive while 20 (90.9%) were not hypertensive; 2 (3.2%) of 62 (16.5%) lab scientists were hypertensive while 60 (90.8%) were not hypertensive; 6(20.0%) of 30 (7.5%) of Lab. Technicians were hypertensive while 24 (80.0%) were not hypertensive. This shows that there is no statistical significant difference between the different profession and hypertension; (x^2 = 9.440, df = 0.093, p = 0.093). 14 (9.7%) of 144 (36.0%) respondents that have been employed for <5 years were hypertensive while 130(90.3%)) were not hypertensive; 10(15.2%) of 66 (16.5%) respondents that have been employed for 5-10 years were hypertensive while 56 (84.8%) were not hypertensive; 36 (18.9%) of 190 (47.5%) respondents that have been employed for more than 10years. Were hypertensive while 154 (81.1%) were not hypertensive. This shows that there is no statistical significant association between duration of employment and hypertention status of the respondents.(x^2 = 5.469, df =2, p = 0.065).

Other bivariate analysis of job related factors/hypertension status are shown in Table 11

Table 11: Bivariate Analysis of Job-Related Factors/ Hypertension status of Respondents

Biological/Lifestyle factors	Hypertensive (%)	Non hypertensive (%)	Total (%)	Chi Square	pvalue
Profession					
Nurse	28(17.7)	128(82.3)	156(39.0)	9.440	0.093
Doctor	12(16.2)	62(83.8)	74(18.5)		
Pharmacist	10(17.9)	46(82.1)	56(14.0)		
Pharmacy technician	2(9.1)	20(90.9)	22(5.5)		
Lab. Scientist	2(3.2)	60(96.8)	62(15.5)		
Lab. Technician	6(20.0)	24(80.0)	30(7.5)		
Duration of employment					
<5 years	14(9.7)	130(90.3)	144(36.0)	5.469	0.65
5-10 years	10(15.2)	56(84.8)	190(47.5)		
>10years	36(18.9)	154(81.9)	190(47.5)		
Monthly income					
<50,000	0(0)	38(100)	38(9.5)	9.668	0.022
50-100,000	20(16.7)	100(83.3)	120(30.0)		
1001-200,000	18(13.1)	116(86.6)	134(33.5)		
>200,000	22(20.4)	86(79.6)	108(27.0)		
Length work hours per day					
<5 hours	(0)	8(100)	8(2.0)	3.086	0.214
5-8 hours	32(13.4)	206(86.6)	238(59.5)		
>8 hours	28(18.2)	126(81.8)	154(38.5)		
Ofteness of Night/weekend call duties in addition to daily work					
All the time	6(23.1)	20(76.9)	26(6.5)	1.444	0.486
Sometimes	44(14.6)	258(85.4)	302(75.5)		
Not at all	10(13.9)	62(86.1)	72(18.0)		

CHAPTER FIVE

DISCUSSION, CONCLUSION, RECOMMENDATIONS AND LIMITATIONS

5.1 Discussion

This study was carried out to determine the association between occupational stress and hypertension among health care professionals in Owerri. A total of 400 health care professionals were sampled using a pretested questionnaire made up of three (3) sections as follows : Socio-demographic, biological/life style and job related factors. A digital Motech sphygmomanometer (Model no :BPU500) was used to confirm the hypertension status of the respondents. Stress level was determined using a standard instrument: perceived stress scale (PSS). The PSS was rated thus :0-13 points =low stress, 14-26 = moderate stress, and 27- 40 = high stress. In this study, 140 (35.0%) respondents had high stress, 238(59.5%/) had moderate stress and 22 (5.5%) had low stress.The prevalence of high job stress was found to be 35%. This is similar to the study carried out in India by Sidhu et al (2021) who reported 35% of high job stress. It is higher when compared with the study carried out on work-related stress perception among health workers of a mission hospital in Oyo State by Akinwumi et al, (2012) who reported prevalence of high job stress as 26%.And lower when compared with the study carried out on prevalence and correlates of job stress among junior doctors in the university college hospital, Ibadan by Adeolu et al (2016), who reported higher prevalence of 48% and 55%. The differences may be due to variations in study populations.

On the other hand, the total occurrence of hypertension among health care professionals was found to be 15%. This is similar to the study carried out on the prevalence of hypertension and influencing factors among the employers of a university teaching hospital in Turkey by Kurtul et

al (2020) who reported prevalence of hypertension as 14.8%. It is lower when compared with the study carried out by Tsutsumi et al (2003) who reported prevalence of hypertension as 18%. It is also low when compared with the findings of Oladimeji et al (2012) on prevalence and factors associated with hypertension and obesity among civil servants in Kaduna who reported prevalence of hypertension to be 27.1%.

This study revealed that respondents within the age brackets of 36-45years were more hypertensive than the older ones. It strongly agrees with the findings of Ugwu et al (2015) on prevalence and determinants of hypertension in an Agrarian rural community in Southeast Nigeria who reported higher prevalence between the group 36-45 years. It also agrees with the findings of Irikefe (2020) on the prevalence and correlates of hypertension among health care professionals in Nigeria, who reported higher prevalence of hypertension among the age brackets 31-40 years. It disagrees with the findings of Angaw et al (2015) who reported that older respondents were more hypertensive than the younger ones. It is also in contrast with the study carried out by Demisse et al (2017) on High burden of hypertension across the age groups among residents of Gonder city Ethiopia, who reported high prevalence in the age group $\geq$ 65 years. This may be due to the group affected are yet to develop stress coping strategies or their inability to adjust to the risk factors of hypertension.

This study also revealed same hypertension rate 15% for both males and females. This is in contrast with the findings of Defiana et al (2015) in Indonessia National survey which shows that more women (50.1%) were diagnosed with hypertension than men (33.7%). It is also in disagreement with the findings of Ajayi et al (2016) on prevalence of hypertension and associated factors among residents of Ibadan-North Local Government Area, who reported higher prevalence in males (36.8%) in males than in females (31.1%). The reason for same

hypertension rate for both males and females in this study may be because both usually engage in physical exercise.

Assessing relationship between level of stress experienced by health care professionals and hypertension revealed that those who had high stress were slightly more hypertensive (15.7%) than those with moderate stress (15.1%). This is in disagreement with the findings of Linquist et al (1997) on Influence of lifestyle coping and job stress on blood pressure in men and women. Which suggested that work stress per say had no direct effect on blood pressure but ways of coping with stress that individuals reported were significantly related to blood pressure.

The result of this study also revealed that type of profession, is associated with hypertension among respondents. The highest occurrence of hypertension was recorded among laboratory technicians (20%). This disagrees with the findings of Akinwumi et (2012), who reported highest prevalence of job strain (45%) among pharmacy personnel's. It is also in disagreement with Iriefeke et al (2020) findings on prevalence and correlates of hypertension among health care professionals in Nigeria :who reported higher prevalence of hypertension in doctors than other health care professionals.

Cutting across relationship between health-related stressors and hypertension, respondents who did not encounter any of the health related stressors were more hypertensive than those who encountered other health stressors. This disagrees with the saying by CDC that during normal sleep, your blood pressure goes down. Having sleep problems means your blood pressure stays higher for a longer period of time. Therefore, insomnia is linked to high blood pressure heart diseases. It also agrees with the study by Wang et al (2015) on relationship between duration of

sleep and hypertension Adult: A meta Analysis: who reported that short period of sleep, led to hypertension in middle aged adults.

Assessing relationship between environmental stressors and hypertension, respondents who encountered none of the environmental stressors, had hgher hypertension rate (20.0%) than respondents who experienced other environmental stressors. This is in contrast with the findings of Ogba (2020) on occupational stress and its management among health care workers in the university of Porthacourt who reported that understaffing was seen to put more pressure among health care professionals. It is also in contrast with Faremi et al (2019) findings on assessment of occupational related stress among nurses in two selected hospitals in a city Southwestern Nigeria.Who reported understaffing as the highest stressor with mean score of 2.55.

Finally, Considering relationship between psychosocial stressors and hypertension, respondents who encountered dealing with death as their major stressor, were more hypertensive (25.0%) than those who experienced other psychosocial stressors. This aggress with the findings of Rengganis et al (2020) on the correlation between work stress and hypertension among industrial workers , who reported that psychosocial stress promotes transient elevation in blood pressure, in reflection to short term ulteration in the automatic nervous system.

5.2 Conclusion

Sequel to the results of this study, conclusion can be made as follows:

The overall prevalence of occupational stress among health care professional in Owerri was higher (35%) compared with total occurrence of hypertension (15%). Respondents who had high stress were slightly hypertensive (15.7%) than those with high stress (15.1%). Therefore the findings provided limited proof that occupational stress is related to hypertension among health

care professionals in Owerri. The most common stressors were found to be: sleep deprivation, frequent missing of meals, understaffing, inadequate resources, high expectation from patients and dealing with death.Occurrence of the low hypertension in this study may be artributed to factors like, gender, family history of hypertension, physical inactivity etc.Although, in this study one may conclude there is no direct association between occupational stress and hypertension, health professionals especially laboratory technicians and the middle aged should be better educated on stress coping strategies and other risk factors of hypertension in other to cope with or manage any type of job stress and reduce to the barest minimum the occurrence of hypertension among health care professionals in Owerri.

5.3 Recommendations

The following recommendations are made based on the findings and aim at reducing stress and hypertension effects among health care priofessionals:

1. Stressful situations should be resolved by health care professionals especially nurses if they can. They should not allow stressful situations foster, rather hold family problem sessions and use negociation skills.
2. Stress intervention programmes should be introduced to encourage health care workers especially nurses to manage stress at work place. Health insurance to be provided for nurses both in private and public heath facilities.
3. Health care professionals especially nurses and the middle aged among them should learn stress coping strategies which include:
    a. Effective time management and priotization
    b. Occasionally taking breaks during work hours to work around
    c. Ensuring that members of their team are effective during work hours.

d. Stretching and laughing with colleagues.

e. Ensuring that members of their team are effective during work hours.

4. Regular exercise of the body should be encouraged. Regular physical activity of at least 30 minutes most days of the week like walking, jogging, cycling, dancing, yoga etc.
5. More health workers should be recruited both in Federal, State, private and mission health facilities to reduce understaffing among the health care professionals.
6. Health workers should reeducate themselves from time to time on the risk factors of hypertension..
7. Regular check up or monitor of blood pressure should be encouraged by health care professionals.

5.4 Limitations of Study

Every study has certain limitations as this study is not an exception. This study only assessed occupational stressors in the occurrence of hypertension instead of assessing all the risk factors that can give rise to hypertension. It was also limited to health care professionals only, rather than entire working population or a wide variety of occupations. Due to the secretive lifestyle of some people, some health care professionals refused to participate despite the conviction to maintain confidentiality by the researcher, thereby, making it difficult for easy data collection. Also due to intense daily activities of health care professionals especially nurses and doctors, many refused to participate and told the researcher they had no time to participate and some that were persuaded made away with the questionnaires.

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APPENDICES

Appendix "A"

Questionnaire

FEDERAL UNIVERSITY OF TECHNOLOGY, OWERRI

DEPARTMENT OF PUBLIC HEALTH

SCHOOL OF HEALTH TECHNOLOGY

Dear Respondent,

I am a Masters degree student of the above named institution and department carrying out a Research Thesis on **"OCCUPATIONAL STRESS AND HYPERTENSION AMONG HEALTH CARE PROFESSIONALS IN OWERRI, IMO STATE, NIGERIA**".

I humbly request for your voluntary participation in providing answers to the questions as this will increase the quality of my findings.

Please be rest assured that all information provided by you will be used for research purposes only, and strict confidentiality will be maintained.

Thanks for your co-operation

……..
Amams Amarachi J.

Note: Hypertension is a medical condition that occurs when a person has blood pressure levels that are constantly raised above the usually accepted range.

Please you are requested to answer the following questions correctly by ticking on theappropriate box below. [√]

SECTION A

Socio-Demographic Factors

1. Age (Year)

(a) < 25 ☐ (b) 26-35 ☐ (c) 36-45 ☐ (d) 46-55 ☐ (e) Above 55 ☐

2. Gender

(a) Male ☐ (b) Female ☐

3. Marital status

(a) Married ☐ (b) Single ☐ (c) Divorced ☐ (d) Widowed ☐

4. Highest level of education attained

(a) Secondary ☐ (b) Tertiary ☐ (c) Masters ☐ (d) PHD ☐

SECTION B

Biological and Lifestyle Factors

5. Have you been diagnosed of high blood pressure?

(a) Yes ☐ (b) No ☐ (c) Don't know ☐

6. How often do you check your blood pressure?

(a) Weekly ☐ (b) Monthly ☐ (c) Every 3-4 Months ☐

(d) Every 6 months ☐ (e) Once a year ☐ (f) None ☐

7. Do you have family history of hypertension?

(a) Yes ☐ (b) No ☐ (c) Don't know ☐

8. Which of the following symptoms have you had?

(a) Blurry vision ☐ (b) Chest pain ☐ (c) Dizziness ☐

(d)Headaches ☐ (e) None ☐ f) Others specify……

9. To what extent do you consume salt?

(a) Little ☐ (b) Moderate ☐ (c) Excess ☐ (d) Not at all ☐

10. Do you smoke cigarette?

(a) Heavy Smoker ☐ (b) Moderate Smoker ☐ c) Past Smoker ☐ e) None ☐

11. What is your Body Mass Index (BMI)?

(a) Under or normal weight $\leq$ 25kg/m^2 ☐

(b) Over weight$\geq$25kg/m^2 ☐

(c) Obese BMI $\geq$ 30kg/m^2 ☐

12. Do you drink alcohol?

(a) Heavy drinker ☐ (b) Moderate drinker ☐ (c) Light drinker ☐ e) None ☐

13. Do you make use of oral contraceptive?

(a) Current user ☐ (b) Partial user ☐ (c) Past user ☐ None ☐

SECTION C

Job Related Factors

14. What is your profession?

(a) Nurse ☐ (b) Doctor ☐ (c) Pharmacist ☐ (d) Pharmacy Technician ☐ (e) Lab Scientist ☐ (f) Lab Technician ☐ (g) Others specify……

15.How long have you been employed?

(a) Less than 5 years ☐ (b) 5-10 years ☐ (c) Above 10 years ☐

16. What is your monthly income?

(a) < 50,000 ☐ (b) 50-100,000 ☐ (c) 100-200,000 ☐ d) > 200,000 ☐

17. How many hours per day do you USALLY work?

(a) <5 hours ☐ (b) 5- 8 hours ☐ (c)Above 8 hours ☐

18. Which of the health-related stressors do you encounter?

(a) Sleep deprivation ☐ (b) Frequently missing meals ☐ (c) Others specify ☐ (d) None ☐

19. Which of the work environmental stressors do you encounter?

(a) Inadequate resources ☐ (b) understaffing ☐

(c) Conflict among colleagues ☐ (d) inability to cope with work ☐ (e) None ☐

20. Do you encounter any of these psycho-social stressors?

(a) Fear of giving wrong treatment/wrong interpretation of results ☐ (b) Dealing with death ☐

(c) High expectations from patients ☐ (d) Inadequate support from family and friends ☐
(e) None ☐

21. How often do you work on night/weekend call duties in addition to your daily work?
(a) All the time ☐ (b) Sometimes ☐ (c) Not at all ☐

SECTION D ☐

Perceived Stress Scale (PSS)
The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you are expected to indicate by circling how often you felt or thought a certain way.
0 = Never, 1 = Almost Never, 2 = Sometimes, 3 = Fairly Often, 4 = Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly at work?
   0 1 2 3 4

2. In the last month, how often have you felt you were unable to control the important things in your life due to pressure at work?
   0 1 2 3 4

3. In the last month, how often have you felt nervous and stressed due to work overload?
   0 1 2 3 4

4. In the last month, how often have you felt confident about your ability to handle your personal problems?
   0 1 2 3 4

5. In the last month, how often have you felt that things are going your way?
   0 1 2 3 4

6. In the last month, how often have you found that you could not cope with all the things that you had to do?
   0 1 2 3 4
7. In the last month, how often have you been able to control irritations in your life?
   0 1 2 3 4

8. In the last month, how often have you felt that you were on top of things?
   0 1 2 3 4

9. In the last month, how often have you been angered because of things that were outside your control?
   0 1 2 3 4

10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?
    0 1 2 3 4

BLOOD PRESSURE READING

1. Systolic…….……., Diastolic…….

2. Systolic……..., Diastolic…….....

Average Systolic……., Average Diastolic……..……

Appendix "B" Letter of Introduction/Approvals

FEDERAL UNIVERSITY OF TECHNOLOGY
SCHOOL OF HEALTH TECHNOLOGY
DEPARTMENT OF PUBLIC HEALTH
E-mail: publichealth@futo.edu.ng

P.M.B. 1526
Owerri, Nigeria
Telegrams.
FEDUNITECH, OWERRI

VICE-CHANCELLOR: PROF. Nnenna Nnannaya Oti
B.Sc, M.Sc. (Nig), PGD. (Belgium), PhD (FUTO), FSSN, RSS & JP

Dean: Prof. P. U. Agbasi. B.Sc, M.Sc, Ph.D
Head of Department: DR.U.M Chukwuocha
B.Sc, MPH, Ph.D.

Our Ref: FUT/SOHT/PUH/CS.006/VOL. 1
Your Ref:

October 10, 2021

Dear Sir/Ma,

LETTER OF INTRODUCTION

The bearer **Amams Amarachi J.** with Reg. No. **20174082568** is a bona-fide student of the Department of Public Health, Federal University of Technology, Owerri. As part of requirement for graduating MPH student, every student is required to carry out a well-articulated research.

Accordingly, **Amams Amarachi J.** is seeking to carry out her research in your Hospital on '**OCCUPATIONAL STRESS AND HYPERTENSION AMONG HEALTH PROFESSIONALS IN OWERRI, IMO STATE, NIGERIA'.**

We would appreciate your kind assistance towards the realization of this compulsory requirement for her graduation.

Please give her the necessary assistance she requires for a successful programme.

HEAD OF DEPARTMENT
PUBLIC HEALTH DEPARTMENT
Dr U.M Chukwuocha
SIGN Public Health
DATE

FMCO
To whom it may Concern,
The intention of the bearer to check blood pressure and obtain answers through questionnaires is known to the HOD.
Please accord her every necessary assistance.
Dr Ozoigwe
HOD

FEDERAL POLYTECHNIC NEKEDE MEDICAL CENTRE

VISITOR'S FORM

NAME: AMAMS AMARACHI

GENDER: FEMALE

ADDRESS: UMUANUNU OBINZE, OWERRI

PURPOSE: TO BE PERMITTED TO CARRY OUT MY RESEARCH / COLLECT DATA FROM HEALTH PROFESSIONALS

TIME IN: 12:45

TIME OUT:

Approved to Shame Quartinez (?) [illegible signature]

Atten: Dr Uwaga, Clinical Services

HOD Clinical

[illegible date] 2021

God Bless You

FEDERAL UNIVERSITY OF TECHNOLOGY
SCHOOL OF HEALTH TECHNOLOGY
DEPARTMENT OF PUBLIC HEALTH
E-mail: publichealth@futo.edu.ng

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VICE-CHANCELLOR: PROF. Nnenna Nnannaya Oti
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Dean: Prof. P. U. Agbasi. B.Sc, M.Sc, Ph.D
Head of Department: DR.U.M Chukwuocha
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We would appreciate your kind assistance towards the realization of this compulsory requirement for her graduation.

Please give her the necessary assistance she requires for a successful programme.

HEAD OF DEPARTMENT
PUBLIC HEALTH DEPARTMENT
Dr U.M Chukwuocha
HOD Public Health
SIGN........
DATE........

Approved for your consideration
Clinical Director
HRH Emekuku
22/11/2021.

Approved for your assistance in the research.
Ag. HOD Clinical
22/11/21

Federal University of Technology, Owerri,

School of Health Technology,

Public Health Department,

PMB 1526

7th August, 2023.

The Director,

Department for Planning, Research and Statistics,

Imo State Ministry of Health, Owerri.

TROUGH:

The HMIS Officer,

Health Management and Information System Unit,

Imo State Ministry of Health, Owerri.

DearSir,

REQUEST FOR DATA

I am Amams Amarachi Jennifer, an MPH student of the above named institution and department with the registration number: 20174082568. I am carrying out a research on **OCCUPATIONAL STRESS AND HYPERTENSION AMONG HEALTH CARE PROFESSIONALS IN OWERRI, IMO STATE.**

I humbly request for the total number of hospitals in Owerri (comprising of the 3 LGAs), the total number of health care professionals in Owerri, the sampling method that will be used for selecting the hospitals and the health care professionals.

This would enable me complete my research work as it is one of the prerequisites for my MPH completion. Please this is strictly for academic purposes and has no other inclination attached.

Thanks in advance, as I anticipate your favourable response.

Yours sincerely

Amams Amarachi Jennifer

Researcher

08062126476

HMIS
Please take necessary action -
DPRS
7/8/23