**PERCEIVED STRESS AND COPING MECHANISM AMONG MEDICAL STUDENTS OF UNIVERSITY OF IBADAN, NIGERIA**

**BY**

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# ABSTRACT

Stress is a major health-related problem among medical students which can either be a subconscious vexing concern or a state of conscious urge. It is an emotionally unstable state that hinders one's ability to focus and function effectively on a routine basis. There is dearth of information about perceived stress and coping mechanism among medical students in South west Nigeria. Therefore, this study was set to investigate perceived stress and coping mechanism among medical students in University of Ibadan.

The study was a cross-sectional study using a-three stage sampling technique. All the 399 respondents in both preclinical and clinical stages in University of Ibadan who consented to participate were recruited into the study. A semi-structured, self-administered questionnaire was used for data collection which elicited information on socio-demographic characteristics, types of stress, prevalence and causes of stress among medical students, perception of medical students towards stress, factors contributing to stress and their coping mechanisms. Data were analysed using descriptive statistics and inferential statistics at $p \leq 0.05$.

Respondents' age was $20.9 \pm 3.1$ years, 63.2% were male and 85.7% were Christians. Majority (97.7%) were single. The two stages took part in the study, 67.2% were from clinical while 32.8% were from preclinical. Acute stress (94.0%) was high among medical student followed by episodic stress (87.7%). Academic stressor (96.7%) was the most type of stressor common among medical students. The prevalence of stress was high among the respondents. Majority of the respondents (94.2%) have been stressed as a medical student before. The factors contributing to stress were academic (86.0%), financial (65.4%), health related (58.6%) and the least was social factor (29.6%). Majority of the respondents (93.0%) indicated that stress could be minimized by the University management. Ways to minimize stress by University management include: creating good environment (90.5%), student friendly time table (90.5%) and good hostel condition (91.0%). It was also stated that student can help minimize stress, (96.5%) agreed to this statement and some ways of minimizing stress by students were indicated: self encouragement (95.0%), understanding one's learning styles (94.7%) and engaging in recreational activities (92.0%). Majority (63.4%) believed students should know what works for them, (31.0%) mentioned adoption of planning and time management while (5.6%) believed getting closed to loved ones could reduce stress. There was a significant relationship between medical student's stage (preclinical and clinical) and ever stress before as a medical student where $p \leq 0.05$.

It has been perceived that stress was common among medical students and different coping mechanisms were stated on how stress could be relieved. There is the need for University management to devise measures to identify stress among medical students as an ongoing activity and develop strategies to deal with it at the individual level during medical education. Time management and understanding individual learning style are therefore recommended to minimize the effects of stress on the medical students.

**Keywords:**    Stress, preclinical, clinical and coping mechanism.

**Word count:  471**

## DEDICATION

This research project is dedicated to the Almighty Allah who has always been with me and for his mercies and favour over my life, and my parent, who sacrificed everything they had to make sure I earn this degree and for my sibling that gave me the full support.

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To my siblings, loved ones, friends and colleagues that supported me in one way or the other, I appreciate and love you all for your wonderful support and encouragement. God bless you all. Amen.

# CERTIFICATION

I hereby certify that this study was carried out by SHODA, Monsurat Abolanle under my supervision in the Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan, Nigeria.

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## OPERATIONAL DEFINITION OF TERMS

**Preclinical:** The first phase of medical school that involves more of theoretical aspect. This is done in their first, second and third year.

**Clinical:** The second phase of medical school that involve practical. This is done at the hospital settings from their fourth year to sixth year of study.

**Stressor:** They are agent that causes/leads to the onset of stress to an individual, as well as the triggering of the stress response system.

**Eustress:** These are positive stress that triggers the body alarm and enhances attention, performance and creativity. It has temporary effect on the body.

**Distress:** They are negative type of stress that causes negative effects on the body, impairing the person's physical and mental wellbeing.

**Coping mechanism:** Any technique developed to help someone cope with or lessen the physical and emotional effects of everyday life pressure. It can also be referred to as a wide spectrum of techniques and psychotherapies aimed at controlling a person's levels of stress usually for the purpose of improving everyday functioning.

## 1.1. Background of study

The stressful environment during medical student's life in medical college often negatively affects the academic performance, physical health and psychological well-being of the student compared to students of other academic streams, medical students face higher stress (Dyrbye and Thomas, 2008). Stress among medical students is receiving attention because it has been recognized that tired, tense doctors may not provide high-quality care. Studies have also reported other negative consequences of stress, and there have been multiple calls for change in stress among medical students (Mona, 2014).

The American Psychological Association (APA) reported that 33% of Americans rated their stress levels as extreme and eight out of ten believed that the main cause of sickness was due to stress (APA, 2008). Medical education has been reported throughout the world as one of the most stressful academic curricula, which negatively affects the physical and mental health of medical students. Fear of examinations, high parental expectation, peer pressure, lack of leisure time, financial problems, relationship disharmony, and aspirations of higher studies are some of the many factors known to contribute to the development of stress in undergraduate medical students (Saeed, Al-Hamdan, Almudhaibery and Alyahya, 2016).

Study of medicine is life-long and boundless. It has been described as a path that never ends and places the student under heavy stress and burnout (Fares, Tabosh, Saadeddin, Mouhayyar and Aridi, 2016). A negative effect is exerted on the psychological health of the medical students as medical school is the place where for the first time they come into contact with serious illnesses and death (Vitaliano, Russo, Carr and Heerwagen, 1984).

The university environment is very different and more challenging than general schooling since responsibilities in universities are different and more demanding than that of high school level. Parent involvement is reduced, and students may live away from families in dormitories and may have added responsibilities. These factors appear to be stress generating, particularly at the start of the course. There is increased attention to the health and wellbeing of students at institutions of higher learning as they represent the future of families, communities, and countries. Of the students in institutes of higher education, medical students appear to have more emotional challenges, physical and psychosocial hazards, and

mood disorders as they progress and think of their future and professional goals (Saeed, et al, 2016).

## 1.2.    Problem Statement

Medical students are exposed to diverse varieties of stress. It is reported that during undergraduate medical education stress is related to academic, financial and social. Sometime stress arises from compulsion to succeed and also in difficulties of integrating education system. Globally, studies have shown reported levels of stress among medical students range anywhere from 25% to 75% (Oku, Owoaje and Ikpeme, 2015).  A study conducted on medical students in the United states, Malaysia and Saudi Arabia have reported stress levels of 26.0%, 29.6% and 57.0% respectively and were related to their academic environment (Hamza Mohammed Abdulghani, 2008). Similarly, a study also carried out in Nigeria among medical students in Bayero University, Kano shows that prevalence of high stress to be 59.8% (Asani, Farouk and Gambo, 2016).

According to a study conducted at College of Medicine, King Saud University, Riyadh, Saudi Arabia, the proportion of female students who experienced stress was higher (75.7%) than their counterpart males (57%) (Abdulghani, Alkanhal, Mahmoud and Alfaris, 2011). The prevalence of stress was the highest among the first-year students (78.7%), followed by the second-year (70.8%), third-year (68%), fourth-year (43.2%), and fifth-year students (48.3%) (Abdulghani, et al, 2011). Various stress factors reported in studies among medical students are volume of material to be learned, long working hours, competitive environment, lack of recreational activities, staying away from home, financial problems.   High levels of stress may have a negative effect on both cognitive functioning and comprehension of medical students (Ragaa, Seba, Randah, Ahmed, Tarek, 2013). Stress has been found to be associated with psychiatric illnesses like anxiety and depression, interpersonal conflict, sleep problems on one hand and lifestyle changes on the other.

There is an increasing concern (mental illness) about stress during undergraduate medical training. Stress during medical training is increasingly being reported in published literature (Dahlin, Joneborg and Runeson, 2005). Despite the fact that a number of study has been carried out on stress among medical students in Nigeria there is little information on stress among medical students of University of Ibadan. Therefore the aim of the study was to investigate perceived stress and coping mechanisms among medical students.

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## 1.3.    Justification

Stress in medical students has been recognised for a long time. Some studies have explored the causes, consequences and solutions outside Nigeria, there are three issues considered to the most relevant, in terms of stress development in medical students. They are required to learn a great deal of new information in a short period of time before taking exams and evaluations. Therefore, they have little or no time to review what they have learned. They are loaded with tremendous amount of information and they have a limited amount to memorize all the information studied, the overload of information creates a feeling of disappointment because of the inability to handle all the information at once and succeed during the examination period. Many medical students struggle with their own capacity to meet the demands of medical curriculum. Excessive amounts of stress in medical school predisposes students for difficulties in solving interpersonal conflicts, sleeping disorders, decreased attention, reduced concentration, temptation to cheat in exams, depression, loss of error and improper behaviour such as negligence. Stress and its psychological manifestations are currently a major source of concern. Medical training poses challenging and potentially threatening demands for students throughout the world (Saeed, et al, 2016).

A person develops stress due to multifactorial aspects of human life, including occupational, individual, community, socioeconomic and ideological aspects. Stress can either be a subconscious vexing concern or a state of conscious urge. It is an emotionally unstable state that hinders one's ability to focus and function effectively on a routine basis. It decreases a person's working efficiency and productivity to a diminished number. The outcome of the study will investigate perceived stress and coping mechanism among medical students so as to enable them adopt the different mechanisms that works for each individual and also coping mechanisms that can be rendered by the school management which will help the student in relieving and coping with their stress management. Therefore, it will provide the basis for enhancing the general adoption of a new, positive approach to student life, and academic success.

## 1.4.  Research Questions

1. What are the different types of stress common among medical students?
2. What are the causes of stress among medical students of University of Ibadan?
3. What are the perceptions of stress among medical students in University of Ibadan?
4. What are the factors that lead to stress among medical students in University of Ibadan?
5. How can stress be managed among medical students of University of Ibadan?

## 1.5. Research Objectives

**Broad Objective**:

To investigate perceived stress and coping mechanism among medical students in University of Ibadan, Nigeria.

**Specific Objectives:**

The specific objectives of this study were to:
1. Identify the different types of stress among medical student in University of Ibadan.
2. Determine the causes of stress among medical student in University of Ibadan.
3. Determine the perception of stress among medical students of University of Ibadan.
4. Determine the factors that lead to stress among medical student in University of Ibadan.
5. Identify the coping mechanism adopted by medical students of University of Ibadan.

## 1.6. Hypotheses:

$H_0 1$: There is no significant association between respondents' socio demographic characteristics (sex and stage) and ever stress as a medical student.

$H_0 2$: There is no significant association between socio demographic characteristics (sex, religion, stage) and factors contributing to stress.

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# CHAPTER TWO

# LITERATURE REVIEW

## 2.1. Introduction

One would expect medical students to be better off than their peers in other walks of life when it comes to health, and this does hold true to certain extent as far as medical ailments are concerned. When we look at stress however, this particular population seems to be on the receiving end of the spectrum. Multiple studies have found significantly high-stress levels in medical students and the high stress has been reported from multiple countries, spanning different continents. This indicates to certain extent that high stress among medical students is a phenomenon that transcends socio-cultural factors, economic status, course patterns, and the alike.

Stress is an unpleasant state of emotional and physiological arousal that people experience in situations that they perceive as danger or threatening to their wellbeing. The word stress means different things to different people. Some people define stress as events or situations that cause them to feel tension, pressure, or negative emotions such as anxiety and anger. Others view stress as the response to these situations. If not managed appropriately, stress can lead to serious problems. Exposure to chronic stress can contribute to both physical illnesses, such as heart disease, and mental illnesses, such as anxiety disorders (Sadik, Eman, Al-Kamil and Mansour, 2007). Stress can also be said to be a psychological reaction which occurs when there is an imbalance between the level of demand placed upon an individual and his/her capability to meet those demands (Tatheer, Atif, Tahira, and Rizwana, 2013). According to Usman and Ismail 2010, they elaborated that stress is that state of mind of an individual in which he faces confusion and conflict between demands, responsibilities or opportunities and desired work outcomes of these and feels that these important and necessary outcomes are not clear and productive.

Medical students may experience stress when curricular demands exceed their resources to deal with them, and they have been reported to suffer from higher perceived stress compared to the general population and students in other academic fields (Moffat, Ross and Morrison, 2004). High degree of perceived stress faced by medical students requires "A Call to Action" (Dyrbye and Shanafelt, 2011).

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## 2.2. Types of stress

In the process of accomplishing our goals and responsibilities, we humans are pressurised into following certain rules and display certain behaviours in the society. Inability to cope with this often leads to stress. Stress can be positive or negative. Positive stress is called eustress and negative stress is called distress. Eustress triggers the body alarm, and enhances attention, performance and creativity. It has temporary effects only. Distress has negative effects on the body, impairing the person's physical and mental wellbeing. Stressful academic pressures are there in all fields of education and in all age groups. Medical schools have unique stressors beyond those of university education. Tertiary medical training has always been regarded as highly stressful (Ragaa, et al, 2013).

According to Fares, Tabosh, Saadeddin, Mouhayyar and Aridi, 2016, stress can be categorized into different aspects which are: Anxiety, Depression, Burnout, Fear and Worry.
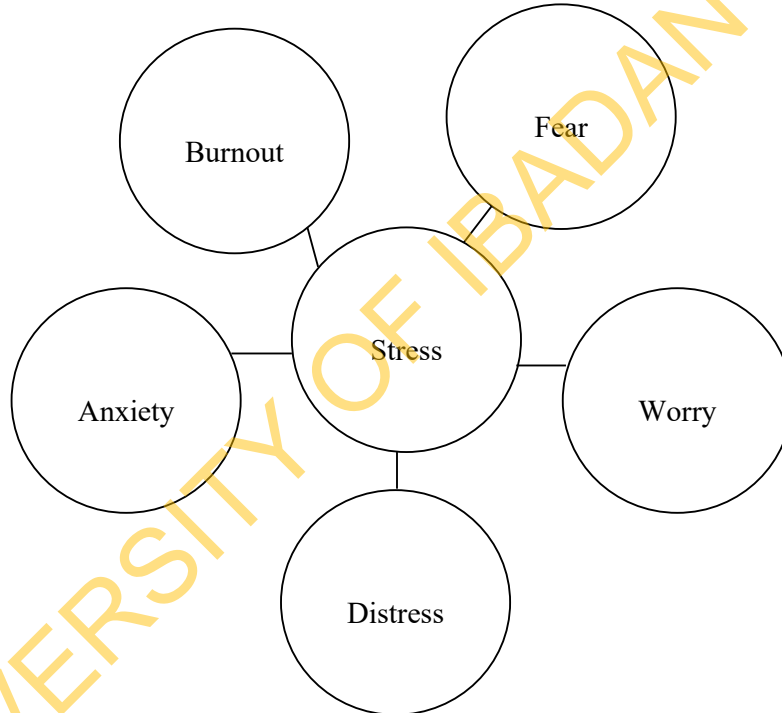


**Anxiety:** Anxiety is explained as the manner in which a person reacts or response to stress, accept and interpret. In this view, stress is seen as a journey to anxiety thus anxiety is an outcome of stress and it how an individual handles stress. A good handler of stress is likely to experience or no form of anxiety. Whereas those without effective management skills is prune to a high level of anxiety (May, 2015).

**Burnout:** Burnout, also refer to as soulless situation, where a person loses the eagerness and motivation in continuing to a particular kind of studies or activity as a result of both external and internal factors. The skills and expertise is still active but the desire and the wellness to

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perform is dead in the person as such activity or studies become huge responsibility without any joy. Burnout destroys a person's motivation and may kill the initiative's at studies or school. Service providers like teachers, counsellors and other officers experience this issue much and make them at times to be hostile to the people that they dedicated to serving. It normally affects people whose studies are interaction with people like team leaders, managers, etc. Also, people whose studies are time band that is adhering to strict time schedule's also experienced burnout. In a situation where an activity or studies required much details and explanations burnout is likely to result in the people who are taking such activities. The following are symptoms of burnout:

> Trouble sleeping due to worrying about studies

> Getting into too much conflict

> Bored with studies or activity

> Feeling frustrated with studies

> Studying very hard and accomplishing little

> I don't like going to studies

> Social activities are draining

**Distress:** Distress is a moment of great pain sorrow, acute physical and mental suffering; Affliction, trouble (Dictionary.com, 2016). It is as a result of an inability to handle or deal with a challenge or problem encountered in the performance of a specific activity or studies. Distress result in both emotional and physical pain e.g. emotional pain is sadness, resorting to drugs, violence, a low concentration at studies, and low participation in social activities. Most often than not Distress are caused by external factors.

**Fear:** Fear "is a chain reaction in the brain that starts with a stressful stimulus and ends with the release of chemicals that cause a racing heart, fast breathing and energise mussels, among other things also known as the fight of light responses" (Layton, 2016). Fear is a common aspect of human emotion that is sentenced in our nervous system. It is a result of instinct in human that responses to sensed danger or unsafe. It protects and alerts us to an impending danger and that's help to prepare for this danger. It is a natural aspect of humans and in some cases it very good because it can be a warning or a signal that cautions us to be very careful. However, it is and can be extremely dangerous to the life of a person. Fear can be mild or intense and it can be short term or last longer (Layton, 2016).

When a person sensed danger the brain responses immediately and send signals which affect the nervous system this causes various aspect of the body to response to the reaction to the nervous system and core symptoms of these are fast breathing and heartbeat, increased blood

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pressure, experience of sensation in their legs, head, chest and hands. There is also profuse sweating. The fight of light is a term used to express how the body react to these symptoms and reactions thus either fighting off the danger or running fast to get away (Phobias, 2016).

**Worry:** Worry is as a result of thinking about an existing problem or yet to happen problem. It is constant thinking and meditating of challenge or fear. Worry looks into what is likely to happen in the future as a result of the present situation. It is a disturbing of one composer or peace of mind, worry causes distress to the mind and results in high blood pressure, headache, stomach disturbances and other physical discomforts.

According to Sarah, (2014) she acknowledged three main types of stress which are acute stress, episodic stress and chronic stress.

*Acute stress*

This is the most widely and experienced type of stress, caused by daily demand and pressure. It brings about excitement, joy and thrill in our lives. It occurs for just a short period of time. Symptoms can only come out when it is accumulated and such symptom include vomiting, tension, headache and other psychological or physiological symptoms. It brings about emotional stress such as anger, anxiety, irritability and acute periods of depression. It can also lead to physical problems such as headache pain, heart palpitation, shortness of breath, hypertension and bowel disorders. Riding one on a roller coaster brings about acute stress, yet it brings about excitement. On the other hand riding higher and longer can result to so more stress that you would wish you shouldn't have gone for the ride (Sarah, 2014).

*Episodic stress*

This is a kind of repetitive stress episodes which may be due to real stressful challenges. It is sometimes referred to as episodic acute stress. For example, losing a job, then developing health problem, followed by difficulty for a child in the school setting. Episodic acute stress for some people is the combination of real challenges and a tendency to operate like a stress machine. Episodic acute stress can occur when you worry endlessly about bad things that could happen; you tend to become impatient with too many demands on your time. (Australian psychological society, 2012).

*Chronic stress*

It is as a result of long term exposure to stressor. This type of stress is brought about by long term exposure to stressor, such as unhappy marriage, traumatic experiences, unwanted career or job, stress of poverty, chronic illnesses, relationship conflicts, political problems, and

dysfunctional families. This situation seems to be unending, and the accumulated stress that results from exposure to them can be life threatening, and can even lead a person to resort to violence, suicide and self-harm. Chronic stress can result to serious illness such as stroke, heart attack, cancer, and psychological problem such as clinical depression and also post-traumatic disorder can originate from chronic stress. Sarah, (2014) also made us understand that chronic stress is the total opposite of acute stress; it is dangerous and unhealthy type of stress. Chronic stress tears the life of a person apart from his body or spirit.

Common physical sign and symptoms of chronic stress are:

- Dry mouth
- Difficulty in breathing
- Pounding heart
- Stomach ache
- Headache
- Diaphoresis
- Frequent urination
- Tightening of muscles:

Mental signs and symptoms include:

- Sudden irritability
- Tension
- Problems with concentration
- Difficulty in sleeping
- Narrowed perception
- Frequent feelings of fatigue

**Stressors, Types of stressors and Its Effects**

Stressors are any agents that causes/leads to the onset of stress to an individual, as well as the triggering of his stress response system. The first step towards effective stress management is recognition of stressor. Stressors are typically perceived as threats to the wellbeing of a person, because of the possibility of these stressors to overwhelm the available resources to be used for stress response. There must be proper recognition of stress for an individual to be able to manage stress effectively. Students are faced with demanding academic standards, deadlines, career aspirations, and the need to compete for residency positions. The sources of stressors in medical students can be grouped into 3 general categories: academic stressor, financial stressor and social and personal stressor (Badr and Hamoda, 2005).

*Academic stressors* include the condensed curriculum, examinations, peer competition, interactions with senior staff on ward rounds, and fear of incompetence. *Social and personal stressors* are caused by lack of free time for recreation, family, and intimate friends. *Financial stressors* derive from the need for continued financial dependence on family (Badr, et al, 2005). A person who is stressed typically has anxious thoughts and difficulty concentrating or remembering. Stress can also change outward behaviours. Teeth clenching, hand wringing, pacing, nail biting, and heavy breathing are common signs of stress. People also feel physically different when they are stressed.

According to Sarah (2012), there are two major types of stressors which are internal stressors and external stressors.

*Internal Stressors*

Most often than not, the stressors or stress inducers that we are able to recognize are those inside of us. However, internal stressor affect us more than external stressor, therefore, there is need to identify our personal internal stressor. These internal stressors which are also called emotional stressors include anxiety, fear and personality traits. Too much worrying about the outcome of a test or exam is actually an internal stressor which leads you to respond to this anxiety by excessive perspiration, difficulty in sleeping or perhaps, nail biting, (Sarah, 2012).

*External Stressors*

Anything outside one's self that induces stress is called an external stressor. This may include Family stressors, such as family role expectations, parent-to-child relationships, sibling relationships, financial struggles and ill family members. Other external stressors are called social stressors, which emerge from the relationships, problems and challenges we face at work, school or other places. In particular, work stressors arise from workplace pressures such as an erratic boss or hectic schedules and tight deadlines (Sarah, 2012).

Yet another subtype of external stressors is the change stressor, or stress inducer which is related to significant life changes. Common examples of change stressors include finding a job, moving, marriage and pregnancy. Change stressors are often paired with decision stressors, wherein the stress results from the need to make crucial decisions such as where to study for college or what career to follow (Sarah, 2012). She also noted that chemical stressors are any drugs a person uses or abuses, such as alcohol, nicotine, caffeine, or tranquilizers. On the other hand, disease stressors are those that result from health problems, such as being bed ridden or following a strict diet. Lastly, environmental stressors include pollution, noise, heat, congestion, etc.

On the effects of stress Sarah (2012), classified it under positive and negative. Positive effects of stress are when performance levels increase because stress is managed effectively. Stressors such as pressure and demands can facilitate better stress response and thus, higher levels of performance while negative effect of stress when stress is perceived as uncontrollable or unmanageable, the person begins to experience a gradual to drastic decrease in performance levels, causing a decline in productivity and enthusiasm to respond to the stress.

## 2.3.    Perception of medical student towards stress

The topic of stress among university students has been the subject of much research for many years. Researchers have found that the perception of high stress levels in students can lead to poor academic performance, depression, attrition and serious health problems (El-gilany, 2009). The incidence of stress and stress-related illnesses such as anxiety and depression among students and trainees internationally is increasingly reported in literatures (Elzubeir and Magzoub, 2010). Students are subjected to different kinds of stressors such as the pressure of academics with an obligation to succeed, an uncertain future and difficulties of integrating into the system. The students also face social, emotional, physical and family problems which may affect their learning ability and academic performance. As far as medical education is concerned, the various research findings indicate that stress exists for students in both the clinical and academic aspects of the program (Sharma and Kaur, 2011).

In many medical schools, the environment itself is an all prevailing pressure situation, providing an authoritarian and rigid system. The estimated prevalence of emotional disturbance found in different studies on medical students was higher than that in the general population (Gade, Chari and Gupta, 2014). Although some degree of stress is a normal part of medical training and can be a motivator for some individuals, not all students find stress constructive. For many individuals, stress arouses feelings of fear, incompetence, uselessness, anger and guilt and can be associated with both psychological and physical morbidity.

High levels of stress may have a negative effect on mastery of the academic curriculum, by impeding concentration, problem solving, decision making, completion of work and other abilities necessary for student learning (Koochaki, Charkazi, Hasanzadeh, Saedani and Qorbani, 2011). The excessive amount of stress in medical training predisposes students to be tempted to cheat on exams and to have difficulties in solving interpersonal conflicts, decreased attention, reduced concentration, loss of objectivity, increased incidence of errors,

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and improper behaviour, such as negligence. Furthermore, stress among students results in impaired judgments, absenteeism, self-medication, and addiction to substances such as khat chewing, cigarette smoking, and alcohol drinking (Melaku, Mossie and Negash, 2015).

Another important point to consider is that stress is a matter of personal perception. Researchers have found that personality traits of medical students include being highly motivated and action oriented achievers, which helps them get high scores; yet same students cannot tolerate feelings of helplessness and dependency and therefore are more prone to stress or less capable of handling it (Samira, Bamuhair and Farhan, 2015). Reports have shown association of high level of stress among medical students with different types of academic stressors (Samira, et al, 2015). Studies related to stress in medical education in Arab countries have also confirmed that stress, depression, and anxiety are common among medical students (Samira, et al, 2015).

According to Samira, et al, (2015) student's perception of high stress levels may lead to poor academic performance, depression, attrition, and serious health problems. A different study on stress management suggested that monitoring student-stress and the methods utilized to deal with it could have valuable implications for higher education administrators. With all the evidence presented above on how the medical student life is burdened with stress, failure to resolve student stress in the long-term could have serious professional and personal consequences (Samira, et al, 2015).

## 2.4.    Prevalence of stress

Generally, medical students have high levels of stress that could be due to the daily life stressors and the extra stress of academic burden, lack of relaxation time, breadth and depth of material to be learned, and repeated formative and summative examinations in a competitive environment. Different studies conducted worldwide among medical students have reported prevalence of stress ranging from 27-73% (Brahmbhatt, 2013). A recent study reported stress (62%) and burnout (75%) among preclinical medical students (Fares, 2016). Stress and burnout among medical students is a common problem with likely severe personal and professional effects (Bugaj, Cranz, Junne, Erschens, Herzog and Nikendei, 2016).

The estimated prevalence of emotional disturbance reported in different studies among medical students was higher than that in the general population. In three British universities the prevalence of stress was 31.2% (Firth, 1986), while in a Malaysian medical school it was 41.9% (Sherina, Rampal and Kaneson, 2004) and in a Thai medical school 61.4% (Saipanish 2003). According to a study conducted at College of Medicine, King Saud University,

Riyadh, Saudi Arabia, the proportion of female students who experienced stress was higher (75.7%) than their counterpart males (57%) (Abdulghani, et al,2011). The prevalence of stress was the highest among the first-year students (78.7%), followed by the second-year (70.8%), third-year (68%), fourth-year (43.2%), and fifth-year students (48.3%) (Abdulghani, et al, 2011).

Various stress factors reported in studies among medical students are volume of material to be learned, long working hours, competitive environment, lack of recreational activities, staying away from home, financial problems.  High levels of stress may have a negative effect on both cognitive functioning and comprehension of medical students (Ragaa El-Masryl, et al. 2013). Stress has been found to be associated with psychiatric illnesses like anxiety and depression, interpersonal conflict, sleep problems on one hand and lifestyle changes on the other.

Stress was also reported to decrease attention, hamper decision-making, and reduce students' abilities to establish good relationships with patients resulting in feeling of inadequacy and dissatisfaction with clinical practice in the future. Furthermore, it was linked to medical student suicide, drug abuse and use of alcohol. These facts confirm the negative association of stress with mental, emotional and physical morbidity. Such situations invariably affect the lives of the patients and the health of the community. Therefore, early detection and intervention may prevent and minimize the effects of stress on the students at a later date (Abdulghani, et al, 2011).

There is an urgent need for every medical college to devise measures to identify stress among the medical students as an ongoing activity and develop strategies to deal with it both at the individual level and curricular level by bringing reforms in medical education. Taking note of the high dropout rate of two to three students every year due to mental illnesses and also the increasing number of coping up problems brought to the notice of the faculty.

## 2.5.    Factors causing stress among medical students

In a study conducted in (2013) in  Private medical college situated in rural Tamilnadu a focus group discussions were carried out in groups of thirty each. The stressors given out by the students are:

Academic reasons:

Exam tension, unequal duration for first and second year as first year is reduced to one year with lot to study, time shortage for studies, last minute exam preparation due to the ongoing

weekly tests, vast subjects to read, lack of time for recreation (Satheesh, Renuka, Prithviraj and Siva, 2013).

Reasons related to family:

Few students were pressurized by their parents to study medicine; many had to keep up with parent's ambitions and expectations. Most of the students commonly complained of homesickness that hampered their studies and other activities recreation (Satheesh, et al, 2013).

Psychosocial reasons:

The lack of confidence, inability to handle academic pressures, difficulty in concentrating, inferiority complex, lack of communication skills and language barrier, misunderstanding, not getting well along with friends, lack of good relations with the opposite sex, inability to socialize that lead to loneliness, poor quality of hostel food were some of the reasons quoted by the students. Students knew well that stress is common and expected in medical profession and they tried at their maximum capacity to cope with the stressful situation (Satheesh, et al, 2013).

Fear of examinations, high parental expectation, peer pressure, lack of leisure time, financial problems, relationship disharmony, and aspirations of higher studies are some of the many factors known to contribute to the development of stress in undergraduate medical students (Gupta, Choudhury, Das, Mondol and Pradhan, 2015). When asked about the methods to overcome stress, few said" just move on with whatever happens in life", "don't think too much about the things that's not in our control". Some suggested the need for periodical counselling, need for parental support, personality development programmes like patience and dedication. Major factors responsible for stress identified were increased workload towards the exam, vast syllabus, not getting the expected marks and less time for repetition and long-term learning. Learning styles and demoralising talks were also creating stress among medical students (Khadija, Najamus, Muhammad and Bashir, 2015).

## 2.6.    Coping mechanism of stress among medical students

According to (Sadik, et al, 2007) coping with stress means using thoughts and actions to deal with stressful situations and lower our stress levels. Many people have a characteristic way of coping with stress based on their personality. People who cope well with stress tend to believe they can personally influence what happens to them. They usually make more positive statements about themselves, resist frustration, remain optimistic, and persevere even under extremely adverse circumstances. Most importantly, they choose the appropriate

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strategies to cope with the stressors they confront. Therefore, coping mechanism is any technique developed to help someone cope with or lessen the physical and emotional effects of everyday life pressure. It can also be referred to as a wide spectrum of techniques and psychotherapies aimed at controlling a person's levels of stress usually for the purpose of improving everyday functioning (The American Institute of Stress).

Over years of research, evidence accumulates that medical students report a high level of perceived stress and apply individual approaches to cope with it, also by investigating the effects of interventions such as stress reduction trainings (McGrady, Brennan, Lynch and Whearty 2012), peer support programs (Hillis, Morrison, Alberici, Reinholz, Shun and Jenkins 2012), student focused curricula (Kiessling, Schubert, Scheffner and Burger 2004) or wellness courses (Ludwig, Burton, Weingarten, Milan, Myers and Kligler 2015).

Coping mechanism has been viewed as a stabilizing factor that may assist an individual in psychosocial adaptation during stressful events. They are method often used by students, to reduce level of stress which includes effective time management, social support, positive reappraisal, and engagement in leisurely pursuits. There is also emotion-based coping that involves accepting responsibility and self-blame, and this type of coping is more useful in the first year of the medical school, while in later years the trend shifted towards confronting, cognitive, and planned problem solving. It has also been found that students with engagement strategy of coping are able to modify situations, resulting in a more adaptive outcome, and also have reported fewer symptoms of depression (Samira, et al, 2015).

A study carried out in medical college in Mumbai showed how coping strategies can reduce or prevent stress among the student. The strength of stress experienced was influenced by the students' ability in using effective coping strategies in stressful situation. The study showed that those who did not know how to use coping strategies to handle stress would experience more stressful condition while those who used coping strategies could handle stress better than those who did not. The use of coping strategies depends on the gender, phase of study and parents occupation. The coping strategies that are usually used include: planning, acceptance, active coping, emotional support and behavioural changes. Male students usually use active coping, alcohol and supportive instruments (Johari, Noor and Hassim, 2009).

It should be noted that when individuals are aware of the strategies they are using and are able to evaluate the context they are facing, they can adjust the coping strategy according to the reality they are experiencing, seeking the strategy that best fits their particular situation (Kristensen, Schaefer and Busnello, 2010). However, in the case of negative adaptation caused by the use of negative coping strategies, individuals may not be able to adapt to or re-

evaluate the situation in order to modify the measures being used to confront the situation. As a result, an intense feeling of withdrawal may occur, manifested in feelings of apathy and lack of motivation to engage in academic activities (Shaban, Khater and Akhu-Zaheya, 2012).

Some stress management techniques that can be adopted by medical students are:-

- Identify source of stress.
- Time management
- Good organization skills
- Develop a healthy mind
- Create a good study environment
- Know your learning style
- Exercise
- Get enough sleep
- Learn study skills

When the coping strategies used by the individual are effective, the stress may possibly be overcome, indicating that a way was found to adapt to the situation. If the strategy used does not solve the problem, a re-evaluation process and a change in coping strategies may occur until the problem is overcome or the individual reaches the point of exhaustion. It should be noted that when individuals are aware of the strategies they are using and are able to evaluate the context they are facing, they can adjust the coping strategy according to the reality they are experiencing, seeking the strategy that best fits their particular situation. However, in the case of negative adaptation caused by the use of negative coping strategies, individuals may not be able to adapt to or re-evaluate the situation in order to modify the measures being used to confront the situation. As a result, an intense feeling of withdrawal may occur, manifested in feelings of apathy and lack of motivation to engage in academic activities (Hirsch, Barlem, Almeida, Tomaschewski-Barlem, Figueira and Lunardi, 2015).

For most students, starting university often means learning how to manage their activities on their own. However, this change in the social, family, and school environment can, in some cases, generate feelings of anxiety that may bring on stress. Changes in the *social support* network can cause students to withdraw and isolate themselves, because they do not find or recognize the necessary social support, inducing them to use coping strategies considered negative, such as defensiveness and social isolation (Hirsch et al, 2015).

According to (Hirsch et al, 2015) they came up with a representation of the socio demographic and academic factors that contribute toward the use of coping strategies.

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                    ┌─────────────────┐
                    │     Stressor    │
                    └────────┬────────┘
                             │
                             ▼
                    ┌─────────────────┐
                    │ Coping strategies│
                    └────────┬────────┘
              ┌──────────────┴──────────────┐
              ▼                             ▼
    ┌──────────────────┐          ┌──────────────────────┐
    │Academic satisfaction│        │Academic dissatisfaction│
    └─────────┬────────┘          └──────────┬───────────┘
              │                              │
              ▼                              ▼
    ┌──────────────────┐          ┌──────────────────────┐
    │Positive coping    │          │ Negative coping      │
    │strategies         │          │ strategies           │
    └─────────┬────────┘          └──────────┬───────────┘
         ┌────┴────┐              ┌──────────┼──────────┐
         ▼         ▼              ▼          ▼          ▼
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| Positive reappraisal strategies | Planning/Resolution | | Denial of problem | Distancing /distraction | Acceptance/ resignation |
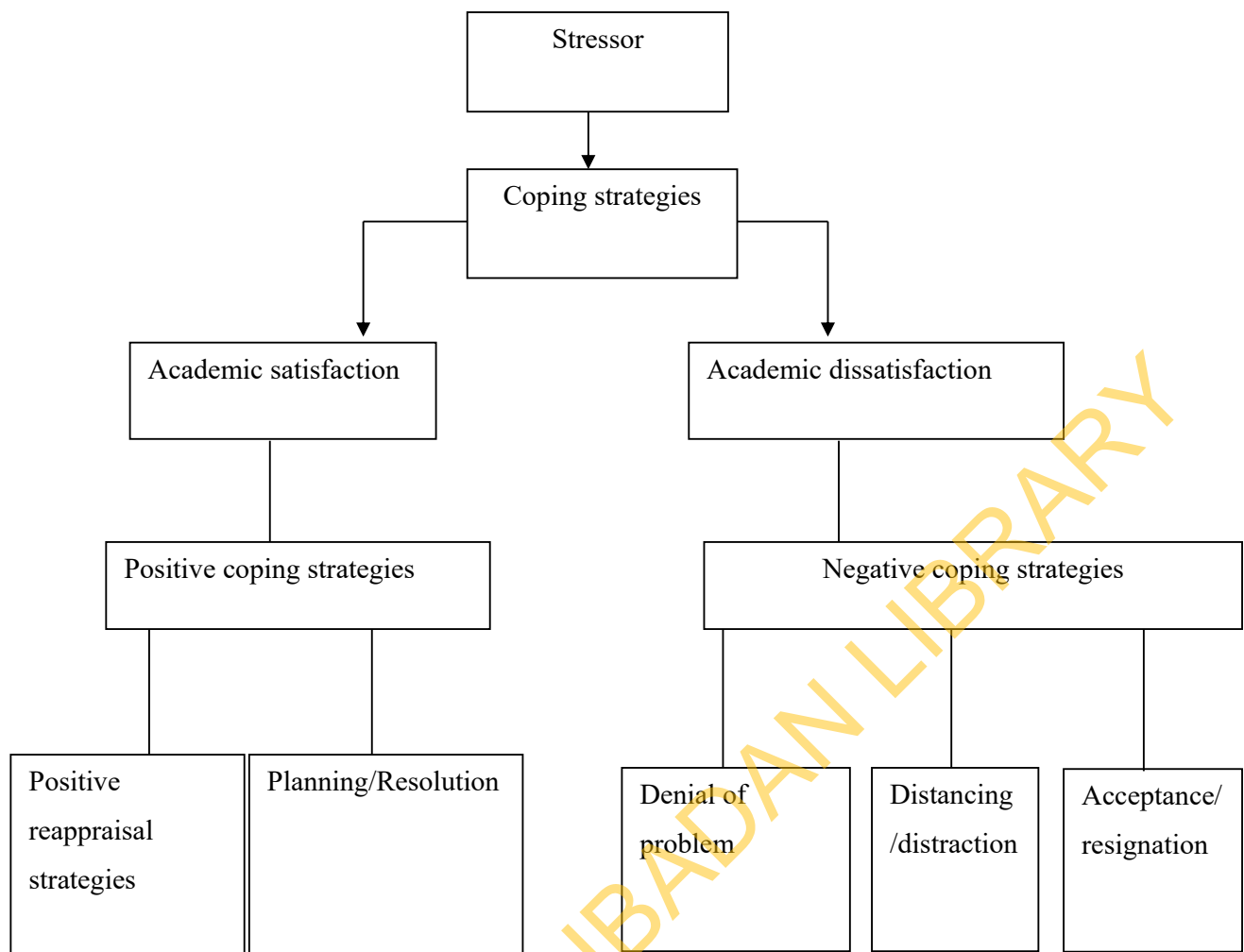
## 2.7. Conceptual framework

The model that was used for this research is Health Belief Model (HBM). The HBM was first developed in the 1950s by social psychologists Hochbaum, Rosenstock and Kegels working in the U.S. Public Health Services. The model was developed in response to the failure of a free tuberculosis (TB) health screening program. Since then, the HBM has been adapted to explore a variety of long- and short-term health behaviours, including sexual risk behaviours and the transmission of HIV/AIDS (Rosenstock, 1978). Hochbaum (1958) defined Health Belief Model as a psychological model that attempts to explain and predict health behaviours. The HBM is divided into six concepts which are;

According to Glance, Lewis and Rimer (1997), they explained the six components of health belief model as follows:-

1. **Modifying factors:** This include details of individual concerned which is; the age, sex, marital status, religion and ethnicity.

2. **Perceived susceptibility:** One's opinion of chances of getting a condition or the belief that one is at risk of an illness is subjective (Rosenstock, 1966).

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3. **Perceived threat/seriousness:** One's opinion of how serious a condition and its consequences are.

4. **Perceived benefits:** One's belief in the efficacy of the advised action to reduce risk or seriousness of impact. The more beneficial or important an individual perceives or views a healthy behaviour or health service to be, the more the behaviour would be practiced and the service utilized.

5. **Barriers to behavioural change:** One's opinion of the tangible and psychological costs of the advised action. Despite a belief being established that a particular course of action may reduce a health threat, indecision may still take place. If readiness is low and negative aspects of the course of action are viewed as high, barriers are constructed preventing action (Rosenstock, 1966).

6. **Cues to action:** Strategies to activate "readiness" or a stimulus that can "trigger" appropriate health behaviour (Rosenstock, 1966). This may be internal such as physical discomfort, or external such as a message communicating the seriousness of a disease. The external is most relevant to communications as it often relies on media and interpersonal interaction (Mattson, 1999).

<table>
<tr><td><strong>INDIVIDUAL PERCEPTION</strong></td><td><strong>MODIFYING FACTORS</strong></td><td><strong>LIKELIHOOD OF ACTION</strong></td></tr>
<tr><td></td><td>Sex: Male and Female<br><br>Stage: Preclinical/clinical<br><br>Ethnicity: Yoruba, Igbo, Hausa</td><td>Perceived benefit: Long life, good health and healthy lifestyle<br><br>Versus<br><br>Perceive barrier: Shortage of Time</td></tr>
<tr><td>Perceived susceptibility: Illness</td><td>Perceived seriousness: anxiety, depression, fatigue, back ache</td><td>If perceived benefits are higher than perceived barriers there is likelihood of behavioural change but if not, there is no likelihood of behavioural change</td></tr>
<tr><td></td><td>Cue to action: Health education and adoption of coping mechanism on stress<br><br>Symptoms: Anxiety, Disorder, Headache, Depression<br><br>Media Information: Television, magazine, radio, counselling</td><td></td></tr>
</table>

HEALTH BELIEF MODEL (HBM): To assess the perceived stress and coping mechanism among medical students in University of Ibadan, this model was applied to predict the likelihood of healthy life among male and female undergraduate medical students of University of Ibadan.

**APPLICATION OF THE HEALTH BELIEF MODEL TO THE RESEARCH**

1. **Modifying factor:** Sex, stage, religion, ethnicity etc of medical students.
2. **Perceived susceptibility:** Medical students are susceptible to illness due to stress and unhealthy life style.
3. **Perceived seriousness:** These are the effects that occur when there are no preventive measures (coping mechanism) taken to reduce stress which may lead depression, anxiety, back ache.
4. **Perceived benefits:** Long life, good health and healthy lifestyle.
5. **Perceived barrier:** Shortage of time for other things like attending social life e.t.c.
6. **Cues to action:** Health education, adoption of different coping mechanism on stress and also behavioural change communication programmes which could be through jingles or advertisements on television, radio, newspaper e.t.c.

## METHODOLOGY

### 3.1.    Study Design

The study is a descriptive cross-sectional design, using quantitative method of data collection. A sample of medical students was selected and questionnaire was administered to them.

### 3.2.    Description of study area

This was carried out in University of Ibadan (UI), with longitude 7.4443$^{o}$N and 3.8995$^{o}$E, located five miles from the centre of the major city of Ibadan Western Nigeria situated in Ibadan North Local Government Area (IBNLGA) of Oyo State, which is one of the 5 LGA in Ibadan metropolis, with an estimated size of 27,249 square kilometres. There are 12 geo-political wards in IBNLGA. The population size is 432,900 (National Bureau of Statistics, 2016) and the people are mainly of the Yoruba tribe. Other ethnic groups in Nigeria are well represented but constitute the minority. University of Ibadan is owned by the Federal Government of Nigeria.

University of Ibadan campus spans over 1,032 hectares of land in Ibadan North Government Area. The institution was originally established on 17 November 1948 as an external College of the University of London. As at that time, it was called the University College and had 104 students spread across the three existing faculties at the time: Arts, Science and Medicine (University of Ibadan, 2016). It became a full-fledged university in 1962 following Nigeria independence in 1960. At the moment, the University has academic programs in thirteen Faculties which include Arts, Sciences, Agriculture and Forestry, The Social Sciences, Education, Pharmacy, Veterinary Medicine, Technology, Law, Basic Medical Sciences, Clinical Sciences, Public Health and Dentistry. The last four faculties are organised as College of Medicine. Other academic units in the University include Institute of Child health, Institute of Education, Institute of African Studies, Centre for Sustainable Development and Centre for Entrepreneur and Innovation among others. There are twelve halls of residence and 1212 housing units for both academic and non-academic staff in the university.

### 3.3.    Study population

The study population consist of male and female medical students of University of Ibadan.

### 3.3.1. Inclusion criteria:

- Only medical students from University of Ibadan took part in the research study.

### 3.3.2. Exclusion criteria:

- Individual who do not give their informed consent did not take part in the research.
- Medical students from University of Ibadan who are not around during the research.

### 3.4. Sampling procedure

A-three stage sampling (3 stages) method was used to select the sampling population among University of Ibadan medical students. A total of 406 medical students were interviewed for the study.

**Stage 1**

**Selection of Levels:** There are two categories of stage among medical students of University of Ibadan which are preclinical stage and clinical stage. Under the two categories are six levels of study. Five out of the six levels of study were used for the research because 300 level students (preclinical stage) were not available during the period of the research (Table 3.1).

**Table 3.1:    Proportion of medical students into preclinical stage and clinical stage**

| Stage | Level | Population | Total |
|-------|-------|------------|-------|
| Pre-clinical | 100 | 150 | 340 |
|  | 200 | 190 |  |
| Clinical | 400 | 200 | 457 |
|  | 500 | 140 |  |
|  | 600 | 117 |  |

**Stage 2**

**Number of respondents in each level:** Proportionate sampling method was used to select the total number of respondent from the categories so as to determine the respondent that will participate from each level of study. Proportionate sampling is used when the population is

composed of several sub groups that are vastly different in numbers. A total of 406 medical students were interviewed for the study.

**Stage 3**

**Selection of respondents in each level:** Simple random sampling was used to select actual participants that will participate in the study.

### 3.5.    Sample size

Previous studies have reported prevalence of stress as 59.8% among Bayero University, Kano Medical School in Nigeria (Asani, Farouk and Gambo, 2016). Hence, based on 59.8% prevalence of stress, at 95% confidence interval and margin of error as 5%, a sample size of 406 was used for the study.

Using Leslie Kesh formula to calculate the prevalence:

$$N = \frac{z^2pq}{d^2}$$

N= Minimum sample size

Z= Standard normal score corresponding to 95%confidence level set at 1.96 normal interval

p= Proportion estimated to be obtained in the target population (59.8%)

d= Degree of accuracy set at 0.05 (precision set at 5% significant)

Therefore, N= $\frac{(1.96)^2 (0.598) (1-0.598)}{0.05^2}$       n= 369.4

Estimate for non-response = assume 10% of the study size.

369.4x 10/100 = 36.94

Therefore total sample population = 369.4 + 36.94 = 406

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**Table 3.1.1:    Proportion of students interviewed according to their level**

| Level | Population | Sample size |
|-------|-----------|-------------|
| 100 | 150 | 150/797 x 406=76 |
| 200 | 190 | 190/797 x 406=97 |
| 400 | 200 | 200/797 x  406 = 102 |
| 500 | 140 | 140/797 x  406 = 71 |
| 600 | 117 | 117/797 x 406  =  60 |

## 3.6.    Research Instrument for data collection

A closed-ended questionnaire was administered to the study participants. The respondents were asked to tick the appropriate box matching their preferred opinions. The questionnaires was structured and divided into sections based on the objectives of the study as follows: Section A: Socio-demographic characteristics, Section B: Types of stress, Section C: Prevalence and causes of stress among medical students, Section D: Perception of medical students toward stress, Section E: Factors associated with stress among medical students, Section F: Coping mechanism of stress among medical students

## 3.7.    Method of data collection

The questionnaire was self-administered with the help of two research assistants so as to ensure confidentiality in all information gathered from the participants.   Two trained assistants were available to assist in the distribution and retrieval of the questionnaires. The questionnaire was distributed to the participants in their lecture rooms after their lecture.

## 3.8.    Validity of the Instrument

The questionnaire was validated by ensuring that the items under each section of the questionnaire measure the section. The questionnaire was given to my supervisor and other colleagues to review before administering it.

## 3.9.    Reliability of the Instrument

The questionnaire was pretested among medical students in University of Lagos by sampling 10% of the total study participants in order to make sure that the responses provided gives consistent response when given to another group. After the pretest, the data gathered was

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checked for errors and competences. Each questionnaire was numbered for easy recall and coding guide was prepared to facilitate entry of data into computer software. Cronbach's Alpha was obtained and reliability coefficient of 0.7 was gotten, which was considered reliable.

## 3.10. Recruitment and training of research assistants

Two research assistants was recruited and trained before commencement of the study; they were trained on administration of the questionnaire, informed consent and on how to assist respondents with any question they find difficult to understand.

## 3.11. Data collection Procedure

The questionnaire was self-administered; it was so designed because the respondents can read and write. In order to ensure that quality data were collected all the level selected was visited and eligible participants were administered the questionnaire. Informed consent of each participant was sought before the administration of the questionnaire. The purpose of the research, the possible risk that may be involved, time to be spent and benefit of the research was explained to the participants. The questionnaire was collected immediately after the completion by respondent. It was then checked for completeness and accuracy. Cases of failure to respond to some questions, incomplete responses and lack of adherence to the instructions provided were promptly addressed in the field by going through the instrument if it has been properly filled.

## 3.12. Data Management and Analysis

Copies of the administered questionnaire were cleaned, collated and edited. A serial number was given to each completed questionnaire for easy identification and recall. The data gathered through the questionnaires was reviewed and a code was developed for each of the variables through the use of a coding guide after a careful review of responses in all the copies of the questionnaire. A template was developed using Statistical Package for Social Sciences (SPSS) version 21 to analyse the data through means of descriptive statistics (frequency) and inferential statistics (Chi-square) to determine if there is an association between the variables at 5% level of significant.

### 3.13. Ethical considerations

Ethics approval was obtained from the University of Ibadan/University College Hospital (UI/UCH) Ethics Committee (Reference No: UI/EC/18/0274) before proceeding with the study to ensure the proposed study meets all the principles and National guidelines in research involving human participants. Letter of introduction was gotten from the department to conduct pretest at the University of Lagos among similar group. Informed consent was obtained from the respondents after they have understood the benefit of the research, time involved in the research and the confidentiality of information's provided to them during the cause of the research. Informed consent was written in a language they understood (English) and it was made known to them that it is voluntary and at any point in time they feel they are not interested in the research they can drop it without been coerced. Those who understood and gave their consent were given the questionnaire to fill.

**Informed Consent/Confidentiality:** A valid Informed consent was obtained from the study participants through appended signature on the informed consent form after adequate provision of information. All identifiers were removed from the questionnaire and confidentiality was ensured through protection of data collected from participants.

**Voluntariness:** Participants were accorded the right to or not to participate in the study without any consequence. It was made clear to participants that they are under no obligation to participate in the study.

**Beneficence:** The findings of this study have a great value in the design of interventions at promoting coping mechanisms to relieve stress among medical students.

.**Non-maleficence:** The study did not involve any risk as it does not involve utilization of any invasive material. No harm came to respondents who chose to participate in the study. Only the time needed to respond to the questionnaires was required of the participants.

### 3.14. Study limitation

This study is limited to only medical students in University of Ibadan. The restriction of this study to only one medical school makes it difficult to generalize the results; further studies should be carried out in both private medical school and state medical school using both qualitative and quantitative data from many different geopolitical zones. The duration of carrying out this research was not enough; more time would be needed for other studies to enable the researcher not to limit the study to only one category of people.

## 4.1. SECTION A: Socio-demographic characteristics of respondents

Majority of the respondents were male (63.2%). They were mostly Christians (85.7%) and (14.0%) were Muslims. Majority of the participants were single (97.7%), and (1.8%) are married. All the 399 respondents answered the questions on ethnic group. They were mostly Yoruba by tribe (75.2%), (18.5%) were Igbo, (2.8%) were Edo and (0.3%) were Hausa by tribe. Other ethnic groups that participated in the study are: Ibibo, Igala, Isoko, Egun, Efik, Idoma, Nupe and Ijaw. More than half of the respondent, (67.2%) are from clinical stage while (32.8%) are from preclinical stage. More than half (59.6%) are within the age categories of 21-30 years. The mean age was 20.9±3.1 (Table 4.1.1).

Majority of the respondents get lesser than twenty thousand naira (58.8%) as monthly allowance, while (37.5%) get more than twenty thousand naira as their monthly allowance and few of the participants (3.7%) get fifty thousand naira as their monthly allowance. The highest monthly income for respondents' father was one hundred thousand naira (43.8%), followed by those that earned more than fifty thousand naira (27.0%); those that earned less than fifty thousand naira are (20.4%) while (8.4%) are those who earn more than hundred thousand naira income (Table 4.1.2).

Respondent mother who has the highest income earn more than fifty thousand naira (32.9%), followed by those who earn less than fifty thousand naira (29.4%), those who earn one hundred thousand naira are (29.0%), and (8.7%) are those who earn more than one hundred thousand naira (Table 4.1.2).

The highest level of education for respondents' father was tertiary (77.7%), followed by secondary level of education (14.2%), primary level of education was (4.1%), while (4.1%) had no formal education. Also, the highest level of education for respondents' mother was tertiary (71.6%), followed by those that had secondary level of education (19.5%), primary level of education was (4.6%), while (4.1%) had no formal education (Table 4.1.3).

**Table 4.1.1: Socio-Demographic characteristics of the respondents (N=399)**

| Demographic variables | Frequency | (%) |
|---|---|---|
| **Sex**: | | |
| Male | 252 | 63.2 |
| Female | 147 | 36.8 |
| **Religion**: | | |
| Christianity | 342 | 85.7 |
| Islam | 36 | 14.0 |
| Traditional | 1 | 0.3 |
| **Marital status**: | | |
| Single | 390 | 97.7 |
| Married | 7 | 1.8 |
| Divorced | 1 | 0.3 |
| Cohabiting | 1 | 0.3 |
| **Ethnicity**: | | |
| Yoruba | 300 | 75.2 |
| Igbo | 74 | 18.5 |
| Edo | 11 | 2.8 |
| Hausa | 3 | 0.8 |
| **Age in years**: | | |
| 15-20 | 158 | 39.6 |
| 21-30 | 238 | 59.6 |
| 31-40 | 2 | 0.5 |
| 41-45 | 1 | 0.3 |
| **Stage**: | | |
| Clinical | 268 | 67.2 |
| Preclinical | 131 | 32.8 |

**Table 4.1.2: Monthly allowance of respondents**

| Monthly allowance | Frequency | (%) |
|---|---|---|
| **Respondent monthly allowance:** | | |
| <20,000 | 204 | 58.8 |
| >20,000 | 130 | 37.5 |
| 50,000 | 13 | 3.7 |
| **Mothers' monthly income**: | | |
| >100,00 | 19 | 8.4 |
| 100,000 | 99 | 43.8 |
| >50,000 | 61 | 27.0 |
| <50,000 | 46 | 20.4 |
| **Fathers' monthly income:** | | |
| >100,000 | 20 | 8.7 |
| 100,000 | 67 | 29.0 |
| >50,000 | 68 | 32.9 |
| <50,000 | 76 | 29.4 |

**Table 4.1.3: Parents level of education of respondent**

| Parents Educational level | Father (%) | Mother (%) |
|---|---|---|
| Tertiary | 306 (77.7) | 283 (71.6) |
| Secondary | 56 (14.2) | 78 (19.7) |
| Primary | 16 (4.1) | 18 (4.6) |
| No formal education | 16 (4.1) | 16 (4.1) |

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## 4.2.     SECTION B: Types of stress among medical students

This section assessed the types of stress common among medical students and the major stressor they encounter during medical school. Nine questions were asked and participants were required to provide yes or no answers. Participants' who answered any of the questions alternatively are represented in Table 4.2.

Acute stress is the most type of stress common among medical students. This is because it's a type of stress caused by their daily demand. Participant response on acute stress was (94.0%) followed by episodic stress (87.7%) which occurs due to real stressful challenges. Eustress is also a type of stress common among medical students, (73.4%) agreed to this because it is a beneficial stress which could either be psychological or physical. Two hundred and forty eight   (62.2%) said distress is also a type of stress among medical students because it is caused by mental or physical suffering while the least type of stress common among medical student is chronic stress, (50.9%) said it is dangerous and unhealthy type of stress.

Academic stressor (96.7%) was the highest common stressor among medical students. Financial stressor (89.7%) was also one of the major stressor, followed by social stressor (70.9%). The least stressor common among medical students was family stressor (56.6%).

**Table 4.2: Types of stress among medical students (N=399)**

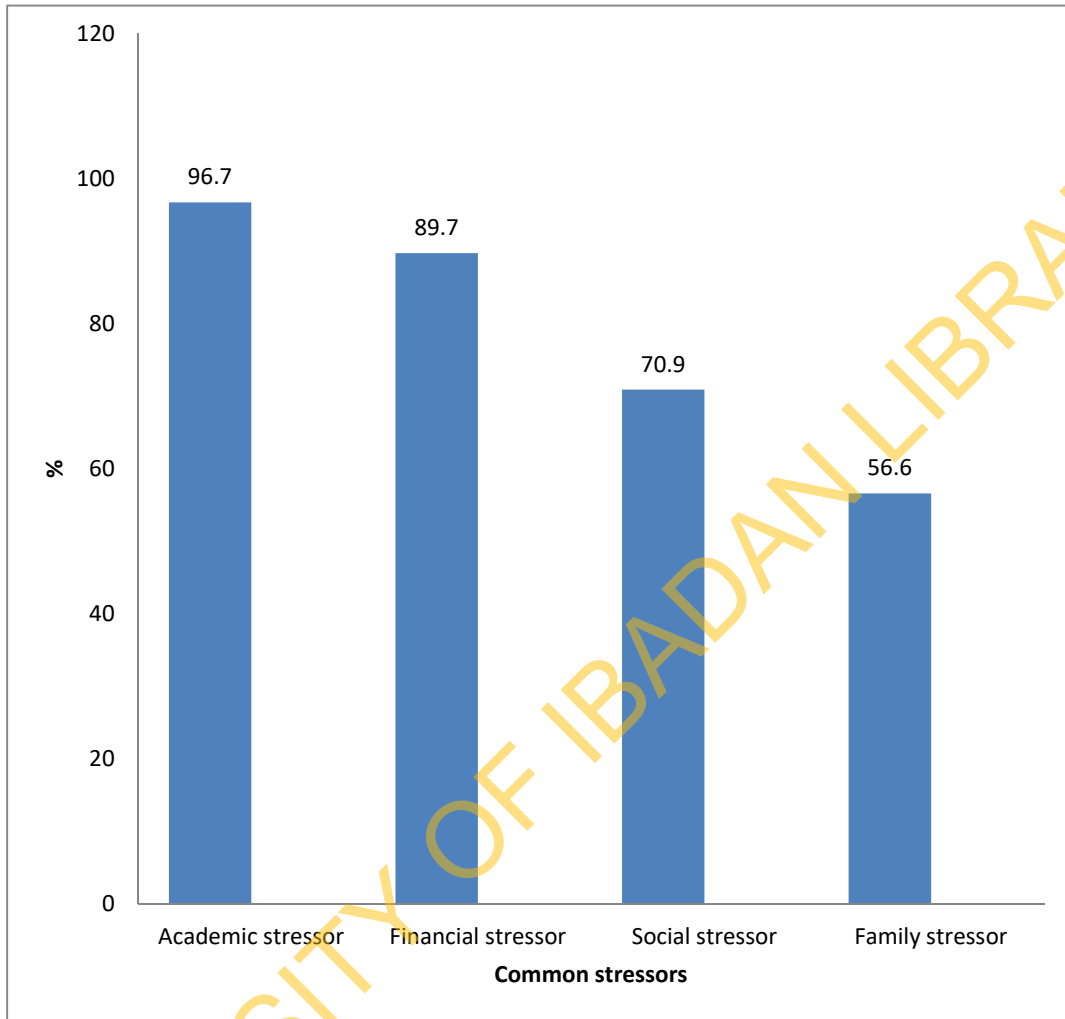| Types of stress | Frequency | (%) |
|-----------------|-----------|------|
| Acute stress | 375 | 94.0 |
| Episodic stress | 350 | 87.7 |
| Chronic stress | 196 | 49.1 |
| Eustress | 293 | 73.4 |
| Distress | 248 | 62.2 |

❖ *Multiple responses included.*

**Figure 4.2.1: Common stressors among Medical Students**

## 4.3. SECTION C: Prevalence and causes of stress among medical students

This section presents the prevalence and causes of stress among medical students. They were asked about how they undergo stress and how severe it is to their health.

Respondents were asked if they have been stressed as a medical student before. Majority of the respondents (94.2%) said they have been stressed as a medical student. Table 4.3 shows how often participants who said they have been stressed as medical student before get stressed, (46.6%) get stressed daily, (29.5%) get stressed randomly, (11.6%) get stressed weekly, (5.5%) get stressed during exam period, (4.5%) get stressed hourly while (2.4%) get stressed monthly.

The table also showed the last time participants were stressed. Thirty nine percent (39.0%) said they were stressed today, (31.0%) were stressed 1 day ago, (11.7%) were stressed 1 week ago, (10.1%) were stressed 3 days ago, and (8.0) were stressed 2 months ago.

Academic workload was the major cause of stress (73.7%), followed by School environment (22.1%) and the least (21.1%) was Ward round (Table 4.3.1). The same table also show what participants did the last time they were stressed. Forty six per cent (46.0%) got enough sleep, (16.8%) watched movie, (3.8%) took their bath, (14.3%) prayed, (27.1%) took some time off, (15.8%) ate, while (15.5%) did nothing. Majority of the respondents (97.5%) said yes it can affect health.

Table 4.3.2 indicates the multiple responses of respondent on health problem that stress can cause among medical students. The highest response was (63.4%) which was depression, (61.7%) chose fatigue, (57.9%) indicated that stress can also cause headache, (48.5%) said it can cause anxiety, and (22.3%) said stress can cause backache.

**Table 4.3:  Frequency of stress among medical students**

| Frequency of Stress | Frequency | (%) |
|---|---|---|
| **Frequency** | | |
| Daily | 47 | 46.6 |
| Randomly | 29 | 29.5 |
| Weekly | 11 | 11.6 |
| Exam period | 6 | 5.5 |
| Hourly | 5 | 4.5 |
| Monthly | 2 | 2.4 |
| | | |
| **When last stressed** | | |
| Day of interview | 39 | 39.3 |
| 1 day ago | 31 | 31.0 |
| 1 week ago | 12 | 11.7 |
| 3days ago | 10 | 10.1 |
| 2 months ago | 8 | 8.0 |

**Table 4.3.1: Causes of stress among medical students**

| Causes of last stress | Frequency | (%) |
|---|---|---|
| Academic workload | 294 | 73.7 |
| School environment | 88 | 22.1 |
| Ward round | 84 | 21.1 |
| **Action taken when stressed** | | |
| Get enough sleep | 183 | 45.9 |
| Take some time off | 108 | 27.1 |
| Watch movie | 67 | 16.8 |
| Eat | 63 | 15.8 |
| Did nothing | 62 | 15.5 |
| Bath | 57 | 14.3 |
| Pray | 15 | 3.8 |

❖ *Multiple responses included.*

**Table 4.3.2: Health problems caused by stress among medical student (N=399)**

| Health Problems | Frequency | (%) |
|---|---|---|
| Depression | 253 | 63.4 |
| Fatigue | 246 | 61.7 |
| Headache | 231 | 57.9 |
| Anxiety | 194 | 48.6 |
| Backache | 89 | 22.3 |

❖ *Multiple responses included.*

## 4.4.    SECTION D: Perception of medical students towards stress

This section presents perception of medical students towards stress. Seventeen questions were asked and participants were told to choose either one of the three options (agreed, undecided and disagreed). Respondents who answered any of the questions on the Likert scale of 0-3 are represented in table 4.4.

The responses of participants on their perception on each statement about stress are stated as follow: One hundred and ninety five (48.9%), disagreed they do not feel tired for no good reason when they are stressed, (32.6%) agreed to the statement while (18.5%) are yet to decide if the statement is true or not, (78.2%) said nothing can calm them when they are nervous when stressed, (17.3%) chose undecided while (4.5%) agreed to the statement. Two hundred and three (50.9 %) agreed they feel restless when they are stressed, (30.1%) disagreed and (19.0%) picked undecided, (75.9%) said stress cause depression, (16.0%) didn't decided on the statement while (8.0) disagreed. Three hundred and seventeen (79.4%) agreed that stress lead to sadness, (14.0%) chose undecided and (6.5%) disagreed.

Three hundred and thirty five (84.0%) of the respondent agreed that multiple assessment at the same time lead to stress, (12.8%) didn't decided if the statement is true or not while (3.3%) disagreed to the statement. Three hundred and fifty seven (89.5%) said lack of time to study adequately cause stress, (7.8%) didn't decide while (2.8%) disagreed, (67.2%) said high parental expectation cause stress, (22.1%) chose undecided and (10.8%) picked disagreed. Three hundred and fifteen (78.9%) agreed that family problem could cause stress, (12.5%) didn't decide on the statement while (8.5%) disagreed on the statement. Two hundred and fifty four (63.7%) said waking up early to go for class cause stress, (22.3%) chose undecided and (14.0%) disagreed, (56.1%) agreed that competitiveness among students lead to stress, (25.1%) didn't decide and (18.8%) disagreed. Two hundred and fifty eight (64.7%) said large amount of extracurricular activities carried out by students lead to stress, (18.0) didn't decide and (17.3%) disagreed, (78.7%) said catching up with missed classes could lead to stress, (13.5%) chose undecided and (7.8%) disagreed to the statement.

Two hundred and twenty four (56.1%) perceived the feeling of guilt because of giving more priority to personal life than studies causes stress, (30.3%) chose undecided and (13.5%) chose disagreed while (78.4%) said difficulty in memorizing the content presented in class could lead to stress, (15.8 %) do not know if the statement is true or not and (5.8%) disagreed to the statement. One hundred and seventy two (43.1%) said been married during medical

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school causes stress, (48.4%) chose undecided and (8.5%) disagreed to the statement and (47.6%) agreed that having kids during medical school cause stress, (45.1%) did not decide if the statement is true or not while (7.3%) disagreed to the statement.

**Table 4.4: Perception of medical student on stress (N=399)**

| Statement | Agreed No (%) | Undecided No (%) | Disagreed No (%) |
|---|---|---|---|
| I feel tired for no good reason | 130 (32.6) | 74 (18.5) | 195 (48.9) |
| Nothing can calm me when I'm nervous | 18 (4.5) | 69 (17.3) | 312 (78.2) |
| I feel restless when I'm stressed | 203 (50.9) | 76 (19.0) | 120 (30.1) |
| Stress causes depression | 303 (75.9) | 64 (16.0) | 32 (8.0) |
| Stress can lead to sadness | 317 (79.4) | 56 (14.0) | 26 (6.5) |
| Multiple assessment at the same time lead to stress | 335 (84.0) | 51 (12.8) | 13 (3.3) |
| Lack of time to study adequately causes stress | 357 (89.5) | 31 (7.8) | 11 (2.8) |
| High parental expectation causes stress | 268 (67.2) | 88 (22.1) | 43 (10.8) |
| Family problems causes stress | 315 (78.9) | 50 (12.5) | 34 (8.5) |
| Waking up early to go for class causes stress | 254 (63.7) | 89 (22.3) | 56 (14.0) |
| Competitiveness among students lead to stress | 224 (56.1) | 100 (25.1) | 75 (18.8) |
| The large amount of extracurricular activities carried out by students leads to stress | 258 (64.7) | 72 (18.0) | 69 (17.3) |
| Catching up with missed classes could lead to stress | 314 (78.7) | 54 (13.5) | 31 (7.8) |
| Feelings of guilt because of giving more priority to personal life than to studies | 224 (56.1) | 121 (30.3) | 54 (13.5) |
| Difficulty in memorizing the content presented | 313 (78.4) | 63 (15.8) | 23 (5.8) |
| Been married during medical school causes stress | 172 (43.1) | 193 (48.4) | 34 (8.5) |
| Having kids during medical school causes stress | 190 (47.6) | 180 (45.1) | 29 (7.3) |

## 4.5.    SECTION E: Factors that contribute to stress among medical students

This section assessed the factors contributing to stress among medical students. All participants were asked to rate how strong the factors can contribute to stress on a scale of three (3- High, 2-Middle, 1- Low) with eight questions.

The factors that contribute to stress among medical students are reported as follows: Academic factor (86.0%) is the most factor contributing to stress among medical students (11.3%) picked moderate and (2.8%) chose low, Financial factor (65.4%) is also one of the major factor contributing to stress: (28.8%) indicated moderate and (5.8%) chose low. Health related factor (58.6%) was also high among the students: (27.8%) chose moderate while (13.5%) picked low, Psychosocial factor (43.1%) is also a major factor contributing to stress: (42.6%) indicated moderate and (14.3%) chose low.

Other factors were: Industrial action by health workers and lecturers (40.4%), moderate (34.8%) and low (24.8%), Family factor (31.3%), moderate (42.4%) and low (26.3%), Government policy (32.1%), moderate (40.4%), low (27.6%) and Social factor (29.6%), moderate (45.9%), low (24.6%).

**Table 4.5: Factors contributing to stress among medical students**

| Factors | High (%) | Moderate (%) | Low (%) |
|---|---|---|---|
| Academic | 343 (86.0) | 45 (11.3) | 11 (2.8) |
| Financial | 261 (65.4) | 115 (28.8) | 23 (5.8) |
| Family | 125 (31.3) | 169 (42.4) | 105 (26.3) |
| Psychosocial | 172 (43.1) | 170 (42.6) | 57 (14.3) |
| Social | 118 (29.6) | 183 (45.9) | 98 (24.6) |
| Health related | 234 (58.6) | 111 (27.8) | 54 (13.5) |
| Government policy | 128 (32.1) | 161 (40.4) | 110 (27.6) |
| Industrial action by health workers and lecturers | 161 (40.4) | 139 (34.8) | 99 (24.8) |

## 4.6.    SECTION F: Coping mechanisms for stress among medical students

This section examines coping mechanisms that can be adopted by the school management and the students to relieve stress among medical students. Participants were asked on relevant suggestions that can be adopted by medical students to relive stress.

Respondents' were asked if stress could be minimize by the school management. Three hundred and sixty nine (93.0%), said yes school management can help minimize stress. Ways by which stress can be minimized by the school management are represented in chart 4.6.1.

Participants were also asked if stress could be minimize by the students. Three hundred and eighty five (97.0%), said yes stress can be minimized by students. The various coping mechanisms that can be adopted by the students to relieve them of stress are listed in (Table 4.6.2) with their different responses.

Suggestions on how to manage stress among medical students were indicated by each respondent, (63.4%) said students should know what works for them, (31.0%) said students should adopt planning and time management while (5.6%) said students should get closed to loved ones when they are stressed.

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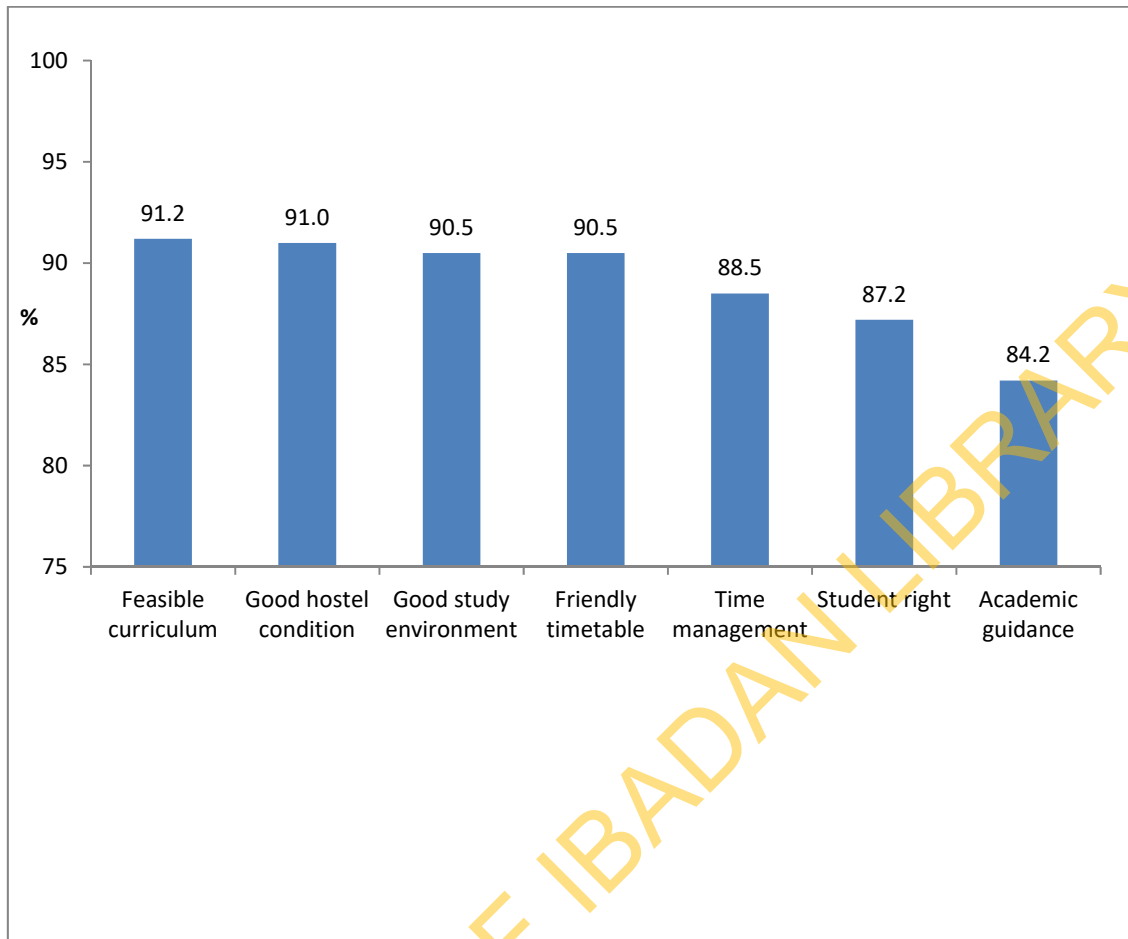
**Figure 4.6.1:  Ways of minimizing stress by school management**

**Table 4.6.2: Ways of minimizing stress by student (N=399)**

| Ways of minimizing stress by student | Frequency | % |
|---|---|---|
| Getting enough sleep | 375 | 94.0 |
| Engage in regular exercise | 351 | 88.0 |
| Understanding your learning styles | 378 | 94.7 |
| Developing a healthy mind | 377 | 94.5 |
| Watching movies | 320 | 80.2 |
| Engage in recreational activities | 367 | 92.0 |
| Listening to music | 343 | 86.0 |
| Spending time with family and friends | 366 | 91.7 |
| Self encouragement | 379 | 95.0 |
| Counselling | 365 | 91.5 |
| Praying | 362 | 90.7 |

❖ *Multiple responses included.*

**Table 4.6.3: Suggestions on how to manage stress (n=232)**

| Suggestions | Frequency | % |
|---|---|---|
| Know what works for you | 147 | 63.4 |
| Planning and time management | 72 | 31.0 |
| Getting close to loved ones | 13 | 5.6 |

## TESTING OF HYPOTHESES

The following hypotheses were tested for the significant associations between the variables

$H_0$: There is no significant relationship between socio-demographic characteristics and ever stressed as a medical students.

$H_0$: There is no significant relationship between socio-demographic characteristics and factors contributing to stress among medical students.

Socio-demographic characteristics that would be used for this study are: Sex, Religion and Stage (preclinical and clinical). The major factors contributing to stress according to the responses from the participants that will be used are: academic factor, financial factor and health related factor.

### Hypothesis 1:

There is no significant relationship between participant's sex and ever stressed before as a medical student

The result presents the association between sex and ever stressed before as a medical student. Statistical association between the two were checked at ($X^2$ =0.044, df=1, p-value>0.05). This indicate that the respondent sex has no relationship with medical students been stressed. Hence the null hypothesis is accepted. Therefore there is no significant relationship between sex and ever stressed before as a medical student (Table 4.7.1).

### Hypothesis 2:

There is no significant relationship between participant's stage and ever stressed before as a medical student

The result presents the association between stage and ever stressed before as a medical student. The stages were categorized into two (pre-clinical and clinical). Statistical association between ever stressed as medical student and stage were significantly associated at ($X^2$ =27.422, df=1, p-value<0.05). These indicate that respondents' stage: clinical (98.5%) is higher than those in preclinical (85.5%) thereby influencing ever stressed before as a medical student stress Hence the null hypothesis is rejected. Therefore there is a significant relationship between stage and ever stressed before as a medical student (Table 4.7.2).

### Hypothesis 3:

There is no significant relationship between sex and perceived academic factor contributing to stress among medical students.

The result shows the association between sex and perceived academic factor contributing to stress among medical students. Statistical association between the two were checked and ($X^2$ =5.348, df=2, p-value>0.05). This shows that male (63.2%) perceived higher academic factor than female (36.8%). Hence the null hypothesis is accepted. Therefore there is no significant relationship between sex and their perceived academic factor contributing to stress (Table 4.7.3).

**Hypothesis 4:**

There is no significant relationship between religion and perceived academic factor contributing to stress among medical students.

The result shows the association between religion and perceived academic factor contributing to stress among medical students. Statistical association between the two were checked and ($X^2$ =0.429, df=4, p-value>0.05). This shows that Christians (85.7%) perceived higher academic factor than Muslims (14.0%). Hence the null hypothesis is accepted. Therefore there is no significant relationship between the religion and their perceived academic factor contributing to stress (Table 4.7.3).

**Hypothesis 5:**

There is no significant relationship between sex and perceived financial factor contributing to stress among medical students.

The result shows the association between sex and perceived financial factor contributing to stress among medical students. Statistical association between the two were checked and ($X^2$ =0.163, df=2, p-value>0.05). This shows that male (63.2%) perceived higher financial factor than female (36.8%). Hence the null hypothesis is accepted. Therefore there is no significant relationship between the sex and their perceived financial factor contributing to stress (Table 4.7.3).

**Hypothesis 6:**

There is no significant relationship between participant's stage and perceived health related factor contributing to stress among medical students.

The result shows the association between stage and perceived health related factor contributing to stress among medical students. Statistical association between the two were checked and ($X^2$ =0.351, df=2, p-value>0.05). This shows that those in clinical stage (67.2%) perceived higher health related factor than those in clinical (32.8%). Hence the null

hypothesis is accepted. Therefore there is no significant relationship between the stage and their perceived health related factor contributing to stress (Table 4.7.3).

**Table 4.7.1: Testing the relationship between sex and ever stress as a medical student**

| Sex | Ever stress as MS | | Total | $X^2$ | P-value |
|---|---|---|---|---|---|
| | Yes | No | | | |
| Male | 237 (94.0) | 15 (6.0) | 252 (100.0) | 0.044 | 0.833 |
| Female | 139 (94.6) | 8 (5.4) | 147 (100.0) | | |
| Total | 376 (94.2) | 23 (5.8) | 399 (100.0) | | |

*Not Significant*

**Table 4.7.2: Testing the relationship between stage and ever stress as a medical student**

| Stage | Ever stress as a MS | | Total | $X^2$ | P-value |
|---|---|---|---|---|---|
| | Yes | No | | | |
| Preclinical | 112 (85.5) | 19 (14.5) | 131 (100.0) | 27.422 | 0.000* |
| Clinical | 264 (98.5) | 4 (1.5) | 268 (100.0) | | |
| Total | 376 (94.2) | 23 (5.8) | 399 (100.0) | | |

*Significant*

**Table 4.7.3: Testing the relationship between socio-demographic characteristics and factors contributing to stress.**

| Factors | Socio-demography | Frequency | Percentage (%) | $X^2$ | P-value |
|---|---|---|---|---|---|
| **Academic** | **Sex:** | | | | |
| | Male | 252 | 63.2 | 5.348 | 0.069 |
| | Female | 147 | 36.8 | | |
| | Total | 399 | 100 | | |
| | **Religion:** | | | | |
| | Christian | 342 | 85.7 | 0.429 | 0.980 |
| | Islam | 56 | 14.0 | | |
| | Traditional | 1 | 0.3 | | |
| | Total | 399 | 100 | | |
| **Financial** | **Sex:** | | | | |
| | Male | 252 | 63.2 | 0.163 | 0.922 |
| | Female | 147 | 36.8 | | |
| | Total | 399 | 100 | | |
| **Health-related** | **Stage:** | | | | |
| | Preclinical | 131 | 32.8 | 0.351 | 0.839 |
| | Clinical | 268 | 67.2 | | |
| | Total | 399 | 100 | | |

*Not Significant*

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## CHAPTER FIVE

## DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

### 5.1.    Discussion

### 5.1.1 Socio-demographic characteristics of the respondents

About 63.2% of the respondent that took part in the study was male. The average age of the respondents was 20.9±3.1 years, finding of this study reveals that a large proportion of the respondents age between 21 and 30. Large numbers of the respondents 97.7% are single both from preclinical and clinical stage. This is expected because it's their first degree and students enter medical school with tender age because of the years spent during the course of the study. They were mostly Christian 85.7% by religion and Yoruba 75.2% by tribe. Sixty seven percent are from the clinical stage while 32.8% are from the preclinical stage.

Overall attainment of the respondent's parent level of education showed that majority of their parent had tertiary education: father (77.7%), mother (71.6%) which could be a major influence while the respondents are studying medicine because their parent are educated and they will want a better education and profession for their children. However some of the respondent's parent: father (4.1%), mother (4.1%) had no formal education which is a major factor contributing to stress because they cannot provide for their children financially. It was also found out that respondent's father earn more than one hundred thousand naira as monthly allowance and the mother earn more than fifty thousand naira as monthly allowance.

### 5.1.2 Types of stress

This study sought to know from the respondents who are medical students the various types of stress common among them through the administration of a structured questionnaire. Acute stress is a major type of stress common among medical students, 94.0% of medical student's indicated it is a type of stress common among them because it is caused by daily demand pressure. It cannot be avoided because going for lectures and ward rounds are daily demands that they have to engage themselves with, which end up leading to a little or minor stress. This is similar to a study carried out by Sarah (2014); it was found out that acute stress occurs for just a short period of time. Symptoms can only come out when it is accumulated and such symptom include vomiting, tension, headache and other psychological or physiological symptoms.

Episodic stress is a type of stress common among medical students. Eighty eight percent of medical students indicated it's caused by repetitive stress episodes which could be due to real stressful challenges. According to Australian psychological society, (2012), episodic stress can occur when you worry endlessly about bad things that could happen; you tend to become impatient with too many demands on your time. This is mostly common among students in the clinical stage because they would either go for ward rounds or they are on call and with that, they have to go for classes and other seminars which doesn't give them enough time to rest well, at the end of the day, they end up been tired because of the stressful challenges they have been through during the day and it is a continuous routine for their entire life which is more dangerous to their health.

With regards to chronic stress, 49.1% of medical students reported that it is a dangerous and unhealthy type of stress that tears of the life of a person apart from his body or spirits. This is contrary to the finding of Sarah, (2014), who made us understand that chronic stress is the total opposite of acute stress; it is dangerous and unhealthy type of stress. It is as a result of long term exposure to stressor. This type of stress is brought about by long term exposure to stressor, this situation seems to be unending, and the accumulated stress that results from exposure to them can be life threatening, and can even lead a person to resort to violence, suicide and self-harm.

Furthermore, 73.4% of the respondents indicated Eustress as a type of stress common among medical students because it is beneficial stress which could be psychological or physical e.g. exercise. This is similar to the observation made by Ragaa El-Masryl, et al, (2013), who said eustress are positive stress that triggers the body alarm, and enhances attention, performance and creativity. It has temporary effects only. It was also found out that 62.2% of the respondents indicated Distress as a type of stress common among medical students. It is a mental/physical type of stress that brings about suffering to people e.g. anxiety, sorrow or pain. According to Ragaa El-Masryl, et al, (2013), a negative stress that has negative effects on the body, impairing the person's physical and mental wellbeing. This type of stress should be avoided among medical students because it can lead to a long term psychological disorder which will affect their life negatively thereby not allowing them to finish from medical school.

The study further shows the major stressor common among medical students. Out of the four stressors listed in the study, respondents indicated three of the stressors as the major stressor

among medical students. This goes in line with Badr and Hamoda, (2005), who indicated that the sources of stressors in medical students can be grouped into 3 general categories: academic stressor, financial stressor and social/personal stressor.

Academic stressor (96.7%) was the highest stressor common among medical students; this is because they are faced with demanding academic standards, deadlines, career aspirations, and the need to compete for residency positions. In line with Badr, et al, (2005), academic stressors include the condensed curriculum, examinations, peer competition, interactions with senior staff on ward rounds, and fear of incompetence.  Financial stressor was also one of the stressors common among medical students. Eighty eight percent of the students chose it because it is derived from the need for continued financial dependence on family and without been financially stable the student would not be able to meet up with the class needs e.g. handout and some other practical materials needed for study and most especially respondent's tuition fee. Social stressor is also a major stressor common among medical students Seventy one percent of the respondents agreed to this because it is caused by lack of free time for recreation, family, and intimate friends.

### 5.1.3 Prevalence and causes of stress

This study shows that (94.2%) of respondents have been stressed as a medical student before. Medical students have high levels of stress which could be due to the daily life stressors and the extra stress of academic burden, lack of relaxation time, breadth and depth of material to be learned, and repeated formative and summative examinations in a competitive environment. This finding is supported by Bugaj, (2016), who reported that stress and burnout among medical students is a common problem with likely severe personal and professional effects. Different studies conducted worldwide among medical students have reported prevalence of stress ranging from 27-73% Brahmbhatt, (2013).

In order to respond on how often respondents get stressed, 44.6% indicate that they get stressed daily, 27.6% randomly, 9.6% weekly, 5.5% exam period,4.5% hourly, and 2.4% get stressed monthly. Also they indicated when last they were stressed, 37.1% got stressed today, 29.1% a day ago, 11% a week ago, 9.5% 3days ago, and 7.5% were stressed two months ago.

In response to that, respondents indicated the cause of the last stress they had: Academic workload (73.7%) was the major cause of the stress, followed by the school environment (22.1%) and ward round (21.1%).

Almost all the participants (97.5%) indicate that stress affect health. This is in contrast with the finding of Ragaa El-Masryl, et al, (2013), who reported that high levels of stress may

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have a negative effect on both cognitive functioning and comprehension of medical students which was linked to medical student suicide, drug abuse and use of alcohol. These facts confirm the negative association of stress with mental, emotional and physical morbidity.

### 5.1.4 Perception of medical stress towards stress

In contrast with Elzubeir and Magzoub, (2010) findings, the incidence of stress and stress-related illnesses such as anxiety and depression among students and trainees internationally is increasingly reported in literatures. Respondents have indicated their perceptions towards stress on a seventeen likert scale of questions. Medical students indicated some perceived illness that could be caused by stress: depression, sadness, anxiety, restlessness, nervous and many others. It was indicated that large amount of extracurricular activities carried out by students leads to stress and also difficulty in memorizing what they are been taught in class could lead to stress.

### 5.1.5 Factors that contribute to stress among medical students

In this study, Academic factor (86.0%) is the highest factor contributing to stress among medical students. This is caused by exam tension, unequal duration for first and second year as first year is reduced to one year with lot to study, time shortage for studies, last minute exam preparation due to the ongoing weekly tests, vast subjects to read, ward round and lack of time for recreation. This is similar to a finding by Satheesh, Renuka, Prithviraj and Siva, (2013).

Financial factor (65.4%) is also one of the major factors contributing to stress among medical students. Financial stability is a major key factor that should be balanced among student not to talk of medical students who demand more for their course of study because without providing materials needed to study that is automatic lagging behind in the class which could lead to failure and might cause depression or other health related problem that could be caused by stress.  Others factors that were also listed that cause stress among medical students are: Family factor (31.3%), Psychosocial factor (43.1%), Social factor (29.6%), Health related (58.6%), Government policy (32.1%) and industrial action by health workers and lecturers (40.4%). A descriptive analysis was also used to get the mean and standard deviation of each of the factors.

### 5.1.6 Coping mechanisms for stress among medical students

The findings in this study gathered that stress can be minimized by both the school management and the students. According to Sadik, Eman, Al-Kamil and Mansour, (2007), coping with stress means using thoughts and actions to deal with stressful situations and lower our stress levels. Different ways were being indicated by the respondents on how stress

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can be minimized. Some of the ways on how stress could be minimized by the school management are as follow: Time management (88.5%), Creating good environment (90.5%), Academic Guidance/Counsellor (84.2%), Student Right (87.2%), Student friendly timetable (90.5%), Good hostel condition (91.0%) and making the curriculum feasible (91.2%).

Furthermore, respondents indicated how stress can be managed by students: Getting enough sleep (94.0%), regular exercise (88.0%), Understanding their learning style (94.7%), Developing a healthy mind (94.5%), Watching movies (80.2%), Recreational activities (92.0%), Listening to music (86%), Spending time with family and friends (91.7%), self encouragement (95.0%), Counselling (91.5%) and Praying (90.7%).

## 5.2.    Implication of findings for health promotion and education

The results of the study have potential implications for health education intervention. Finding shows that stage (preclinical and clinical) of respondents has a significant role to play on how respondents are been stressed as a medical student. This therefore indicates the third sustainable development goal which says "Good health and well being for people" will further strengthen the health of the student. Health education and advocacy programme on coping mechanisms should be intensified. The school management have a crucial role to play in medical student's academic workload. Their involvement will be a huge contribution in the health of the student's thereby creating a good learning environment and a student friendly time table with good hostel condition.

Social and interpersonal interventions can be preventive. As shown in the findings, been stressed can lead to health problem, therefore recreational activities should be adopted by medical students to help them relieve stress and make them stronger and healthier.

## 5.3.    Conclusion

The findings of this study from the data generated have shown that almost all the respondents have been stressed has a medical students before. The prevalence of stress is higher in those in clinical stage than those in preclinical stage. Hence academic factor is a major factor contributing to stress among medical students. It could be inferred that adopting coping mechanisms both by the school management and the students could help them minimize stress. Also it was found out that acute stress is a major type of stress common among medical students because it is a stress caused by daily demand and pressure which medical students can't avoid because it is part of their daily activities. Some of the stressor common among them were also indicated and it shows that academic stressor is a major stressor common among them, because medical students are faced with demanding academic standards, deadlines, career aspirations, and the need to compete for residency positions.

Furthermore monthly allowance of parent has an important role to play with financial stressor of the respondents. Financial stressor was also one of the stressor common among medical students because respondent derive their financial needs from family and when parents monthly allowance is not enough to provide for respondents needs, he/she would not be able to meet up with the needs in medical school.

Therefore, early detection and intervention may prevent and minimize the effects of stress on the students at a later date. There is an urgent need for every medical college to devise measures to identify stress among the medical students as an ongoing activity and develop strategies to deal with it at the individual level during medical education. Taking note of the high dropout rate of two to three students every year due to psychological illnesses and also the increasing number of coping up problems brought to the notice of the faculty and also educating them on adopting different coping mechanisms that works for them because not all the coping mechanisms works for everybody.

## 5.4. Recommendations

As a health promoter from the findings of this study, it is evident that coping mechanisms should be adopted by medical students so as to so as to relieve them of their daily stress. If all the ways of minimizing stress indicated in the study are been followed there won't be any health problem caused by stress either mentally or psychologically. Based on the findings of this research, the following are the recommendation and implications for public health practice:

1. An emerging focus on wellness promotion and risk reduction (psychological illness) among medical students concentrating on healthy behaviours in which there are evidence based  interventions of students.

2. Medical students need to be educated about the causes of stress, self and time management strategies and available services through public enlightenment programmes.

3. The coordinated school health programme should be strengthened as a part of the student health. This will provide some more intentional health education programmes for the students, informing them of the health implications associated with stress. More over there is need for adequately trained lecturers who can provide quality services in health education/counselling for the students.

4. It is expedient that a psychologist is available in medical school. This will be socially for interaction and skills programmed but trained peer educations and counsellors will be available to provide services and information for the students.

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5. Government should implement and evaluate promotional campaigns and education programmes, alongside efforts to increase the adoption of coping mechanisms among medical students.

6. Advocacy for medical students on various coping mechanisms at the grass root will also play a vital role in preparing them ahead of medical school.

7. More studies should be carried out to examine the prevalence of stress among medical students in clinical stage and the factors influencing stress among them.

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**QUESTIONNAIRE**

Dear Respondent,

I am a postgraduate student of the department of Health Promotion and Education; I'm conducting a research titled **Perceived stress and coping mechanism among medical students of University of Ibadan.** Your sincere response to this questionnaire will assist me in finding answers to my research questions and objectives. I hereby request that you spare me a few moments of your time for the purpose of filling out the questionnaire. The findings of the study are primarily for academic purpose and I assure you that whatever information you provide will be handled with utmost confidentiality.

Do you want to participate 1. Yes ☐ 2. No ☐

Thanks for your cooperation.

I have read and understand the consent form and voluntarily agree/disagree to participate in the study by ticking [√] in the appropriate box below:

Signature                          Date

----------------------              ---------------------


**SECTION A: Socio – Demographic Data**

Instruction: Kindly tick (√) the appropriate answers among the options provided to the question.

1. Sex: 1. Male ☐ 2. Female ☐

2. Age as at last birthday: _____ (In years)

3. Religion: 1. Christianity☐ 2. Islam☐ 3.Traditional ☐ 4. Others specify _____

4. Ethnicity: 1. Yoruba☐ 2. Igbo ☐ 3. Hausa☐ 4. Edo ☐ 5. Efik ☐ 6. Igala ☐
   7. Igede ☐ 8. Others specify _____

5. Marital status: 1. Single ☐ 2. Married ☐ 3. Divorced ☐ 4. Cohabiting ☐

6. Level: 1.100 ☐ 2. 200 ☐ 3. 300 ☐ 4. 400 ☐ 5. 500 ☐ 6. 600 ☐

7. Stage: 1. Preclinical☐ 2. Clinical☐

8. Monthly allowance: 1. < 20,000☐ 2. >20,000 ☐ 3. 50,000 ☐ 4. Others _____

9. Father's level of Education: 1. Primary☐ 2.Secondary☐ 3.Tertiary☐4.None ☐

10. Mother's level of Education: 1. Primary☐ 2. Secondary☐ 3. Tertiary☐4. None ☐

11. Father's monthly income: 1. < 50,000☐ 2. >50,000☐ 3.100,000☐ 4. Others _____

12. Mother's monthly income: 1. < 50,000☐ 2. >50,000☐ 3.100,000☐ 4. Others _____

**SECTION B: TYPES OF STRESS AMONG MEDICAL STUDENTS**

13. Students are exposed to different types of stress. Kindly tick the type of stress common among medical students

| S/N | Types of stress among medical students | Yes | No |
|-----|------------------------------------------|-----|-----|
| a. | Acute stress (stress caused by daily demand and pressure) | | |
| b. | Episodic stress (repetitive stress episodes which may be due to real stressful challenges) | | |
| c. | Chronic stress (dangerous and unhealthy type of stress that tears the life of a person apart from his body or spirit) | | |
| d. | Eustress (beneficial stress either psychological or physical e,g exercise) | | |
| e. | Distress (mental or physical suffering e.g extreme anxiety, sorrow or pain) | | |

14. Medical students encounter different categories of stressor. Kindly tick the type of stressor common among medical students.

| S/N | Common stressor among medical students | Yes | No |
|-----|------------------------------------------|-----|-----|
| a. | Academic stressor | | |
| b. | Financial stressor | | |
| c. | Social stressor | | |
| d. | Family stressor | | |

**SECTION C: PREVALENCE AND CAUSES OF STRESS AMONG MEDICAL STUDENTS**

15. Have you been stressed as a medical student? 1. Yes ☐ 2. No ☐

If No, go to **Question 20**

16. If yes, how often do you get stress? 1. Daily ☐ 2. Weekly ☐ 3. Monthly ☐ 4. Randomly ☐ 5. Exam period ☐ 6. Hourly ☐

17. When was the last time you were stressed? 1. 1day ago ☐ 2. 3days ago ☐ 3. 1week ago ☐ 4. 2months ago ☐ 5. Today ☐

18. What do you think caused the last stress you had? 1. Academic work load ☐ 2. School environment ☐ 3. Ward round ☐

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19. What did you do the last time you were stressed? 1. Get enough sleep ☐ 2. Watch movie ☐ 3. Take a bath ☐ 4. Pray ☐ 5. Take some time off ☐ 6. Eat ☐ 7. Did nothing ☐

20. Can stress affect health as a medical student? 1. Yes ☐ 2. No ☐

21. What health problem can stress cause among medical students? 1. Headache ☐ 2. Anxiety ☐ 3. Depression ☐ 4. Fatigue ☐ 5. Bach ache ☐

## SECTION D: PERCEPTION OF MEDICAL STUDENTS TOWARDS STRESS.

22. Please indicate your perception about the following statements by ticking (√) any of the options that is applied to you: A- Agreed, D- Disagreed, U- Undecided.

| S/N | Statements | Agreed | Undecided | Disagreed |
|---|---|---|---|---|
| a. | I feel tired for no good reason | | | |
| b. | Nothing can calm me when I'm nervous | | | |
| c. | I feel restless when I'm stressed | | | |
| d. | Stress causes depression | | | |
| e. | Stress can lead to sadness | | | |
| f. | Multiple assessment at the same time lead to stress | | | |
| g. | Lack of time to study adequately causes stress | | | |
| h. | High parental expectation causes stress | | | |
| i. | Family problems causes stress | | | |
| j. | Waking up early to go for class causes stress | | | |
| k. | Competitiveness among students lead to stress | | | |
| l. | The large amount of extracurricular activities carried out by students leads to stress | | | |
| m. | Catching up with missed classes could lead to stress | | | |
| n. | Feelings of guilt because of giving more priority to personal life than to studies | | | |
| o. | Difficulty in memorizing the content presented | | | |
| p. | Been married during medical school causes stress | | | |
| q. | Having kids during medical school causes stress | | | |

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**SECTION E: FACTORS THAT CONTRIBUTE TO STRESS AMONG MEDICAL STUDENTS.**

23. In a scale of 3, kindly rate how strong each of the following factors will contribute to stress among medical students: 3= High, 2= Moderate and 1=Low. To what degree does this factor contribute to stress?

| S/N | Factors contributing to stress | High | Moderate | Low |
|---|---|---|---|---|
| a. | Academic | | | |
| b. | Financial | | | |
| c. | Family | | | |
| d. | Psychosocial | | | |
| e. | Social | | | |
| f. | Health related | | | |
| g. | Government policy | | | |
| h. | Industrial action by health workers and lecturers | | | |

**SECTION F:  COPING MECHANISM FOR STRESS**

24. Can stress be minimized by the school management? 1. Yes ☐   2. No ☐

If No, go to **Question 26**

25. If yes, in what ways do you think stress can be minimized by the school management?

| S/N | How can stress be minimized by school management | Yes | No |
|---|---|---|---|
| a. | Time Management | | |
| b. | Creating a good study environment | | |
| c. | Academic Guidance/Counsellor | | |
| d. | Student Right | | |
| e. | Student friendly timetable | | |
| f. | Good hostel condition | | |
| g. | Making the curriculum feasible | | |

26. Can stress be minimized by the students? 1. Yes ☐ 2. No ☐

If No, go to **Question 28**

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27. If yes, in what ways do you think stress can be minimized by the students?

| S/N | How can stress be minimized by students | Yes | No |
|-----|------------------------------------------|-----|-----|
| a. | Getting enough sleep | | |
| b. | Engage in regular exercise | | |
| c. | Understanding your learning styles | | |
| d. | Developing a healthy mind | | |
| e. | Watching movies | | |
| f. | Engage in recreational activities | | |
| g. | Listening to music | | |
| h. | Spending time with family and friends | | |
| i. | Self encouragement | | |
| j. | Counselling | | |
| k. | Praying | | |

28. What suggestion do you have for medical students on how to manage stress?

_____

_____

_____

**Thank you for the time you spent with me.**

## INFORMED CONSENT FORM

**IRB Research Approval Number:**

**This Approval will elapse on:**

**Title of Research:** Perceived stress and Coping mechanism among medical Students of University of Ibadan Nigeria.

**Name and Affiliation of Researcher:** SHODA, Monsurat Abolanle, a Postgraduate student of the Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan.

**Sponsor of research:** Self sponsored.

**Purpose of research:** The purpose of this study is to investigate the Perceived stress and Coping mechanisms among medical Students of University of Ibadan Nigeria.

**Procedure of the research:** The study will use a quantitative method (Questionnaires) to elicit information from study participants. A total of 406 medical students from University of Ibadan will be recruited to participate in the study. Selection of study participants will be done by multi-stage sampling technique.

**Expected Duration of research and Participants' involvement:** Each research participants is expected to fill the questionnaire within fifteen to twenty minutes of administration and will be collected back immediately after completion. The research work is expected to last for six months.

**Risk:** This research will not cause any harm. It will not involve utilization of any invasive material or collection of biological samples.

**Cost to participants:** Participation in this research will not have any financial cost but will require only about twenty minutes (20) of participants' time

**Benefit:** There is no direct benefit from this study for the participants but the findings would be of great value in the design of interventions targeting coping mechanisms for relieving stress among the population group for a healthy society.

**Confidentiality:** All identifiers will be removed from the questionnaire and confidentiality will be ensured through protection of data collected from participants.

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**Voluntariness:** Participation in this study is entirely voluntary. You have the right to choose to participate in the study or not without any consequence.

**Alternatives to Participation:** If they choose not to participate in the study, it will not be held against them in any way.

**Due Inducement:** No payment will be made to any participant for participating in this research. Individual who consent to participate in the study would be appreciated verbally.

# APPENDIX III

# ETHICAL APPROVAL

**INSTITUTE FOR ADVANCED MEDICAL RESEARCH AND TRAINING (IAMRAT)**
College of Medicine, University of Ibadan, Ibadan, Nigeria.

Director: **Prof. Catherine O. Falade,** MBBS (Ib), M.Sc., FMCP, FWACP
Tel: 0803 326 4593, 0802 360 9151
e-mail: cfalade@comui.edu.ng lillyfunke@yahoo.com

UI/UCH EC Registration Number: **NHREC/05/01/2008a**
NOTICE OF FULL APPROVAL AFTER FULL COMMITTEE REVIEW

Re: **Perceived Stress and Coping Mechanism among Medical Students of University of Ibadan, Nigeria.**

UI/UCH Ethics Committee assigned number: UI/EC/18/0274
Name of Principal Investigator:     **Monsurat A. Shoda**
Address of Principal Investigator:   Department of Health Promotion & Education
                                     College of Medicine,
                                     University of Ibadan, Ibadan.

Date of receipt of valid application:  03/07/2018
Date of meeting when final determination on ethical approval was made: **14/08/2018**

This is to inform you that the research described in the submitted protocol, the consent forms, and other participant information materials have been reviewed and *given full approval by the UI/UCH Ethics Committee.*

This approval dates from **14/08/2018 to 13/08/2019.** If there is delay in starting the research, please inform the UI/UCH Ethics Committee so that the dates of approval can be adjusted accordingly. Note that no participant accrual or activity related to this research may be conducted outside of these dates. *All informed consent forms used in this study must carry the* UI/UCH EC *assigned number and duration of* UI/UCH EC *approval of the study.* It is expected that you submit your annual report as well as an annual request for the project renewal to the UI/UCH EC at least four weeks before the expiration of this approval in order to avoid disruption of your research.

*The National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the Code including ensuring that all adverse events are reported promptly to the* UI/UCH EC. *No changes are permitted in the research without prior approval by the* UI/UCH EC *except in circumstances outlined in the Code. The* UI/UCH EC *reserves the right to conduct compliance visit to your research site without previous notification.*

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**Professor Catherine O. Falade**
Director, IAMRAT
Chairperson, UI/UCH Ethics Committee
E-mail: uiuchec@gmail.com

Research Units • Genetics & Bioethics • Malaria • Environmental Sciences • Epidemiology Research & Service • Behavioural & Social Sciences • Pharmaceutical Sciences • Cancer Research & Services • HIV/AIDS

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