SCHOOL OF PUBLIC HEALTH

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OCCUPATIONAL STRESS, RESILIENT COPING ABILITY AND MENTAL HEALTH STATUS OF POSTGRADUATE MEDICAL RESIDENTS AT THE KORLE-BU TEACHING HOSPITAL

BY

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DECLARATION

I, GIFTY NAA MAANUM QUARSHIE-NGISSAH, declare that except for other people's investigations which have been duly acknowledged, this thesis is my own work and it has not been presented anywhere for another degree.

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ABSTRACT

Background: Post-graduate medical residents are exposed to numerous stressors during their post-graduate training which affects them both physically and mentally. The effect of occupational stress on their mental health status can have a profound impact on their ability to work ultimately affecting patient care adversely.

Aim: The aim of this study was to determine the occupational stress level, resilient coping ability, and mental health status of post-graduate residents at the Korle-Bu Teaching Hospital (KBTH).

Method: A cross-sectional study design was employed and a census survey was done on 200 eligible resident physicians in all the departments of the hospital. Occupational stress level, resilient coping ability, and mental health status were assessed using predetermined questionnaires administered both online and physically.

Results: The overall level of occupational stress among postgraduate medical residents was found to be moderate (138.9) with 16.2% having low stress, 65% moderate stress and 18.8% having high stress. The prime source of stress was underpayment (mean 4.04 ± 1.04). There was a statistically significant association between occupational stress and mental health status ($p = 0.004$). Increasing levels of occupational stress resulted in poorer mental health status. The resilient coping ability for all the resident physicians was low with a mean score of 9.04 ± 5.24 and 52.5% of participants had poor mental health status.

Conclusion: The study has revealed that medical residents at the KBTH experienced moderate to high levels of occupational stress, had low resilient coping ability and reported poor mental health status. There is therefore the need for stress management programs during the residency program in order to improve their mental health status and overall wellbeing.

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LIST OF ABBREVIATIONS

BMA	British Medical Association
BRCS	Brief Resilient Coping Scale
COVID-19	Coronavirus disease 2019
GADOR	Ghana Association of Residents
GCPS	Ghana College of Physicians and Surgeons
GHQ-12	General Health Questionnaire Version 12
ILO	International Labour Organisation
KBTH	Korle-Bu Teaching Hospital
NIOSH	National Institute for Occupational Safety and Health
OPD	Out-Patient Department
OSI	Occupational Stress Index
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Occupational stress has become an important dialogue for most stakeholders in the healthcare industry (Khamisa et al., 2015; Tsai et al., 2018). Occupational stress occurs when workers' resources or their capabilities do not match their job demands and requirements, resulting in negative physical and emotional responses (NIOSH, 1999). High levels of occupational stress have been connected to an amplified risk of bodily injuries, cardiovascular illnesses including hypertension, and mental health disorders (Mosadeghrad, 2014). The resultant effect of occupational stress on workers has been shown to cause significant financial losses to their organizations (Hanson, Onasoga, & Babalola, 2017) and has become a leading hazard for employers particularly in developing countries where managers downplay the power of stress on employee's performance leading to precarious managerial problems (Bashir & Ramay, 2010). In the healthcare industry, this financial loss is as a result of increased infection rates, low productivity and poor output (errors made during patients care), absenteeism, and injury claims (NIOSH, 1999).

Post-graduate medical residents are qualified doctors who are in training under supervision by medical consultants to become specialists in different fields of medical practice (Lassey et al., 2013; Newman-Nartey, Nartey, Amoah, Buckman, Ndanu, & Oti Achempong, 2019). Residents undergo tremendous levels of stress during their training which affects both their social and professional lives (Gawande et al., 2019). The aim of residency is to equip trainees with skills and the knowledge they need to become authorities in their chosen medical field. However, this is fraught with high levels of stress due to high work demands (Omisanjo, 2007).

In various studies, factors such as long working hours, poor management practices, distant accommodation, high patient volumes, shortage of recreational services, being assessed without

sufficient training, gender related issues, being under mental and bodily stress from their supervisors and patients, indebtedness, lack of social and financial support among others were the sources of work stressors identified for post-graduate medical residents (Adeolu et al., 2016; Ebrahimi & Kargar, 2018b; Ogunsemi et al., 2010).

Some level of occupational stress is required for motivation in the job setting, however heightened levels of stress result in poor mental health status (BPS, 2009). The mental health status of doctors is a result of a multifaceted and concurrent interaction of their individual constraints, individual resources (coping) and social and environmental factors (Marchand et al., 2015). Mental health concerns and burnout affect about 30-60% of both physicians and medical residents (Baer et al., 2017; Blais et al., 2010; Chan et al., 2016; Lu et al., 2015). Occupational stress leads to the development of more severe mental health problems (Daskivich et al., 2015; Keller, 2014). Post-graduate medical training has been shown to produce the highest rates of burnout (Chan et al., 2016; Govardhan et al., 2012).

Poor mental health status of post-graduate medical residents as a result of the occupational stressors they encounter leads to increased medical errors and sub-optimal standard of care, increased absenteeism, difficult interpersonal relationships, decreased adherence to best practices, conflict with authorities, and reduced work performance (Bernburg et al., 2016; De Oliveira et al., 2013; Dyrbye et al., 2010; Kaur et al., 2009; Lu et al., 2015; Ratanawongsa et al., 2007).

Resilience has been described as the effective process of negotiating, adapting to or managing significant sources of trauma or stress (Windle, 2011). Resilience coping ability is therefore a person's ability to respond to stress in a highly adaptive manner (Connor, 2006b). Several studies have shown that high resilient coping ability has a positive predictive value of a person's mental health status (Tsaras et al., 2018). The skills of resilience coping can be learned and

developed to help workers cope better in the face of challenges and difficulties across all dimensions of their life (Emmons et al., 2012, APA, 2009). This study therefore seeks to evaluate the levels of occupational stress, resilient coping abilities and the mental health status among post-graduate medical residents working in Korle-Bu Teaching Hospital (KBTH).

The study outcome will provide important information about post-graduate residents, to enable resident associations, faculty coordinators, post-graduate college educators, clinical and medical directors of residency training hospitals design effective stress management protocols and resilience training for residents so as to improve their overall mental health status and consequently their learning experience, skills acquisition, effective patient care delivery and a reduction in financial cost incurred by training institutions from poor stress management practices.

1.2 Research Problem

Globally, occupational stress has been linked with mental health status (World Health Organization, 2005). The existing link between occupational stress and mental health status has been clearly demonstrated in several models such as the Job Demands-Control model, Job Demands-Resources model (JD-R model), and the Transactional theory of Stress and Coping (Demerouti et al., 2001; Siegrist, 2002). Studies from developed and developing countries have shown that post-graduate medical training is associated with high levels of occupational stress (Bernburg et al., 2016; Costantino et al., 2015; Ogunsemi et al., 2010; Pasqualucci et al., 2019). Adeolu et al. (2016), showed a high prevalence of occupational stress among post-graduate medical residents in Ibadan-Nigeria.

According to Ebrahimi et al. (2018), postgraduate doctors are exposed to many stresses as a result of the demanding nature of healthcare delivery. Direct involvement with patients and its resultant pressure coupled with high workload, low support, and protracted working hours are the bane of most medical residents. These coupled with their numerous educational and medical

roles leads to high levels of stress and a resultant poor mental health status affecting their work output as well as their personal life.

In Ghana like other countries, residency training is fraught with similar kinds of stressors: long working hours, poor remuneration, high patient work load, distant accommodation, being assessed without sufficient training, gender related issues, being under mental and bodily stress from their supervisors and patients, indebtedness, lack of social and financial support among others (Drislane et al., 2014; Hagopian et al., 2005; Newman-Nartey, Nartey, Amoah, Buckman, Ndanu, & Achempong, 2019; Sandhu, 2018).

However, there is a dearth of research on occupational stress and its outcomes on post graduate medical residents in Ghana. This study therefore seeks to ascertain the self-reported levels of occupational stress, resilient coping ability and mental health status of post-graduate medical residents of the Ghana College of Physicians and Surgeons at the Korle-Bu Teaching Hospital.

1.3 Research Questions

1. What are the occupational stress levels of post-graduate medical residents in KBTH?
2. What are the main the determinants of occupational stress among post-graduate medical residents in KBTH?
3. What are the levels of resilient coping ability of post-graduate medical residents in KBTH?
4. What is the mental health status of post-graduate medical residents in KBTH?
5. Is there an association between occupational stress levels and mental health status of post-graduate medical residents in KBTH?

1.4 Research Objectives

The main aim of this study was to identify the levels of occupational stress, resilient coping abilities and mental health status among post-graduate medical residents at the Korle-Bu Teaching Hospital.

1.4.1 Specific Objectives

Specifically, the study sought to determine the following over the study period:

1. To determine the levels of Occupational stress of post-graduate medical residents in KBTH.
2. To identify the determinants of occupational stress among post-graduate medical residents in KBTH.
3. To assess the resilient coping ability of post-graduate medical residents in KBTH.
4. To determine the mental health status of post-graduate medical residents in KBTH.
5. To investigate the association of occupational stress with mental health status of post-graduate medical residents in KBTH.

1.5 Justification of the study

The well-being and health of doctors and other health workers is important to the success of every healthcare system. Physician specialists are required to become masters of the myriad of medical conditions our current world is plagued by and it is through residency training that results in this crop of physicians. Residents endure great levels of stress during their training which affects both their social and professional lives (Gawande et al., 2019). Direct involvement with patients and its resultant pressure coupled with high work-load, low support, and protracted working hours, among others are what they are continuously faced with and this is even worse in developing nations.

These factors, in addition to the many educational and medical roles lead to high levels of stress and a resultant poor mental health status affecting their work output as well as their personal lives. Global statistics on the prevalence of stress, burnout and depression among physicians in training is alarming. Kijima et al. (2020), showed that symptoms of burnout occurred in nearly half of US resident physicians, with a wide range in prevalence by clinical specialty and studies in Iran reported moderate to high level of stress among medical residents.

In Ghana like other countries, residency training is fraught with similar kinds of stressors: long working hours, poor remuneration, high patient work load, distant accommodation, being assessed without adequate training, gender related issues, being under bodily and mental pressure from their supervisors and patients, indebtedness and lack of social and financial support among others (Drislane et al., 2014; Hagopian et al., 2005; Newman-Nartey, Nartey, Amoah, Buckman, Ndanu, & Achempong, 2019; Sandhu, 2018). The Korle Bu Teaching Hospital (KBTH) is the largest public tertiary healthcare institution in Ghana and the third biggest referral center in Africa. It serves as referral point for several public and private health institutions across the country and beyond. Average daily out-patient department (OPD) attendance is about 1,500 with about 250 inpatient admissions (https://kbth.gov.gh). Generally, doctor–to-patient ratio is very low about 1 doctor to 10,000 patients in 2015 (World Bank, 2016) and this is far worse for the specialists. Being a tertiary facility, most of the referrals require specialist attention and this puts a lot of pressure from workload on the residents since they work with the specialists and consultants. Some level of occupational stress is required for motivation in the job setting, however heightened levels of stress result in poor mental health status (BPS, 2009).

Poor mental health status of physicians as a result of the occupational stressors they encounter leads to increased medical errors and sub-optimal standard of care, increased absenteeism, difficult interpersonal relationships, decreased adherence to best practices, conflict with authorities, and reduced work performance (Bernburg et al., 2016; De Oliveira et al., 2013; Kaur et al., 2009; Ratanawongsa et al., 2007). These factors have become a source of concern for postgraduate doctors in training especially where burnout and distress are recognized to affect patient safety (Eisenach et al., 2014).

The findings of this study would be valuable to post-graduate medical training in Ghana. It will help to inform policies and propel interventions at the national and facility level to address the

challenges of occupational stress and mental health, as well as resilience building of medical residents. The findings will also encourage residents to make healthier decisions with respect to their work and mental health. Furthermore, formulating proper stress management interventions for residents would spare the society the brunt of the medical errors, and the sub-optimal standard of medical care associated with resident burn-out. In addition, the study will also contribute scientific knowledge to an important area with dearth of data in our country and form a baseline for further research in future to enhance post-graduate medical training.

It is therefore important to assess the levels of occupational stress, resilient coping ability and mental health status of post-graduate medical residents in the Ghana College of Physicians and Surgeons at the Korle-Bu Teaching Hospital.

1.6 Conceptual Framework

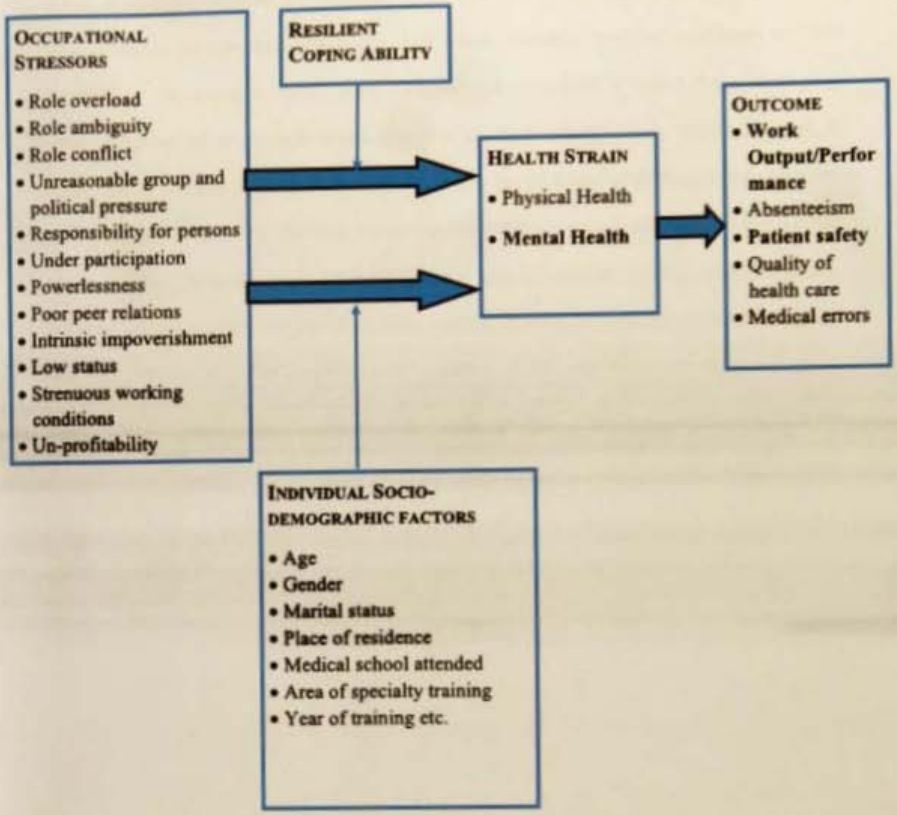

Figure 1.1: Conceptual framework of the relationship between Occupational stress, resilient coping ability and mental health status (Adopted from the NIOSH Model of Job Stress).

According to the NIOSH model of job stress, job stress is primarily caused by working conditions. Exposure to these stressful working conditions affects a worker's health and safety. However, individual characteristics or situational factors mediate this relationship (NIOSH, 1999). In the concept for this study's model, occupational stress is seen to result from twelve

domains of work stress which are role overload, role ambiguity, role conflict, unreasonable group and political pressure, responsibility for persons, under participation, powerlessness, poor peer relations, intrinsic impoverishment, low status, strenuous working conditions and un-profitability (Srivastava & Singh, 1981). Occupational stress leads to health strain which may affect either mental or physical health (Fortes et al., 2020; Nielsen et al., 2010; Rosenthal & Alter, 2012). The effect of occupational stress on the mental health of workers is influenced by their resilient coping ability and their individual characteristics such as their age, gender, marital status, place of residence, medical school attended, area of specialty training, year of training, years of medical practice, number of children, number of dependents, history of chronic medical condition, history of mental health disorder, monthly income, and history of childhood abuse, trauma, or neglect (Smith et al., 2019). The mental health of workers invariably affects work performance and output (Cadorette & Agnew, 2017).

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of existing literature on occupational stress, resilient coping ability and mental health status. It explores the various articles and papers on the subject matter and critically examines them locally and globally.

2.2 Stress

Stress can be defined as an organism's response to circumstances or events (stressors) that threaten the capability to adjust to those conditions (McEwen, 2010). Stress can also be defined as a series of biological and psychological responses experienced by an individual facing real or imagined threats, changes or events (Cohen & Patten, 2005; Cohen, Janicki-Deverts, & Miller, 2007; Fink, 2009; Karasek, 1979). Stress is the way the body responds to a perceived danger, being it imaginary or real and often triggered by the individual's thoughts, beliefs and feelings (Syed et al., 2018).

A certain amount stress about a situation could be positive as it may develop the sense of competition and motivation among individuals which may challenge the individual to go the extra mile to get things done right. Distress, however, is always negative and often leads to decreased productivity, diseases and in extreme situations death, all of which are a direct consequence of the altered psychological and physiological changes brought about by the stress (Salleh et al., 2008).

Stress has become more prevalent and pervasive in our modern world due to increasing demands and this cut across the entire population irrespective of the economic and social standing of the people, making it a global health concern. Zawadzki et al. (2019), using a synchronized review of five ecological momentary assessment studies found that stress was

reported on 42-76% of days. Stress has been identified as the most common workplace health complaint and according to the International Labour Organization, almost 10% of work place accidents are related to stress (ILO, 2013). Chronic stress results in burnout resulting in loss of productivity, withdrawal, quality of work, job turnover, and intention to leave the job (Kijima et al., 2020).

2.3 Stress and Occupational Health

Occupational stress is a universal phenomenon which can be classified as the biological and psychological effects of negative interaction between work conditions and a person's knowledge, skills, or expectations (Malek et al., 2011). It can also be considered as an endless situation caused by the conditions in workplace that tangle antagonistic influences on the workers' employment progress and their general thriving (Yahaya et al., 2009).

Stress is part of our everyday life and cut across all professions but it is of paramount interest in medical practice partly due to the fact that healthcare delivery involves taking care of other peoples' lives and mistakes or errors could potentially lead to death (Familoni, 2008). The expectation therefore is that the physician must be in a good state of mind free of morbid concerns. This expectation is usually not met because the physician apart from being faced with stressors arising from the peculiar nature of the work and the general expectation of society; he/she is also confronted with the same stressors that affect the general population large.

According to the Sarsosa-Prowesk and Charria-Ortiz (2018), stress exists to a significant proportion in both junior and senior doctors and this is unfavorable to the physician's health and service offered to patients. This finding was further buttressed by the claim that on the average, suicides are common among the medical profession than any other profession. Deaths resulting from suicide are about 70% more likely among male physicians and 250-400% higher among female doctors (Schernhammer & Colditz, 2004). Some amount of occupational stress is deemed psychologically healthy because it allows the individual to experience a feeling of

challenge and accomplishment, which are both necessary for their wellbeing (Ben-Avi et al., 2018). When occupational stress however, becomes overly upsetting or regular to deal with, mental health status is negatively affected rather than enhanced (BPS, 2009).

2.4 Sources of Occupational Stress

Researchers have argued that stress comes from many different sources rather than a single source (Yeboah & Ansong, 2014) and influences several areas of life. It could be physical; acting acutely or chronically, social or psychological (Buckley et al., 2009). In the hospital environment for instance, research has identified the following as causes of stress; work overload, lack or inadequate resources, boring/monotonous duties, physical environment (e.g. temperature, lighting, disruption, space), psychological working environment (e.g. inappropriate behavior verbal abuse,), working long hours, issues with managing people, scanty allocation of new technology, and so on (Kaburi et al., 2019).

Several sources of occupational stress have been documented but Cooper (1983) categorized them into six main sources namely job conditions, role stress, interpersonal factors, career development, organizational structure and home-work interface.

2.4.1 Job Conditions

An employee may suffer stress reaction coming from work overload, which may be qualitative and/or quantitative, technologies related to the work, physical hazards directly from the job which the worker is exposed such as noise, vibration, temperature, lighting, and others as well as too little work for the employee (under load). Work overload may be a result of being asked to do too much work or being asked to do work that is too difficult. Insufficient staff numbers, inequitable distribution of work, poorly designed jobs making them difficult to perform and inadequate training to do the expected job are all conditions that contribute to work overload.

There is contrasting report on relationship between workload and stress/burnout. Whilst McVicar (2003) cited workload to be strongly correlated with mood disturbance. Payne (2001), however, did not find any correlation between workload and stress/burnout. The variation in findings between the two studies could be attributed to differences for stress 'hardiness'; of coping mechanisms; of age and experience; or of the level of social support in the workplace (Kossek et al., 2011).

2.4.2 Role Stress

Role stress may be due to role ambiguity or role conflict. In role ambiguity, the employee is unclear about what is expected of him or her whilst role conflict arises when the job demands that the employee act or do things that; He or she is averse to or dislikes or is of the belief that things he/she does are outside the scope of his/her job description. In addition, being responsible for other people has also been identified as a role-related stressor and this mostly affect people doing 'white collar jobs'. Acting in concert with the inherent stressors, role stressors have been documented to have a much greater impact on job strain in healthcare settings than in any other occupation or setting. Tang and Chang (2010), identified role stressors (role conflict or role ambiguity) as the major predictor of burnout among many other important stressors.

2.4.3 Interpersonal Factors

Interpersonal factors are most listed as the main job stressors (Nappo, 2020). These factors are related to lack of management concern for the worker, jealousy, anger, poor work and social support systems and political rivalry. It is documented that poor working relationships between colleagues, subordinates and superiors lead to stress. Harassing or abusive behaviour has been found to significantly corelate with job stress (Rospenda, 2002).

A study by Nappo (2020) found that there is significant correlation between interpersonal contacts on and outside of the job and job stress. The probability of being stressed at work

decreases with help and support provided by managers while receiving help and support from co-workers is likely to increase the probability of job stress occurrence. However, maintaining cooperation and getting on well with colleagues decreases the probability of experiencing stress, confirming the positive and gratifying features of contact with co-workers reported by the literature.

2.4.4 Career Development

Stressors in career development may come from issues of promotion (under-promotion or delayed promotion and over-promotion), job insecurity and frustrated ambitions. Employees in the early stages of their career for example, may desire to advance rapidly and this may become a stressor to them. Stagnation in an organization, resulting from reaching a "career ceiling" can also be a potent form of stressors especially for the older workforce.

2.4.5 Organizational Structure

Structures that are rigid and impersonal, organizational politics, inadequate supervision or training and non-participation of workers in decision making. Organizations that do not promote a sense of belonging, encourage worker participation in decision making, and good communication within its ranks is likely to create stress. Non-participation of workers in decision making has been cited as the most important consistent signal of stress on the job (Bhui, Dinos, Galant-Miecznikowska, De Jongh, & Stansfeld, 2016). The set-up of the organization in relation to role and power structures may also be a source of job stress. This occurs when professional roles within an organization are conflicting, incompatible or the expectations about the roles are unclear.

2.4.6 Home-work Interface

Spillover of work-related task into the home and vice versa, lack of support from spouse, marital conflict and dual career stress especially with regard to women. Evidence suggest that, job-related stress can be prevented or reduced in marriages with spousal support.

Marriages in which spouses can freely and informally discuss job-related problems with each other usually achieve increased occupational and martial satisfaction through the prevention or reduction of stress whereas a less successful marriage can intensify, if not generate, stress at work (Azimian et al., 2017).

2.5 Occupational Stress and Mental Health

Occupational stress has been clearly shown to be associated with several deprecating consequences such as negative physical and mental health outcomes (Andrew, 2016; Kakiashvili et al., 2013) and a number of undesirable organizational outcomes such as impaired work output (Bridger et al., 2013). Various contemporary theories have been propounded about occupational stress and mental health. Four of these are based on the dynamic interaction between and individual and their environment. They include the Person-Environment Fit theory, Job Demand-Control theory, Effort-Reward Imbalance Model, and the Transactional model.

The Person-Environment fit theory is defined as the compatibility between the individual and their environment. Everyone has an innate need to fit into their environment and search for environments that match their own attributes. It argues that distress can arise due to a lack of fit between the individual's skills, resources and abilities, and the demands of the work environment (Trevor Yu, 2013). It has three basic underlying principles; the person and the environment together predict human behaviour better than each of them does separately; outcomes are most optimal when personal attributes (e.g., needs, values) and environmental attributes (e.g., supplies, values) are compatible, irrespective of whether these attributes are rated as low, medium, or high; and the direction of misfit between the person and the environment does not matter. The lack of fit in this model may arise from three directions; the demands of the work environment exceed the employee's ability; the employee's needs consistently fail to be met by the work environment; and a combination of the two situations

exists (i.e., where an employee's needs are not being met while at the same time their abilities are over-stretched).

The Job Demands-Control Model describes stress in the workplace as a result of the imbalance between psychological demands and the level of control that an individual has over his or her work (Akbari et al., 2017). It specifies that control is set as a limiting factor to impact on work demands. The theory is categorized into four ideologies which include the ability for the persons' to have high need as well as high control (Jones & Bright, 2011), or low demands with little or no need for control (Schaubroeck & Merritt, 1997). In this model, the greater the demand that workplaces put on an individual, the less control one has over his/her work, the higher the risk that one will become physically or psychologically stressed (Theorell, 2015).

Effort-Reward Imbalance Model, developed by Johannes Siegrist in the early 1990s, posits that failed social reciprocity between high efforts spent at work and low rewards received in turn elicits strong negative emotions and stress reactions with adverse long-term effects on health (Siegrist, 2017). Stress related to this imbalance between effort and rewards can arise under three conditions main conditions: where the employee has a poorly defined work contract or where they have little choice concerning alternative employment opportunities; employee accepts the imbalance for reasons such as the prospect of improved working conditions; and copes with the demands at work through over commitment.

The Transactional model is a process model unlike the other three that are structural models. In the Transactional theory of stress and coping, Folkman & Lazarus (1986) proposed that there was a link between the environment, a persons' appraisals of the environment, and the means through which the person copes with issues that arise. The theory relies on two processes: cognitive appraisal and coping. A person initially assesses the importance and effect of a specific stressor to himself and then pulls his coping resources based on his assessment to

respond to the threat. In this theory, a person's personal opinion of the stressor as well as a persons' differences in dealing with situations when they arise are important in the eliciting stress(Cooper et al., 2001). A person's cognitive assessment of perceived demands and capabilities can be influenced by several factors such as personality, situational demands, coping skills, previous experiences, and any current stress state already experienced. The model of stress introduces room for intervention because stress can be ameliorated by building-up an individual's resources. The relationship between psychosocial hazards and health outcomes is intermediated by many considerations; the transactional model accounts for the complex relationship by acknowledging individual variation and differences in the stress process.

This study relies on the transactional theory of stress in conceptualizing the relationship between occupational stress and mental health, and the moderating effect of resilience coping abilities.

2.6 Occupational Stress among Medical Residents

Numerous stressors have been identified which affect post graduate medical residents in their work place. Some of these include a myriad of scientific literature and practical tasks which must be learnt within a short period in addition to the amount of work and heavy duties (Schneider et al., 2002). Among all health workers, the major sources of occupational stress identified were insufficient pay, inequality at work, scarce frequency of breaks at work, too much work, staff shortages, , time pressure, job insecurity, poor management support and poor recognition and promotion (Mosadeghrad, 2014).

In a study conducted by Ebrahimi & Kargar (2018), it was shown that among the different levels of residency, first year residents suffer more stress compared to third year and fourth year residents. In the same study it was reported that the highest stress was seen among gynecologist and obstetrics residents and the least was among dermatologist residents.

2.7 Coping and Resilience Coping Ability

Stress from both personal and professional sources cannot be entirely removed from an individual's life. Therefore, the ability to cope or learning to cope is crucial for survival in our fast-moving world, and in particular, the healthcare environment. Coping is a continuously developing process which plays a vital role on how workers associate with work conditions and is active in the line of situational demands and transforming people (Chen, 2007). It is the thoughts and behaviour used by people both internally and externally to control demands of conditions which are assessed as unpleasant (Folkman & Moskowitz, 2004). The individual may prevent stress by physically avoiding stressful stimuli situations, alter behaviour patterns that increase stress (such as decreasing "Type A" behaviors and self-destructive thinking) and/or develop coping mechanisms (such as cognitive assets, social support and a sense of physical health).

According to Folkman & Lazarus (1986), coping serves two important functions. One is to alter or manage the issue causing the distress (problem-focused coping), and the other is to control the emotional response to the problem (emotion-focused coping). Coping may be adaptive or mal-adaptive depending on the circumstances, the individual and the type of stress. It is also moderately controlled by personality and the characteristics of the stressful environment (Carver & Connor-Smith, 2010). However, coping responses are not independent of each other and may be adopted simultaneously and may change over time.

Physicians face many stressful conditions including having to deal with the death of their patients, it is therefore imperative that attempts are made to ensure that they use adaptive coping strategies. A study by McKinley et al. (2020), showed that doctors frequently used maladaptive coping mechanisms. Lemaire and Wallace (2010), found out that most commonly used coping strategies by physicians at work included performing their duties despite the stress, dealing with stress through humor, making a plan of action, and talking to co-workers. Strategies used

outside work included tuning out work and spending time with their family, talking to their partner or spouse, engaging in physical activity like sport and exercise.

Resilience is the ability to cope with stress over a time period (Connor, 2006) while resilience coping refers to the individual's propensity to cope with stress in a highly adaptive manner (Connor, 2006).

2.8 Effects of resilience coping ability on Occupational Stress and Mental Health Status

There is evidence of reduction in occupational stress after effective stress prevention programs (Bekker et al., 2001). Training in active coping strategies significantly decreases stress and improves psychological and physical well-being. Resilient coping ability is an active coping strategy which has been shown to buffer the effect of stress on mental health status (Sinclair & Wallston, 2004). High trait resilient people have been found to show less distress and somatoform symptoms despite having experienced previous adversities in comparison to those with low resilient coping abilities (Beutel et al., 2017). According to Gloria and Steinhardt (2016), greater resilience coping ability is associated with better mental health status.

The absence of resilience coping among physicians has been found to have a negative consequence for both them and their patients (McKinley et al., 2020; Mills & McKimm, 2016). Some medical jurisdictions now acknowledge the need for emotional resilience training within medical curricula (General Medical Council, 2014), but varied approaches are still being analyzed. Possessing resilient coping abilities does not protect against all challenges, but it can improve the tolerance and threshold at which a problem begins to become unmanageable.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter describes the methods and techniques that were used for the study. It describes the study design, the study population, sampling method, sample size, data collection techniques, the dependent and independent variables, and how the analysis was done after data collection.

3.2 Study Design

This was a facility-based cross-sectional study using quantitative methods to assess occupational stress, coping strategies and mental health status of post-graduate medical residents of the Ghana College of Physicians and Surgeons working at the Korle Bu Teaching Hospital, Accra. This design was used because it allowed a rapid generation of data given the short time frame, and multiple variables could be accessed simultaneously, enhancing the accuracy of the assessment of the burden within the specific population group. In addition, the standardized quantitative tools of data collection for mental health studies allowed the objectives to be addressed.

3.3 Study Site

The study was conducted at the Korle-Bu Teaching Hospital. This is a tertiary referral hospital in the southern sector of Ghana. It is the third biggest referral centre in Africa and covers a total land space of approximately 441 acres being hemmed in by the Korle Lagoon, Korle-Gonnor, Lartebiorkorshie and Mamprobi to the east, south, north and west respectively (https://kbth.gov.gh). It was established on 9th October, 1923 and has grown from an initial 200 bed capacity to over 2000 beds. It runs a 24-hour service with an average daily out-patient attendance of over 1500 and an admission rate of about 250 patients per day. The hospital currently has 17 clinical and diagnostic departments and units as well as three centers of excellence. These include Internal Medicine, General and Allied Surgery, Obstetrics and

Gynaecology, Paediatrics, Polyclinic, Dentistry, Radiology, Laboratory, Pathology, Anaesthesia and Radiotherapy and Nuclear medicine. It is accredited by the both the Ghana College of Physicians and Surgeons and the West African College of Physicians and Surgeons to undertake post-graduate medical training for all specialties offered by the College and currently has about 400 postgraduate medical residents in training for membership of the Ghana College. The study was conducted in every unit with postgraduate medical residents.

3.4 Study Population

The study population was all postgraduate medical residents training for the Membership of the Ghana College of Physicians and Surgeons at the Korle Bu Teaching Hospital in all accredited disciplines within the hospital

3.4.1 Inclusion Criteria

- All Post-graduate medical residents of the Ghana College of Physicians and Surgeons who had been assigned to and were in-training for Membership of the College in Korle Bu Teaching Hospital.
- The resident should have completed at least one (1) month of training in order to fulfil the requirement for use of the General Health Questionnaire-12.

3.4.2 Exclusion Criteria

- Post-graduate medical residents who had been on leave within a month prior to the study.

3.5 Sample Size Determination

The current estimation of the total number of post-graduate medical residents assigned to KBTH for training as members in different specialties was about 200. Several studies conducted among postgraduate medical residents have shown low response rates usually around 45% - 70% (Pereira-Lima & Loureiro, 2015; Prins et al., 2007; Stern et al., 1995). Considering the fact

that responses were collected using an online questionnaire, a population census of all eligible residents was done.

3.6 Sampling Technique and Data Collection Method

The data were collected in the month of September, 2020. The sampling frame consisting of a list of names, phone numbers and email addresses of all residents from year 1 to 3 in each specialty of the membership program of the Ghana College of Physicians and Surgeons, was collected from the KBTH administration.

A research assistant was trained to help in data collection and cleaning. Eligible respondents were first sent an email with information explaining the purpose of the study, the structure and instructions for the questionnaire, a consent form, and a declaration on the anonymity and confidentiality of the respondent. This was later followed by an email and text message with a link to the online questionnaire. Respondents were asked to fill out the questionnaire within three (3) days of receiving the email. Participation and subsequent submission of the online questionnaire was taken as consent. The research assistant called all respondents who failed to respond after three (3) days of receiving the email and prompted them about the study. Permission was sort from respondents, who failed to respond following the prompting but did not decline to participate in the study, to meet up with them in-person for completion of the questionnaire.

3.7 Data Collection Instrument

A 5-part standardized questionnaire was used to elicit information from the study participants. These included their socio-demographic data; Occupational Stress using the Occupational Stress Index (Srivastava & Singh, 1981); Mental Health Status using the General Health Questionnaire version 12 developed by Goldberg in 1972 (Reid, 1973); and Coping Resilient Ability using the Brief Coping Resilient questionnaire (Sinclaire & Wallston, 2004).

The socio-demographic questions sought to gather information on the respondent's age, gender, marital status, place of residence, Medical school attended, area of specialty training, year of training, years of medical practice, number of children, number of dependants, history of Chronic medical condition, history of mental health disorder, monthly income and a history of childhood abuse, trauma, or neglect.

Occupational Stress: A widely used Occupational Stress Index (OSI) by Srivastava and Singh (1981) was used to assess the occupational stress of the residents. The scale consists of 46 items with five alternative responses e.g., 5 for strongly agree, 4 for mildly agree 3 agree, 2 for disagree and 1 for strongly disagree. The items relate to almost all relevant components of the job life which cause stress in some way or the other and measures role overload, role ambiguity, role conflict, unreasonable group and political pressure, responsibility for persons, under participation, powerlessness, poor peer relations, intrinsic impoverishment, low status, strenuous working conditions and un-profitability. Out of the 46 items, 28 are true-keyed and rest 18 are false-keyed. Scores in between 46 – 127 indicate low stress, scores in between 128 – 150 indicate moderate stress and scores more than 150 indicate high stress.

The 12-Item General Health Questionnaire (GHQ-12) developed by Goldberg in the 1970's is a screening measure for the detection of minor psychiatric disorder (i.e., nonpsychotic psychological impairment) in community and non-psychiatric clinical settings. The questionnaire is designed to be maximally sensitive to changes in normal functioning and to differentiate psychiatric cases from non-cases. It consists of 12 items, each one assessing the severity of a mental problem over the past few weeks using a 4-point Likert-type scale (from 0 to 3). Each score is used to generate a total score ranging from 0 to 36. The positive items were scored from 0 (always) to 3 (never) and the negative ones from 3 (always) to 0 (never). Increasing scores indicated increasing likelihood of mental health disorder. It has been shown to

be a consistent and reliable instrument when used in general population samples (Pevalin, 2000).

The Brief Resilient Coping Scale (BRCS) developed by Sinclaire and Wallston is a 4-item measure designed to capture tendencies to cope with stress in a highly adaptive manner. The Likert-type scale has 5 responses (from 1 to 5): 1-does not describe me at all, 2-does not describe me, 3-neutral, 4-describes me and 5-describes me very well. The scale contains the following themes: tenacity, optimism, creativity, an aggressive approach to problem solving, and a commitment to extract positive growth from difficult situations. Individuals who score high on the BRCS are endorsing a tendency to reframe the potency of stressors by affirming control of positive ways to offset potential losses. The items in this measure describe an effective, active problem-solving coping pattern. The BRCS has adequate internal consistency (r = .76) and test-retest reliability (r = .71) (Sinclair & Wallston, 2004). Summation of the scores gives the final score. A high score – between 17 and 20 – indicates that respondent has a high resilient coping, between 14 and 16 – a moderate resilient coping and a low score – between 4 and 13 – suggests a low resilient coping.

To test the reliability, the internal consistency of the questionnaire was assessed by Cronbach's alpha coefficient and alpha equal to or greater than 0.70 was considered satisfactory. The Cronbach's alpha for the instruments of this study were 0.873, 0.717 and 0.834 for the Occupational stress index, Brief Resilient Coping Scale and GHQ-12 questionnaires respectively.

All the measurement tools have been validated in Ghana (Affum-Osei et al., 2014; Asante & Meyer-Weitz, 2014; Glozah, 2015).

3.8 Study Variables

The variables that were assessed in the study were divided into dependent and independent.

3.8.1. Dependent variable

The dependent variable was mental health status.

3.8.2 Independent variable

The independent variables were:

Occupational stress, Coping resilience and socio-demographic characteristics of the study participants; age, gender, marital status, religion, place of residence, Medical school attended, area of specialty training, year of training, years of medical practice, number of children, number of dependents, history of chronic medical condition, history of mental health disorder, monthly income and history of childhood abuse, trauma, or neglect.

3.9 Data Quality Control

The questionnaire was pretested among some senior residents (not part of the 200 residents for Membership) in the department of Obstetrics and Gynaecology of the hospital to ascertain its clarity to the respondents. All required corrections were made before the actual administration to the target population.

To ensure completeness of the online questionnaires, each question was set-up with mandatory fields. To prevent multiple entries, respondents entered their names at the start of the questionnaire and their names were used as unique reference codes preventing subsequent entries. Supervision of data collection was done by the Principal investigator to ensure completeness of all other questionnaires. Research assistants were trained on data collection using the online survey method. They were also be trained on how to approach and make introductions to the medical residents, explain purpose of study, administer consents, check for completeness of questionnaires and examine for errors to facilitate the completion of questionnaires done in-person.

3.10 Data Analysis

Data collected by the online forms were automatically stored on a Microsoft Excel spreadsheet and then exported to SPSS 22.0 statistical analysis software after cleaning. Frequency statistics

was used to describe distributions of Occupational stress, mental health status and resilience coping for the respondents with mean, standard deviation (SD), number (N) and percentage (%). Chi-square was used to test the association between the variables.

3.11 Ethical Consideration

Ethical approval for this study was sought from the Scientific Technical Committee (STC) and Institutional Review Board of the Korle-Bu Teaching Hospital (KBTH-STC 00072/2020). For the online questionnaire, participants' successful submission was taken as consent to participate fully in the study. For in-person questionnaires, informed consent was obtained from each respondent by signing the consent form after careful explanation of study objectives had been made.

Privacy and confidentiality were maintained at all times. To ensure confidentiality, data extraction from the online application did not include the names of respondents. To ensure privacy, data collected was stored in a password protected electronic device and safely locked in a cabinet. Access was limited only to the principal investigator and research assistant. Data collected was strictly for research purposes.

Participation in the study was completely voluntary. There was no consequence for refusal to participate in the study. Refusal to answer any question had no consequence. Withdrawal from the study at any point in time was allowed and there was no consequence for doing so.

Some level of stress may have been experienced by respondents in the filling of questionnaires, however, no harm was caused. The contact details of a Clinical Psychologist were included in the forms to enable participants who felt distressed after filling the forms to seek counseling.

CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter presents the results of the study based on the set objectives to include; socio-demographic data, Occupational Stress assessment, Resilient Coping ability and Mental Health Status.

4.2 Socio-demographic characteristics of respondents

80 out of 200 eligible residents completed the questionnaire (Response rate = 40%). Table 4.1 shows the socio-demographic data of respondents. The average age of the respondents was 32.73 ± 6.19. More than half (57.5%) were aged between 26-34 years and 42.5% aged 35-43 years. About 50% were male and about 52.5% were married while 47.5% were single. About 60% resided more than 10km from the hospital, 11.2% of the respondents were in their first year, 65% were in their second year and 23.8% were in their third year of the training program. About 65% had practiced for more than four years (4years and above), and 16.2% had practiced less than one year (<1year) after the completion of medical school before starting residency training. About a third (30%) had more than four (4) children, while 27.5% had no child. More than a third (36.2%) had more than four (4) dependents and 17.5% had no dependents.

With net monthly income, about 46.3% earned between GHS6000 - <8000 and 6.2% earned less than GHS4000 (<GHS4000). About 18.7% had history of chronic medical condition, 6.3% had history mental disorder and almost all respondents (100%) had no history of child trauma.

Table 4.1: Socio-demographic characteristics of respondents

Variable	Frequency (N = 80)	Percentage (%)
Age category (Mean = 32.73 ± 6.19)		
26-34 years	46	57.5
35-43 years	34	42.5
Sex		
Male	40	50.0
Female	40	50.0
Marital status		
Married	42	52.5
Single	38	47.5
Place of residence		
>10km from hospital	48	60.0
Within Korle-Bu	14	17.5
Within 1km - 5km from hospital	18	22.5
Year of training		
One	9	11.2
Two	52	65.0
Three	19	23.8
Years of practice (Mean = 4.03 ± 2.39)		
<1 year	13	16.2
1-3 years	15	18.8
4 years and above	52	65.0
Number of children		
Zero	22	27.5
1-3	34	42.5
4 children and above	24	30.0
Number of dependents		
Zero	14	17.5
1-3	37	46.2
4 and above	29	36.3
Monthly income		
<4000	5	6.2
4000-6000	24	30.0
6000-<8000	37	46.3
>12000	14	17.5
Have history of a Chronic medical condition		
No	65	81.3
Yes	15	18.7
Have history of mental disorder		
No	75	93.7
Yes	5	6.3
Have history of child trauma		
No	80	100.0
Yes	0	0.0

4.3 Occupational stress level of respondents

Figure 4.2 presents on the occupational stress level of respondents; about two-third (65%) had moderate stress levels, 19% had high stress levels and 16% had low stress levels.

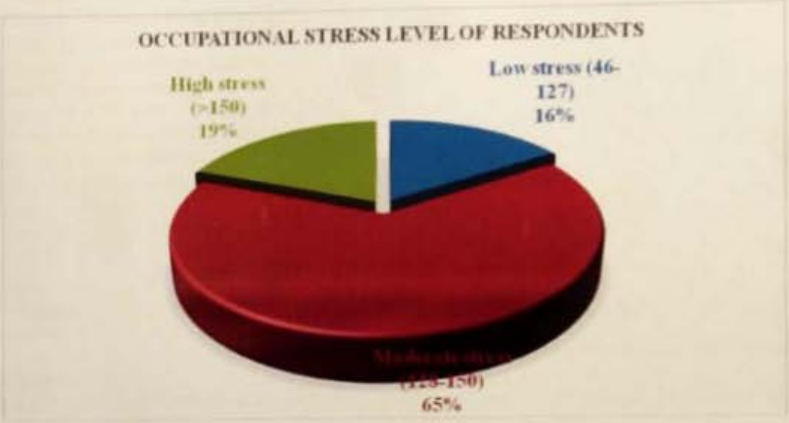

Figure 4.2: Occupational stress level of respondents

4.3.1 Domain/Sub-scale assessment of Occupational Stress among respondents

Exploratory factor analysis of the twelve sub-scales of the OSI (Table 4.2) showed that un-profitability had the highest score with a mean of 4.09 ± 1.16, followed by role overload (mean = 3.49 ± 1.16), strenuous working conditions (mean = 3.27 ± 1.07), role ambiguity (mean = 3.22 ± 1.09), role conflict (mean = 3.22 ± 0.87), low status (mean = 3.08 ± 1.02), responsibility for persons (mean = 3.02 ± 1.10), intrinsic impoverishment (mean = 2.74 ± 1.04), poor peer relations (mean = 2.64 ± 0.89), unreasonable group and political pressure (mean = 2.62 ± 0.95), powerlessness (mean = 2.60 ± 1.12), and lastly under participation with a mean of 2.40 ± 1.07).

The prime sources of stress were underpayment (mean 4.40 ± 1.04), superiors not giving due significance to the position and work of the resident physicians (mean 3.85 ± 0.86), seldom reward for the hard labour (mean 3.77 ± 1.27) and workload (mean 3.73 ± 1.57).

Table 4.2: Domain/Sub-scale assessment of Occupational Stress among respondents.

Sub-scales of OSI	Observations	Mean	SD	Min	Max
Role overload					
I have to do a lot of work in this job	80	3.73	1.57	1	5
Owing to excessive workload I have to manage with insufficient number of employees and resources	80	3.51	0.93	2	5
Being too busy with official work I am unable to devote sufficient time to my domestic and personal problems	80	3.52	1.20	2	5
I have to dispose of my work hurriedly owing to excessive work load	80	3.02	1.02	1	5
I have to do such work as ought to be done by others	80	3.61	1.16	2	5
I am unable to carry out my assignments to my satisfaction on account of excessive work load and lack of time	80	3.57	1.09	2	5
Overall Role Overload	**80**	**3.49**	**1.16**	**1.67**	**5**

Sub-scales of OSI	Observations	Mean	Standard deviation	Min	Max
Role Ambiguity					
The available information relating to my Job role and its outcomes are vague and insufficient.	80	3.31	1.39	1	5
The objectives of my work role are quite clear and adequately planned	80	2.86	1.04	1	5
I am unable to perform my duties smoothly owing to uncertainty and ambiguity of the scope of my jurisdiction and authorities	80	3.18	1.09	1	5
It is unclear what type of work and behaviour my higher authorities and colleagues expect from me	80	3.51	0.85	2	5
Overall Role Ambiguity	**80**	**3.22**	**1.09**	**1.25**	**5**

Sub-scales of OSI	Observations	Mean	Standard deviation	Min	Max
Role Conflict					
My different superiors often give contradictory instructions regarding my work	80	3.21	1.06	1	5
Officials do not interfere with my jurisdiction and working	80	2.70	0.83	1	4

methods

I am not provided with clear instructions and sufficient facilities regarding the new assignments trusted me	80	3.23	1.04	1	5
Employees attach due importance to the official instructions and formal working procedures	80	3.48	0.79	2	5
It becomes difficult to implement all of a sudden, the new dealing procedures and policies in place of those already in practice	80	3.50	0.62	3	5
Overall Role Conflict	**80**	**3.22**	**0.87**	**1.60**	**4.80**

Sub-scales of OSI	**Observations**	**Mean**	**Standard deviation**	**Min**	**Max**
Unreasonable Group and Political Pressure					
Sometimes it becomes a complicated problem for me to make adjustment between political/Group pressures and formal rules and instruction	80	2.06	1.14	1	4
I have to do some work unwillingly owing to certain group/political pressures	80	2.88	0.96	1	5
In order to maintain group conformity sometimes I have to do/produce more than the usual	80	3.61	1.09	1	5
I am compelled to violate the formal and administrative and policies owing to group/political pressures	80	1.93	0.61	1	3
Overall unreasonable group and political pressure	**80**	**2.62**	**0.95**	**1**	**4.25**

Sub-scales of OSI	**Observations**	**Mean**	**Standard deviation**	**Min**	**Max**
Responsibility for person					
The responsibility for the efficiency and productivity of many employees is thrust upon me.	80	3.60	1.09	1	5
I am responsible for the future of a number of Employees	80	2.65	0.98	1	5

I bear the great responsibility for the progress and prosperity of this organization	80	2.81	1.23	1	5
Overall responsibility for person	**80**	**3.02**	**1.10**	**1**	**5**

Sub-scales of OSI	Observations	Mean	Standard deviation	Min	Max
Under Participation					
Most of my suggestions are heeded and implemented here	80	2.93	1.02	1	4
My cooperation is frequently sought in solving the administrative or industrial problem at higher level	80	2.01	0.98	1	5
My options are sought in framing important policies of the department	80	2.11	1.11	1	5
My opinion is sought in changing or modifying the working systems/instruments and conditions here	80	2.56	1.18	1	5
Overall under participation	**80**	**2.40**	**1.07**	**1**	**4.75**

Sub-scales of OSI	Observations	Mean	Standard deviation	Min	Max
Powerlessness					
My decisions and instructions concerning distribution of assignments among employees are properly followed	80	2.80	0.95	1	4
My suggestion regarding the training programs of the employees are given due significance	80	2.08	1.19	1	5
Our interest and opinion are duly considered in making appointment for important posts	80	2.93	1.22	1	5
Overall Powerlessness	**80**	**2.60**	**1.12**	**1**	**4.67**

Sub-scales of OSI	Observations	Mean	Standard deviation	Min	Max
Peer Group Relations					
I have to work with persons of my liking	80	2.93	0.82	2	4
Some of my colleagues and subordinates try to defame and malign me as unsuccessful	80	2.03	1.09	1	5

My colleagues do cooperate with me voluntarily in solving administrative and industrial problems	80	3.03	0.50	2	4
There exists sufficient mutual cooperation and team-spirits among the employees of this department	80	2.55	1.16	1	4
Overall Peer Group Relations	**80**	**2.64**	**0.89**	**1.50**	**4.25**

Sub-scales of OSI	**Observations**	**Mean**	**Standard deviation**	**Min**	**Max**
Intrinsic Impoverishment					
My assignments are of monotonous nature	80	3.05	1.03	1	5
I get ample opportunity to utilize my ability and experience independently	80	2.38	1.13	1	5
I get ample opportunity to develop my aptitude and proficiency properly	80	2.62	1.04	1	5
My suggestions and cooperation are not sought in solving even those problems for which I am quite competent	80	2.91	0.97	2	5
Overall Intrinsic Impoverishment	**80**	**2.74**	**1.04**	**1.25**	**5**

Sub-scales of OSI	**Observations**	**Mean**	**Standard deviation**	**Min**	**Max**
Low Status					
Higher authorities do care for my self-respect	80	2.85	1.11	1	4
This job has enhanced my social status	80	2.53	1.09	1	5
My higher authorities do not give due significance to my position and work	80	3.85	0.86	2	5
Overall Low Status	**80**	**3.08**	**1.02**	**1.33**	**4.67**

Sub-scales of OSI	**Observations**	**Mean**	**Standard deviation**	**Min**	**Max**
Strenuous Working Condition					
I do my work under tense circumstances	80	3.55	1.08	2	5
Some of my assignments are quite risky and complicated	80	3.42	0.77	2	5
I often feel that this job has made my life cumbersome	80	3.61	1.15	1	5
Working conditions are satisfactory here from the point of view of our welfare and convenience	80	2.51	1.27	1	5
Overall Strenuous Working Condition	**80**	**3.27**	**1.07**	**1.50**	**5**

Sub-scales of OSI	**Observations**	**Mean**	**Standard deviation**	**Min**	**Max**
Unprofitability					

I get less salary in comparison to the quantum of labour/ work.	80	4.40	1.04	1	5
I am seldom rewarded for my hard labour and efficient performance	80	3.77	1.27	1	5
Overall Unprofitability	**80**	**4.09**	**1.16**	**1**	**5**

4.4 Socio-demographic Characteristics of respondents and Occupational stress

Table 4.3 reveals the association between respondents' socio-demographic data and occupational stress level. From the study, age of respondents was significantly associated with occupational stress level (X^2 = 6.909; p = 0.03). The resident's year of training was also statistically associated with occupational stress level (X^2 = 14.702; p = 0.01). In addition, the number of years of practice before starting residency training (X^2 = 11.206; p = 0.02) and the monthly income level of resident's (X^2 = 13.168; p = 0.04) were statistically associated with occupational stress level.

Table 4.3: Association between respondents' socio-demographic data and occupational stress level

Variable	Occupational stress level (N = 80)			Chi-square (Chi2)	P-value
	Low stress n (%)	Moderate stress n (%)	High Stress n (%)		
Age category					
26-34 years	4 (8.7)	30 (65.2)	12 (26.1)		
35-43 years	9 (26.5)	22 (65.0)	3 (8.8)	6.909	0.03*
Sex					
Male	4 (10.0)	26 (65.0)	10 (25.0)		
Female	9 (22.5)	26 (65.0)	5 (12.5)	3.589	0.17
Marital status					
Married	7 (16.7)	30 (71.4)	5 (11.9)		
Single	6 (15.8)	22 (57.8)	10 (26.3)	2.781	0.25
Place of residence					
>10km from hospital	10 (20.8)	32 (66.7)	6 (12.5)		
Within Korle-Bu	3 (21.4)	6 (42.9)	5 (35.7)	8.569	0.07

Within 1km - 5km from hospital	0 (0.0)	14 (77.8)	4 (22.2)		
Year of training					
One	4 (44.4)	5 (55.6)	0 (0.0)		
Two	8 (15.4)	37 (71.2)	7 (13.4)	14.702	
Three	1 (5.3)	10 (52.6)	8 (42.1)		0.01*
Years of practice					
<1 year	0 (0.0)	9 (69.2)	4 (30.8)		
1-3 years	0 (0.0)	10 (66.7)	5 (33.3)		
4 years and above	13 (25.0)	33 (63.5)	6 (11.5)	11.206	0.02*
Number of children					
Zero	0 (0.0)	18 (81.8)	4 (18.2)		
1-3	8 (23.5)	20 (58.8)	6 (17.7)		
4 children and above	5 (20.8)	14 (58.3)	5 (20.8)	6.396	0.17
Number of dependents					
Zero	1 (7.1)	11 (78.6)	2 (14.3)		
1-3	6 (16.2)	26 (70.3)	5 (13.5)		
4 and above	6 (20.7)	15 (51.7)	8 (27.6)	4.305	0.37
Monthly income					
<4000	0 (0.0)	5 (100.0)	0 (0.0)		
4000-6000	2 (8.3)	20 (83.3)	2 (8.3)		
6000-<8000	10 (27.0)	17 (46.0)	10 (27.0)	13.168	
>12000	1 (7.1)	10 (71.4)	3 (21.4)		0.04*
Have history of a Chronic medical condition					
No	12 (18.5)	41 (63.1)	12 (18.5)		
Yes	1 (6.7)	11 (73.3)	3 (20.0)	1.256	0.53
Have history of mental disorder					
No	12 (16.0)	48 (64.0)	15 (20.0)		
Yes	1 (20.0)	4 (80.0)	0 (0.0)	1.231	0.54

******* indicates the level of significance of variables at 5% (p<0.05)**

4.5 Resilient coping ability of respondents

Table 4.4 summarizes the resilient coping ability of respondents which had a mean of 9.04 ± 5.24. This falls within the ranges of 4-13, indicating a low resilient coping ability for all of the postgraduate medical residents.

Table 4.4: Assessment of Resilient coping ability of Respondents

Variables	Observations	Mean	Standard deviation	Min	Max
I look for creative ways to alter difficult situations	80	1.97	1.13	1	4
Regardless of what happens to me, I believe I can control my reaction to it	80	2.63	1.43	1	4
I believe I can grow in positive ways by dealing with difficult situations	80	2.09	1.32	1	4
I actively look for ways to replace the losses I encounter in life	80	2.35	1.36	1	4
Overall Resilient Coping Ability of respondents	**80**	**9.04**	**5.24**	**1**	**4**

4.6 Overall Mental Health Status of respondents

Out of the total of 80 respondents, 42 representing 52.5% had Poor mental health status whilst 38 representing 47.5% had Good mental health status.

Table 4.5: Overall Mental Health Status of respondents

Mental Health Status	Number (n)	Percentage (%)
Poor	42	52.5
Good	38	47.5

4.7 Association between Occupational Stress and Mental Health Status

Table 4.5 presents the association between occupational stress and mental health status of respondents. Respondents occupational stress level was significantly associated with the mental health status of respondents ($X^2 = 15.160$; $p = 0.004$).

Table 4.6: Association between Occupational Stress and Mental Health Status

Variable	Mental Health Status		Chi-square	P-value
	Poor n (%)	Good n (%)		
Occupational stress				
Low stress (46-127)	8 (61.5)	5 (38.5)	15.160	0.004
Moderate stress (128-150)	26 (50.0)	26 (50.0)		
High stress (>150)	8 (53.3)	7 (46.7)		

CHAPTER FIVE

DISCUSSION

5.1 Occupational Stress

Stress is considered to result from a disparity between the demands of the workplace and an individual's ability to cope. Stress has become an important global health issue because of the deprecating consequences on physical and mental health as well as negative organisational outcomes (Andrew, 2016; Bridger et al., 2013; Kakiashvili et al., 2013). Globally, occupational stress has been shown to be associated with mental health status (WHO, 2019). According to statistics, stress affects about one out of four workers (Seňová & Antošová, 2014). Stress exists in every occupation but appears to be more prevalent in certain types of occupations. Several studies have demonstrated that persons in the healthcare industry experience the most stress which can lead to burnout (Govardhan et al., 2012; Kijima et al., 2020). Residency training is pivotal in the continuum of medical education as it produces specialists to manage the myriad of health conditions our world is faced with. Unfortunately, post-graduate medical training has been shown to produce the highest rates of burnout (Chan et al., 2016; Govardhan et al., 2012). Kijima et al. 2020 showed that symptoms of burnout occurred in nearly half of US resident physicians, with a wide range in prevalence by clinical specialty and studies in Iran reported moderate to high level of stress among medical residents (Malek et al., 2011).

The current study found out that the majority (65%) of the medical residents undergoing specialist training at the Korle Bu Teaching Hospital had moderate stress. This is consistent with findings from the study by Shah, Hasan, Malik, and Sreeramareddy, 2010 which reported 60.8% moderate stress among resident physicians in a university hospital in Egypt. Malek et al. (2011) also reported moderate stress (average total stress score 147.06 out of 205) among postgraduate doctors in one of the teaching hospitals in Tehran, Iran. The most

significant predictor of stress from the present study was unprofitability (mean 4.09 ± 1.16) with less salary for the quantum of work done being the most significant source. This finding is in agreement with the works of Issa, Yussuf, Olanrewaju, and Oyewole (2009) and Jiang, Guan, Dai, Huang, and Huang (2019) who reported low income levels in comparison to the quantum of job done as most significant determinant of stress among resident physicians in Nigeria and China respectively.

Several studies have reported strong correlations between remuneration and job satisfaction among employees in general (Nur-Agustiningsih, 2016; Opoku & Apenteng, 2014). Dissatisfied employees are usually more stressed than their satisfied colleagues. Adeolu et al. (2016) for instance found a positive correlation between low job satisfaction and occupational stress among physicians in the university college hospital in Ibadan, majority of who were residents and this might have accounted for the moderate stress level found in this study.

5.2 Association between socio-demographic factors and occupational stress

Chi-square analysis showed significant statistical association between age, net monthly income, years of practice and year of training. The youngest age group (26-34 years), those who had practiced for 1-3 years and those in year three of training were more prone to stress which is in agreement with findings from a number of studies. For example, the studies on occupational stress among medical residents in Japan by Shimizu, Hiro, Mishima, and Nagata (2002) reported the highest stress rates in the youngest group. The finding by Ebrahimi & Krager (2018), however, was in sharp contrast to the finding in the current study. They reported that the highest level of occupational stress in respondents in the oldest group (age bracket ≥ 31 years), whereas no relationship was found in the studies by Archer, Lim, Teh, Chang, and Chen (2015), Lavretsky and Newhouse (2012), and Oubiña, Calvo, and Fernández-Ríos (1996).

According to Osipow, Doty, and Spokane (1985), occupational stress varies according to life stage and will result in divergent availability of coping strategies and this might have accounted for the differences in findings from the different studies in different jurisdictions.

It was also observed that those who earned less than < 4,000 GHC net monthly income were all moderately stressed. Income level was also significantly associated with occupational stress and it was the single most important source of stress. Financial inadequacy in a heavily dependent world is a significant source of stress since numerous basic activities of daily life are associated with personal financial resources and their management (Bailey et al., 1998; Subha & Shakil, 2009) and this may explain why all the residents who earned less were moderately stressed.

Year of training was also statistically significantly associated with occupational stress. It was noted that residents in third year were more prone to stress than those in lower batches. This according to Issa et al. (2009) is as result of concerns for examination and evaluation as well as workload which increase as the residents approaches the end of their training.

There was no statistically significant association between chronic health conditions and occupational stress. This is, however, in sharp contrast to the findings by De Graaf, Tuithof, Dorsselaer, and Have (2012) who reported a strong positive correlation between history of chronic medical condition and occupational stress. They found out that chronic health conditions such as respiratory disorders, cardiovascular disease, diabetes, sleep disorders and rheumatic diseases can negatively impact work life and this may be a significant source of stress. This was further buttressed by Koolhaas, Klink, Groothoff, and Brouwer (2012) who reported that workers with chronic health conditions were greatly exposed to occupational stress and perceived their work as more strenuous mentally compared to their healthier co-workers. These chronic medical conditions are thought to impinge heavily on an employee's

capacity to adequately carry out job expectations, resulting in an increasing likelihood of experiencing poor mental and psychosocial outcomes. This fact raises a lot of concern on how their reduced work performance may impact their job or financial security and quality of life (De Graaf et al., 2012; Mutambudzi, Gonzalez, & Wong, 2020; Vanajan, Bültmann, & Henkens, 2020).

This study again found no statistically significant association between sex and occupational stress which is consistent with findings from the study by Malek et al. (2011). This is, however, inconsistent with findings of Ebrahimi & Kargar (2018) who reported a significant statistical association between sex and occupational stress. Other studies in Canada and Japan also corroborated this finding. Results from all these studies showed that, occupational stress in females was more than men (Shimizu et al., 2002) and this may be a result of greater involvement of females in responsibility for household responsibilities and social engagement combining with work roles than their male colleagues.

Two relatively older studies in medical residents, however, found stress was reported more in male than female residents (Richardsen & Burke, 1991; Karbakhsh, Sedaghat & Nabaee, 2002).

There was also no significant relationship between marital status and stress which is consistent with findings by Ebrahimi & Kargar (2018) and Malek et al. (2011) who reported higher stress level among married medical residents. In contrast, a study in Canada found out that single residents experienced higher level of stress compared to the married ones (Kelner & Rosenthal, 1986).

5.3 Resilient Coping Ability

Health workers will either agonize through, or cope with stressors in a manner that relates both to their own background and personal qualities, in addition to institutional variables

(Chen, 2007). Since stress cannot be eliminated entirely in the life of an individual – personal and professional, the ability to cope or learning to cope is crucial for survival in our fast-moving world, and in particular, the healthcare environment. The ability to re-engage with work in the face of threats is good marker of resilience. Developing it requires that postgraduate doctor's deal with their own individual humanity and discover personal connections to patients and the work (Winkel et al., 2018).

The current study reported a range of 10-13 with an average resilient coping ability score of 9.04 for medical residents which fall into the category of low resilient coping (range 4-13). This is consistent with studies conducted in an urban teaching hospital among first year medicine and psychiatry residents which reported low resilient coping ability (Chaukos et al., 2017). Resilience coping ability has been shown in studies to buffer the effect of stress on mental health status (Sinclair & Wallston, 2004) and it is therefore worrying that despite the moderate level of stress observed in this study, the resilience coping ability is low.

High trait resilient people have been found to display reduced levels of stress and somatoform symptoms regardless of their previous adversities encountered in contrast to others with low resilient coping abilities (Beutel et al., 2017). An individual's psychological and physical wellbeing is greatly affected by their resilience. Increasing resilience correlates positively with improved morbidity and mortality (Pressman & Cohen, 2005). In the United Kingdom for example, stress and anxiety are important causes of absenteeism at work. This results in loss of productivity with associated financial cost. With decreasing resilience, it is noted that individuals may be present at work but perform sub-optimally a phenomenon categorised as 'presenteeism'. This phenomenon has been found to be more commonly associated with higher-paid staff and is more costly than absenteeism (The Sainsbury Centre for Mental Health, 2007). Overall, poor resilience and stress have a significant impact on an individual's

health from 'burnout' manifesting with depersonalization, feelings of low personal accomplishment and emotional exhaustion (Bittner et al., 2011).

Resilience can be developed through a number of ways, one of them being adversity. This was found out by (Winkel et al. (2018) who reported that postgraduate doctors with prior encounters of set-backs before their working life appeared to struggle less with the stresses of the job, responsibility, medical error and self-doubt suggesting they had developed their resilience. This was corroborated by Walters, Laurence, Dollard, Elliott, and Eley (2015) who acknowledged that exposure to challenging experiences and "not having things easy," both in the physicians personal and professional lives, was an important factor in their learning of how to become more resilient and cope with difficult experiences.

According to Epstein, before an individual begins enacting strategies for resiliency, that individual must have a sense of self-awareness and be able to self-monitor (Epstein & Krasner, 2013). The understanding to this is that the individual must gain insight into his/her ability to accept limits, acknowledge uncertainty, recognize error, and solve problem. One of the components of wellness, which is self-care, has been identified as crucial to maintaining resilience. This includes setting boundaries and identifying the need to make time activities outside-of-work.

While it does not address the source of stress, it promotes a sense of work-life balance, which sets a good foundation for learning and implementing resilience skills (Berger & Waidyaratne-Wijeratne, 2019). Studies have shown that doctors are less likely to get help from others, employ denial and avoidance as coping strategies and disregard signs and symptoms of burnout. Bittner et al. (2011) opined that physicians mostly ignore their own health, delay their own medical treatment, and avoid problems that may negatively impact

their ability to care for patients and this might have accounted for the low resilience coping recorded in this study.

5.4 Mental Health Status

A better mental health status is good for the overall physician wellbeing as well as patient safety and quality of care. The present study found out that 52.5% of medical residents had poor mental health status. The result of this study is a bit lower than what was recorded in the study by Haoka et al. (2010) which assessed mental health status among Japanese resident doctors. In that study, 61.9% of residents scored higher than GHQ-12 cut off value of 12 and the mean GHQ12 score for all residents was high, an indication of poor mental health status. The difference in results may be due to the different cut off values used in the two (2) studies.

5.5 Association between occupational stress and mental health status

Occupational stress level was significantly associated with mental health status (p=0.004). The medical residents who were highly stressed were more likely to have poor mental health status compared to those who had low or moderate stress. 53.3% of the respondents who were more stressed had poor mental health status. This finding is consistent with the study by Adeolu et al. (2016) who reported 68% of junior doctors who were stressed in the University College Hospital of Ibadan had poor mental health status. This is further buttressed by the studies of Fortes et al. (2020) which established a positive association between occupational stress and poor mental health.

Studies have shown that people with a high level of ability to cope with stress can be expected to maintain good health, even under stressful conditions (Proulx & Aldwin, 2015). Considering that resilient coping ability was low for all the participants in this study and since coping ability is known to moderate mental health status in the face of stress, it was expected that all the medical residents would have had poor mental health status but that was

not the case in this study since a good proportion (47.5%) of the residents had good mental health status despite some level of stress.

5.6 Limitations of the study

The major limitation of this study was the response rate. A sample size of 200 was targeted but less than 45% of the selected population responded. Some of the respondents were unwilling to answers some of the questions which made it difficult to answer all the research questions and meet all the objectives.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This current study found out that 16.2%, 65.0% and 18.8% of residents at the KBTH had low, moderate and high occupational stress levels respectively. The average stress score for all respondents was 138.9 corresponding to moderate stress. The prime sources of stress were underpayment, higher authority not giving due significance to position and work of the resident physicians, seldom reward for the hard labour and workload. There was a statistically significant association between high levels of stress and age, income level, year of training and years of practice.

The resilient coping ability for all the resident physicians was low and 52.5% of the participants had poor mental health status.

In conclusion, medical residents at the KBTH experience moderate to high level of occupational stress, have low resilient coping ability and poor mental health status which does not augur well for their physical and mental health. There is therefore the need for stress management programs during the residency program in order to improve their mental health status and overall wellbeing.

6.2 Recommendations

The following recommendations were made based on the findings from the current study.

1. Considering the moderate to high level of occupational stress among medical residents at the KBTH, it is important for the management of the hospital to routinely screen medical residents for stress related physical conditions for proper and timely management.

2. The hospital authorities must provide stress relief interventions and counseling through the help of clinical psychologists.

3. The Ghana College of Physicians and Surgeons should undertake periodic organization of seminars and workshops on stress and stress management for all its residents in training to enhance mental health literacy and psychological wellbeing.

4. The Ministry of Health/ Ghana Health Service and the Fair Wages and Salaries Commission must take the necessary steps to improve upon remuneration and conditions of service in general to improve the overall occupational stress level since poor remuneration emerged as a major contributing factor among medical residents.

5. Medical residents associations such as GADOR should also be proactive in organizing stress management interventions for their members and provide hotlines for counseling.

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APPENDIX 1:QUESTIONNAIRE

OCCUPATIONAL STRESS, RESILIENT COPING ABILITY AND MENTAL HEALTH STATUS OF POST-GRADUATE MEDICAL RESIDENTS AT THE KORLE-BU TEACHING HOSPITAL

University of Ghana College of Health Sciences School of Public Health

Name.....

Dear Sir/Madam,

You are kindly invited to participate in this research by answering this questionnaire. This study seeks to evaluate the self-reported levels of occupational stress, resilient coping abilities and examine the mental health status among post-graduate medical residents working in the Korle-Bu Teaching Hospital. It will also explore the functions of resilient coping abilities in moderating the influence of stress on the mental health status of residents.

This study is strictly for academic purposes and your responses are confidential and will not be disclosed to anyone.

Participation in this study is voluntary. There is no direct reward for participation however the responses received today may contribute in the setting up of effective stress management protocols for residents in Ghana.

Your participation will not influence your academic progression in the residency program.

Kindly take a few minutes to answer the questionnaire.

THANK YOU

SECTION 1-Socio-demographic data of participants

This section contains some general background questions about you. Please tick in the brackets and write where appropriate.

1.	Age	.....
2.	Sex	Male ( ) Female ( )
3.	Marital status	Married ( ) Single ( ) Divorced ( ) Widow ( ) Others specify.....
4.	Religion	Christianity ( ) Muslim ( ) Traditional ( ) Others specify.....
5.	Medical School attended	University of Ghana ( ) KNUST-SMS ( ) University of Cape-Coast-SMS ( ) University of Developmental Studies ( ) Others ( ) specify.....
6.	Area of Specialty training	Internal Medicine ( ) Surgery ( ) Obstetrics & Gynaecology ( ) Anaesthesia ( ) Otorhinolaryngology ( ) Ophthalmology ( ) Family Medicine ( ) Laboratory Medicine ( ) Paediatrics and Child Health ( ) Psychiatry ( ) Public Health ( ) Radiation Oncology ( ) Radiology ( ) Dental Surgery ( )
7.	Place of residence	Within Korle-Bu ( ) Within 1km to 5km of the hospital ( ) >10km from the hospital ( )
8.	Year of Training	Year 1 ( ) Year 2 ( ) Year 3 ( )
9.	How many years did you practice as a doctor (after completion of medical school) before starting residency training?	.....years

10.	How many children do you have?	One ( ) Two ( ) Three ( ) Four ( ) > Four ( )
11.	How many dependants do you have? (including your children if they are your dependants)	One ( ) Two ( ) Three ( ) Four ( ) > Four ( )
12.	In what bracket is your net monthly income from all sources of income (in GHS)?	< 4000 ( ) 4000 - <6000 ( ) 6000 - <8000 ( ) 8000 - <10,000 ( ) 10,000 - <12,000 ( ) >12,000 ( )
13.	Do you have a history of a Chronic medical condition?	Yes ( ) please specify..... No ( )
14.	Do you have a known history of any Mental Health Disorder?	Yes ( ) please specify..... No ( )
15.	Do you have any history of childhood trauma or neglect?	Yes ( ) please specify..... No ( )

SECTION 2: Occupational Stress

This section assesses the extent of occupational stress you experience in your role as a resident. Select (circle) any one of the alternative responses to indicate the extent of accuracy to which each statement describes the nature and conditions at your job and experiences and feelings about various aspects of your job life. Kindly answer all questions in this section.

The score for the statements are; 5 for absolutely true, 4 for almost true, 3 for partially true, 2 for almost false and 1 for absolutely false. The statements with asterisk should be scored inversely, e.g. 5 for absolutely false and 1 for absolutely true.

16.	I have to do a lot of work in this job	5	4	3	2	1
17.	The available information relating to my Job role and its outcomes are vague and insufficient.	5	4	3	2	1
18.	My different superiors often give contradictory instructions regarding my work.	5	4	3	2	1
19.	Sometimes it becomes a complicated problem for me to make adjustment between political/Group pressures and formal rules and instruction.	5	4	3	2	1
20.	The responsibility for the efficiency and productivity of	5	4	3	2	1

	many employees is thrust upon me.					
21.	*Most of my suggestions are heeded and implemented here.	5	4	3	2	1
22.	*My decisions and instructions concerning distribution of assignments among employees are properly followed.	5	4	3	2	1
23.	*I have to work with persons of my liking.	5	4	3	2	1
24.	My assignment are of monotonous nature.	5	4	3	2	1
25	*Higher authorities do care for my self-respect	5	4	3	2	1
26	I get less salary in comparison to the quantum of labour/ work.	5	4	3	2	1
27	I do my work under tense circumstances.	5	4	3	2	1
28	Owing to excessive workload I have to manage with insufficient number of employees and resources	5	4	3	2	1
29	*The objectives of my work role are quite clear and adequately planned.	5	4	3	2	1
30	*Officials do not interfere with my jurisdiction and working methods	5	4	3	2	1
31	I have to do some work unwillingly owing to certain group/political pressures.	5	4	3	2	1
32	I am responsible for the future of a number of Employees	5	4	3	2	1
33	* My cooperation is frequently sought in solving the administrative or industrial problem at higher level	5	4	3	2	1
34	*My suggestion regarding the training programs of the employees are given due significance.	5	4	3	2	1
35	Some of my colleagues and subordinates try to defame and malign me as unsuccessful.	5	4	3	2	1
36	*I get ample opportunity to utilize my ability and experience independently.	5	4	3	2	1
37	*This job has enhanced my social status.	5	4	3	2	1
38	I am seldom rewarded for my hard labour and efficient performance.	5	4	3	2	1
39	Some of my assignment are quite risky and complicated.	5	4	3	2	1
40	I have to dispose off my work hurriedly owing to excessive work load.	5	4	3	2	1
41	I am unable to perform my duties smoothly owing to uncertainty and ambiguity of the scope of my jurisdiction and authorities.	5	4	3	2	1
42	I am not provided with clear instructions and sufficient facilities regarding the new assignments trusted me.	5	4	3	2	1
43	In order to maintain group conformity sometimes I have to do/produce more than the usual.	5	4	3	2	1
44	I bear the great responsibility for the progress and prosperity of this organization.	5	4	3	2	1
45	My options are sought in framing important policies of the department.	5	4	3	2	1

46	*Our interest and opinion are duly considered in in making appointment for important posts.	5	4	3	2	1
47	*My colleagues do cooperate with me voluntarily in solving administrative and industrial problems.	5	4	3	2	1
48	*I get ample opportunity to develop my aptitude and proficiency properly.	5	4	3	2	1
49	My higher authorities do not give due significance to my position and work.	5	4	3	2	1
50	I often feel that this job has made my life cumbersome.	5	4	3	2	1
51	Being too busy with official work I am unable to devote sufficient time to my domestic and personal problems.	5	4	3	2	1
52	It is unclear what type of work and behavior my higher authorities and colleagues expect from me.	5	4	3	2	1
53	*Employees attach due importance to the official instructions and formal working procedures.	5	4	3	2	1
54	I am compelled to violate the formal and administrative and policies owing to group/political pressures.	5	4	3	2	1
55	*My opinion is sought in changing or modifying the working systems/instruments and conditions here.	5	4	3	2	1
56	*There exists sufficient mutual cooperation and team-spirits among the employees of this department.	5	4	3	2	1
57	My suggestions and cooperation are not sought in solving even those problems for which I am quite competent.	5	4	3	2	1
58	*Working conditions are satisfactory here from the point of view of our welfare and convenience.	5	4	3	2	1
59	I have to do such work as ought to be done by others.	5	4	3	2	1
60	It becomes difficult to implement all of a sudden the new dealing procedures and policies in place of those already in practice.	5	4	3	2	1
61	I am unable to carry out my assignments to my satisfaction on account of excessive work load and lack of time.	5	4	3	2	1

SECTION 3: Mental Health Status

Please read carefully.

This section seeks to determine if youhave had any medical complaints, and how your health hasbeen in general, over the past few weeks. Please answer **all** the questions by **circling** the response which best describes your present and recent complains, not those that you had in the past.

Have you recently.....

ITEM	1	2	3	4
Been able to concentrate	Better than	Same as usual	Less than	Much less

on whatever you are doing?	usual		usual	than usual
Lost much sleep over worry?	Not at all	No more than usual	Rather more than usual	Much more than usual
Felt that you were playing a useful part in things?	More so than usual	Same as usual	Less useful than usual	Much less than usual
Felt capable of making decisions about things?	More so than usual	Same as usual	Less so than usual	Much less than usual
Felt constantly under strain?	Not at all	No more than usual	Rather more than usual	Much more than usual
Felt that you couldn't overcome your difficulties?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been able to enjoy your normal day-to-day activities?	More so than usual	Same as usual	Less so than usual	Much less than usual
Been able to face up to your problems?	More so than usual	Same as usual	Less able than usual	Much less than usual
Been feeling unhappy and depressed?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been losing self confidence in yourself?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been thinking of yourself as a worthless person?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been feeling reasonably happy, all things considered?	More so than usual	Same as usual	Less so than usual	Much less than usual

SECTION 4: Resilient coping ability

This section seeks to assess your resilient coping ability. Consider how well the following statements describe your behavior and actions and tick the appropriate response.

	Does not describe me at all	Does not describe me	Neutral	Describes me	Describes me very well
I look for creative ways to alter difficult situations					
Regardless of what happens to me, I believe I can control my reaction to it.					
I believe I can grow in positive ways by dealing with difficult situations					
I actively look for ways to replace the losses I encounter in life.					

SECTION 5: Coronavirus Anxiety Scale

This section seeks to assess your feelings during the last two (2) weeks. In each case, please indicate your response by placing an "X" over the square representing HOW OFTEN you felt or experienced the following activities.

	How often have you experienced the following activities over the last two weeks?	**Not at all**	**Rare, less than a day or two**	**Several days**	**More than sevenday s**	**Nearly every day over the past two weeks**
1	I felt dizzy, lightheaded or faint, when I read or listened to news about the coronavirus.					
2	I had trouble falling or staying asleep because I was thinking about the coronavirus.					
3	I felt paralyzed or frozen when I thought about or was exposed to information about the coronavirus.					
4	I lost interest in eating when I thought about or was exposed to information about the coronavirus.					
5	I felt nauseous or had stomach problems when I thought about or was exposed to information about the coronavirus.					

APPENDIX 2: CONSENT FORM

Project Title: OCCUPATIONAL STRESS, RESILIENT COPING ABILITY AND MENTAL HEALTH STATUS OF POST-GRADUATE MEDICAL RESIDENTS AT THE KORLE-BU TEACHING HOSPITAL.

Principal Investigator: Dr. Gifty Naa Maanum Quarshie-Ngissah (Postgraduate student of the School of Public Health, University of Ghana, Legon)

You are invited to take part in this research study, before you decide to, please take time to read the following information carefully and decide whether or not you wish to take part.

General information:

Occupational stress is an important concern for stakeholders in the healthcare industry. High level of occupational stress have been linked to poor physical and mental health. Post-graduate medical residents are exposed to numerous stressors during their post-graduate training such as long working hours, poor management practices, high patient work load, distant accommodation, lack of recreational services, being evaluated without enough training, gender related issues, being under mental and physical pressure from their superiors and patients, indebtedness, lack of social and financial support among others. The current COVID-19 pandemic is also an additional stressor. The effect of occupational stress on the mental health status of medical residents can have a profound impact on their ability to work. The quality of their personal or professional life ultimately affect patient care adversely. Medical residents with high resilience coping ability (ability to cope adaptively to stress) have been shown to have better mental health status.

This study therefore seeks to evaluate the levels of occupational stress, resilient coping abilities and the mental health status among post-graduate medical residents working in various medical specialties at the Korle-Bu Teaching Hospital. It is also explore the functions of resilient coping abilities in moderating the influence of stress on mental health status of the residents as well as determining the psychological effect of COVID-19 on medical residents.

This is purely for academic purposes and forms part of the requirement for the award of Masters' Degree in Public Health. The researcher has no conflict of interest in this study.

This survey will require you to answer a number of questions beginning with information about yourself. All information will remain anonymous and confidential, but will be used to understand who has taken part in this study. You will also be asked some questions covering Occupational stress, Resilient coping abilities, mental health status and COVID-19 anxiety.

Potential Risks and Discomfort:

Some questions in this questionnaire may elicit some unpleasant feelings, memories or thoughts. Please call any of the following numbers for counseling if you feel distressed during or after answering this questionnaire: 0244738022 or 0243207170 (Ghana Psychological Association). You may choose to stop participating in this study if it causes you significant distress.

Possible Benefits:

Your involvement in this study will not directly benefit you but indirectly your response may influence decision making as to how to make effective stress management protocols and resilience training for residents so as to improve their overall mental health status and would also guide future residents in making decisions about specialty choices.

Confidentiality:

Information provided will be protected to the best of my ability. You will not be named and any information that could lead to your identification will not be presented in the study. Anonymity will be ensured.

Compensation:

There will be no compensation either in cash or kind for your involvement in this study.

Additional Cost:

The study is purely academic work and so there is no financial incentives attached to it. Your involvement will also not cost you in any form.re is no additional cost to the participant.

Voluntary Participation and Right to leave research:

Your participation in this study is voluntary. You therefore have the right to withdraw from the study at any point in time. If you wish to withdraw, you may have to inform the interviewer and your request would be granted. Nonetheless, your full participation is highly encouraged.

Termination of participation by researcher:

There is no anticipated circumstance under which your participation may be terminated by the interviewer.

Contacts for Additional Information:

If you have any question(s) or further clarification concerning this study and/or the conduct of the researcher and research assistants, please do not hesitate to contact the following:

Dr. Irene Kretchy,
Department of Clinical Pharmacy and Practice,
School of Pharmacy, University of Ghana, Legon,
Email: ikretchy@ug.edu.gh, Phone: 0206301543 OR

Dr. Gifty Quarshie-Ngissah,
School of Public Health, University of Ghana, Legon,
Email: gnmqngissah@gmail.com, Phone: 0206301543 OR

Mr. Nortey,
Research and Development unit at the Medical Directorate, Central Admin Block, KBTH,
P. O. Box, 77 Accra, Ghana, Email: rdo@kbth.gov.gh
Phone: + 233-302666766

Your right as a Participant

This research has been reviewed and approved by the Institutional Review Board of Korle Bu Teaching Hospital for Medical Research (KBTH-IRB). If you have any questions about your rights as a research participant you can contact the IRB Office between the hours of 8am-5pm through the landline ***0302666766 or email addresses: rdo@kbth.gov.gh***

VOLUNTEER AGREEMENT

The above document describing the benefits, risks and procedures for the research, **Occupational stress, Resilient coping ability and mental health status of post-graduate medical residents at the Korle-Bu Teaching Hospital** has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer on condition that no reference should be made under any conditions to my real identity with other individuals.

Name and signature of Participant:

Date:

.....

Name and signature of Researcher: **Date:**

Cynthia Owusu-Ansah 08/2020

APPENDIX 3: ETHICAL CLEARANCE APPROVAL

In case of reply the number
And the date of this
Letter should be quoted
My Ref. No. KBTH/Pmb/05/20
Your Ref. No.

KORLE BU TEACHING HOSPITAL
P. O. BOX KB 77,
KORLE BU, ACCRA.

Tel: +233 302 667759/673834-4
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Email: info@kbth.gov.gh
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Website: www.kbth.gov.gh

30th July, 2020

DR. GIFTY NAA MAANUM QUARSHIE-NGISSAH
SPECIALIST OBSTETRICIAN AND GYNECOLOGIST
MIDWAY CLINIC
ACHIMOTA-ABOFU

OCCUPATIONAL STRESS, RESILIENT COPING ABILITY AND MENTAL HEALTH STATUS OF POST-GRADUATE MEDICAL RESIDENTS AT THE KORLE- BU TEACHING HOSPITAL

KBTH-IRB /00072/2020

Investigator: DR. GIFTY NAA MAANUM QUARSHIE-NGISSAH

The Korle Bu Teaching Hospital Institutional Review Board (KBTH IRB) reviewed and granted approval to the study entitled: **"Occupational Stress, Resilient Coping Ability and Mental Health Status of Post-Graduate Medical Residents at The Korle- Bu Teaching Hospital"**

Please note that the Board requires you to submit a final review report on completion of this study to the KBTH-IRB.

Kindly, note that, any modification/amendment to the approved study protocol without approval from KBTH-IRB renders this certificate invalid.

Please report all serious adverse events related to this study to KBTH-IRB within seven days verbally and fourteen days in writing.

This IRB approval is valid till 30th May, 2021. You are to submit annual report for continuing review.

Sincere regards,

DR. DANIEL ANKRAH
VICE CHAIR (KBTH-IRB)
FOR: CHAIR (KBTH-IRB

Cc: The Chief Executive Officer, KBTH

The Director of Medical Affairs, KBTH