ASSOCIATION BETWEEN EMOTIONAL DISTRESS TOLERANCE AND DEPRESSION AMONG POSTGRADUATE MEDICAL TRAINEES IN THE UNIVERSITY OF NAIROBI

DR. ODHIAMBO EDWARD FESTUS

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DECLARATION OF ORIGINALITY FORM

I declare that this is my original work and has not been presented in any other high institution for any award.

Student name	Signature	Date
ODHIAMBO EDWARD FESTUS		10/07/2021

APPROVAL OF SUPERVISORS

This Research Dissertation has been submitted for examination with our approval as the University Supervisors.

Dr. Pius Kigamwa

Signature _____ Date 10/07/2021

Prof. Muthoni Mathai

Signature _____ Date: 10/07/2021

DEDICATION

This dissertation is dedicated to my late mother and my daughter.

ACKNOWLEDGEMENT

I would like to acknowledge my family for their support, my colleagues, staff and the Administration of the psychiatric department at the University of Nairobi for their support during this process.

I would also like to acknowledge my supervisors Prof. Pius Kigamwa and Prof. Muthoni Mathai for their support and guidance in training and research.

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Abstract

Introduction

Mental health is a concern to society. Medical students go through a lot of stressors due to the complexity of their work, family issues, as well as college work. Therefore, they become vulnerable to mental illnesses, which can negatively affect their grades and lives in general. This study aims at researching Distress Tolerance (DT) as a possible resilience factor in the development of depression among students.

Objective

The objective of the study is to determine if distress intolerance is associated with depression among medical registrars in the UON.

Method

The current study usedan analytical cross-sectional design using quantitative methods of data collection. The area of study was the UON School of medicine, which is located at Kenyatta National Hospital and Mathari teaching and referral hospital. The study targeted280 postgraduate medical students from 2013 to date since most of the courses last for six years, but there are still some students who take up to 10 years before they complete their course because of different challenges. The primary outcome measures used the Becks depression Inventory and the distress tolerance scale.Data collection was through Google forms administered questionnaires. Data entry and analysis was by STATA vERSION16. All measures were self-reported.

Results

Out of the 280 targeted sample size, 258 responded which represents 90% of the response required where 51.6% were male and 48.4% female.Most of the respondents were in the younger age of 20 -30 years (45.9%) and only 11.9% were above 40 years of age.Among the respondents, 32.3% were in their year one of study, 20.3% in year two, 24.5% in year three and 22.9% in year

four or above.Majority of the respondents were employed (80.2%) and most of the students were self-sponsored (54.7%). More than half (54.5%) of the respondents were married, and majority (64.4%) were not involved in social activities. Among the participants, 137(53.5%) reported normal BDI score, while 23(9.0%) reported mild depression,77(29.3%) moderate depression, and 21(8.2%) had severe depression.

Conclusion

Based on the objectives of the study, it was found out that medical registrars were vulnerable to depression based on social demographic characteristics like age, gender, and marital status. Female students were found to be more susceptible to depression than male students. It was also found out that the risk of experiencing depression is also dependent on the age of the students. The older students were found to be more susceptible to depression compared to the younger students. Marriage life showed good prognosis because they showed to be less depressed than the divorced and singles. The findings also indicate that distress tolerance was found to be related to depression among the medical registrar.

1 INTRODUCTION AND BACKGROUND

1.1 Introduction

Mental health is a concern to society. Medical students go through a lot of stressors due to the complexity of their work, family issues, as well as college work. Therefore, they become vulnerable to mental illnesses, which can negatively affect their grades and lives in general (Landow, 2006). This study aims at finding ways of preventing and diagnosing mental problems before they become a disorder by researching Distress Tolerance (DT) in association with depression. According to Verna (2005), with the continued different challenges affecting medical students, they end up developing mental illnesses, but they do not want to disclose that information to other people for fear of stigmatization. Therefore, it is indispensable to conduct this study at this time to find ways of preventing and diagnosing possible mental problems facing the students before it becomes a disorder. So far, no research has ever been done on distress tolerance in Kenya, and this makes the current study justifiable.

1.2 Background of Information

Medical students face different challenges that lead to a change of their lives, including poor academic performance; some differ from taking other causes, while even the bright ones tend to perform poorly in the long run (Eiko& Randolph, 2015).

Below is the University of Nairobi Annual report 2009-2014 showing that the number of grandaunts is lesser than those that were enrolled in a course

Year	Enrollment	Grandaunts
2011	259	110
2012	557	120
2013	557	106
2014	569	113

For this study, more attention is on the capacity tolerate negative emotions, as measured using the distress tolerance scale (Simons and Gaher, 2005). Simon and Gaher define emotional distress tolerance as "the ability to experience and withstand negative psychological states" (p. 83). While Zvolensky et al. (2011) defined DT as "one's supposed ability to tolerate emotional distresses" (pp. 13-14).

In the past, some students have been documented to have suffered depression, which affected their work, and some even ended up committing suicide. Such problems that could have started when they were undertaking their courses could have been diagnosed and prevented before they reached such a critical stage (Magudha, 2019). In the recent past, one of the Kenyan doctors undergoing training in Cuba was alleged to have committed suicide. (By Gloria Magudha for Citizen Digital published on March 18, 2019)

1.2.1 The Stress-Depression Connection

Stress is indispensable because it keeps a person alert and readyto respond to the threat. However, too much stress has been documented to cause depression. Even in some major positive life events such as marriage and new job stress can lead to major depression if not well articulated. It is, however, important to point out here that around 10% of people with depression suffer from major depression without any known or major triggers (WHO, 2019). Charmandari et al. (2005) suggest that in the presence of stressful situations, the sympathetic nervous system with increased release of adrenaline, which mobilizes the body's defenses in preparation for fight or flight. This condition is characterized by numerous behavioral adaptations, such as augmented attention, loss of appetite, as well as increased respiratory rate. This characterizes the normal short-term bodily response to stress.

The other deliberate part of the stress-response system is the engagement of the hypothalamic Pituitary-Adrenal Axis (HPA), which leads to the activation of cortisol in the

adrenal glands. Cortisol, often termed as the stress hormone, has various biological functions (Zamans et al., 2014). Students in medical school have long been recognized to encounter too many stressors that affect their wellbeing. Together with daily life stressors, they must face stresses in the medical school, which includes work overload, financial stress,and limited leisure time. Etc. As compared to other students, medical students have been reported to have a higher level of stress and depression. Results on a study of 304 first-year and second-year medical students showed a 12% incidence of major depression. Predictors of depression in these studies were found to include the history of major depression or other mental health problems, family history of depression, professed medical school stress, and vulnerability characteristics (Kraemer et al., 2016). A supportive family or being married was found to be protective factors. This study also aims to assess if family life has an impact on the mental wellbeing of postgraduate medical students.

1.3 Problem Statement

For the last decade, postgraduate medical registrars of the University of Nairobi have had some contentious issues as they navigate between the training requirements and their personal lives. Generally, it is assumed that medical registrars are admitted when ready to study in different specialties without considering the amount of stress they undergo during their period of learning which may include workload, financial constraint, academic pressure, family pressure, exposure to patients suffering among others. It is not until recently that the Kenya Medical Practitioners and Dentist Union (KMPDU), advocated for policies to promote theirphysical, mental, and social wellbeing of undergraduate and postgraduate medics.

According to Cruess and Steinert (2016), medical students tend to develop depression due to different challenges facing them, something that leads to extended problems later in

professional life and compromising patient care. A study conducted by Ngasa et al (2017) in regards to the mental stress of the medical registrars at the UON, which is the primary focus of this study, no data and no research is highlighting the early detection of depressive symptoms. The proposed study seeks to determine if the distress tolerance scale Simons and Gaher (2005) can be used to assess distress tolerance amongst the medical registrars in the UON and whether this is significantly associated with depression.

2 LITERATURE REVIEW

2.1 Introduction

This chapter entails literature on studies done on the schooling life of both postgraduate and undergraduate medical students and the effect on their mental wellbeing. It also puts into consideration the coping efforts made by different individuals in tackling the stresses, different tools used to weigh the ability of students to cope with the stresses and depression as one of the outcomes of negative distress tolerance.

A study done in the United States on medical schools documented that 47% of the students who responded had at least one issue related to mental health or substance use, with stress affecting 26% among the group. Unfortunately, 76% of the students were concerned about discretion and the possible effect of having connected stress issues appearing in their academic records. However, the study did not highlight the coping mechanisms involved in dealing with the stresses. Also,the study did not touch on the various issues and moderators that may influence the effects of the stressful situations encountered.

Certain characteristics place medical students at increased risk of stress. A study done at the University of Manitoba documented that medical students have high individual standards and principles, which proves to be beneficial when it comes to entering the highly competitive medical school. These principles were linked to perfectionism leading to increased concern about educational performance. These features were also considerably connected to common symptoms of neuroticism and were predictive of depression and feelings of hopelessness at follow-up (Verna, 2005). However, the study only focused on medical students in general but did not divide them according to the course being taken or level of study having different stresses. For example, it did not consider the fact that at postgraduate level the medical students could be encountering more stress than undergraduates

In her study on mental health crisis for graduate students Collen (2018) reported that there are high rates of depression and anxiety among graduate students with many students reporting little help or support from supervisors. The paper was based on a survey using clinically authenticated scales for anxiety and depression presented to students via email and social media, with 2,279 respondents among them being 90% Ph.D. students from 26 countries and 234 institutions, 39% scored in the range of moderate to severe depression as compared to 6% in the overall population which was earlier studied with the similar scale. The authors asked the respondents if they experienced a good work-life balance. Among the students with moderate to severe depression, more than half (55%) disagreed, and (21%) agreeing with the statement. Thus the author relates that good work-life stability is considerably linked to better mental health results. The author also found out that among the students with anxiety and depression, more than half did not agree to their immediate mentors providing real mentorship.(about 1/3 of both groups agreed).

In an article by Zaman et al. (2014)a survey which was carried out in three postgraduate medical institutions in Dhaka, Bangladesh in 2013, 100 students were presented with preformed questionnaires using work-related, social-economic, and demographic variables to diagnose depression. The Hamilton rating scale for depression (HAN_D) was used to assess the severity of depression among the students. 53 students (53%) responded at the appropriate time. Among them, depression was diagnosed in 21(39%) of the respondents. Contributing factors included low income, inadequate study time, staying away from relatives, smoking, and marital status I.e. the divorce among women. The conclusion was made that an estimated two-fifth of postgraduate medical trainees had mild to moderate depression.

Kulsoom and Nasir(2015) carried out a study at the Alfais University in Riyadh, Saudi Arabia, whereby all 575 medical students across 5 years of study were served with the Depression, Anxiety and Stress_21 scale (DASS_21) questionnaire anonymously twice, 2 weeks prior to a major exam and during regular class after the examination. Responded were 76.8% (pre-examination) and74.9% (post=examination). The majority were children of expatriates who worked in Saudi Arabia. Pre-exam depression was high at (43%, 63%, and 41%). This reduced to (30%, 47%, and 30%) after examination during a normal class period. Also noted was that smoking and female gender predicted higher levels of baseline depression, anxiety, and stress.

In the same study, the Depression Anxiety Stress Scale (DASS-21) scores were considered with the level of study. It was noticed that there was a high level of stress among 1st-year students, attributed to the high workload. However, the level peaked up in year 4, when clerkship starts, and students have to rotate in different departments in the hospital as a method of training. Year 4 scored highest in terms of depression and anxiety scores.

Considering the fact that stress, depression, and anxiety can vary depending on different factors, and the relation between DASS-21 scores in a study carried out simultaneously in Saudi Arabia and Egypt by a single team which found out that the level of depression among students in Saudi Arabia was lower than that of their counterparts in Egypt (even though the study was done in their own countries). However, the study done in the same setting found that Saudis were more depressed than there expatriate counterparts.

2.2 Stress Coping Strategies

In a study conducted at a medical college in India about stress and coping styles in medical students (Datar et al., 2017) with 200 out of 233 postgraduate students participating, the students were served with three scales, 1. Perceived stress scale (PSS). 2. Brief cope scale by

Carver (1997) and the 3, Self-reporting questionnaire (SRQ-20). The mean PSS score was 17.96 (the domain of stressors was 88% academic performance, 83% responsibility at the workplace, 77% worry of future careers, 66% interpersonal relationships, 39.55 financial issues, and 36.5% family problems. The mean SRQ score was 4.98.

Coping strategies on brief cope were divided into

1. Problem-focused coping strategy with a mean score of 14.4 (i.e. active coping, use of instrumental support, planning.),

2. Emotional coping strategy, mean score21.52, (involves acceptance, emotional support, and humor, spiritual),

3. Dysfunctional strategies with mean score 20.9 (i.e. behavioral disengagement, denial, substance use). The study clearly showed that students using dysfunctional coping strategies were highly vulnerable to stress and psychological morbidity whereas on the other hand use of healthy emotionally focused strategies helped students to handle stress better.

A research conducted by Idzai Muchabaiwa (2016) on the levels and impacts of stress on academic performance of master's students from the University of Nairobi revealed that most postgraduate students experience stress but react to stressors differently depending on their gender roles and responsibilities. The study further revealed that there is no single factor that is related to stress but a wide variety of factors are connected to stress. These factors include work-related pressures, family responsibilities, and anxiety during the examination, and absence of lecturers, among many others. The study also documented that female students are affected by stress differently from male students. Male students tend to have stronger coping mechanisms compared to female students.

However, the study also revealed that courses taken also tend to play a key role in determining the level of stress affecting the students. For instance, Mwakughu (2011) confirmed that over 70% of medical students experience stress during the study and that stress impacts negatively on their family and academic life. However, the study that focused on undergraduate students indicated that there is hardly any comprehensive study articulating postgraduate students. Therefore, the current study will play an essential role in investigating the issue of stress tolerance among postgraduate students.

Another study conducted by Ndegwa, et al (2017) on factors influencing alcohol use among university students in Kenya indicated that students with depression, anxiety, and PTSD were also likely to abuse drugs. However, male students were found to indulge in drug abuse more than female students. The study also revealed that students living off-campus had a higher prevalence of drug abuse. The study also pointed out that there are suicidal attempts by students who are confronted by difficult schoolwork and handling home issues. On the contrary, Chinawaet al (2017), in their study on determinants of depression among medical students in South East Nigeria found that depression cannot be correlated to gender, age, and socioeconomic factors. Although the researchers point out that, previous studies indicate that major depression is twice as common in women as in men; it is unclear why this is so. In their review, the researchers pointed out that a family history of depression and poor school performance are additional risk factors.

Another study conducted by Nwobi, et al (2009) on depression and coping strategies among medical students of the University of Nigeria found out that factors related to the academic environment were associated with depression but only a minimal proportion of the affected students sought medical advice. 76% of the respondents were not satisfied with the

duration of medical education. In this regard, it is apparent that the long duration of the study depresses students who think that it takes a long time before they complete the course. 57% of the respondents believed that the lecturer's attitude affected their learning process. In light of this, such students might develop a negative attitude towards the course and get depressed over the issue given the fact that they do not have a choice of choosing lecturers of their choice. With little evidence of medical students seeking mental medical advice, the authors recommended a yearly mental health screening for medical students.

The study also found out that 23% of the respondents had a fear of failure that plays a critical role in affecting their learning process. Such students would feel depressed about the outcome of exams and probably the aftermath of life after college. This was also complemented by 11% of the respondents that felt that their dual role of being a spouse/parent affects their learning progress. Students with family responsibilities play a dual role, and trying to balance the two is a daunting experience. Any failure on either the academic side of the family side can have detrimental effects on the life of the student. This may end up affecting both academic performance and personal life of the student. Although most of the students that have dual roles as parents/spouses and students have to ensure that they balance both roles, something that tends to be difficult to some of them. According to the study, those students that have to travel from their place of work and homes find it stressing, especially when they have to be in class on time or at their place of work.

2.3 Distress Tolerance

Brandt (2013) researched Distress Tolerance, Emotion Deregulation, Anxiety, and Depressive Symptoms among HIV+ Individual and broadly focused on them based on individual differences in the capacity to tolerate aversive internal state (e.g. Pain, body sensation, negative

emotions etc.). However, scholars studying distress tolerance suggest it should be narrowed down to specific types of distresses, i.e. tolerance of ambiguity, intolerance of uncertainty, discomfort intolerance, distress intolerance of negative emotion, and frustration tolerance.

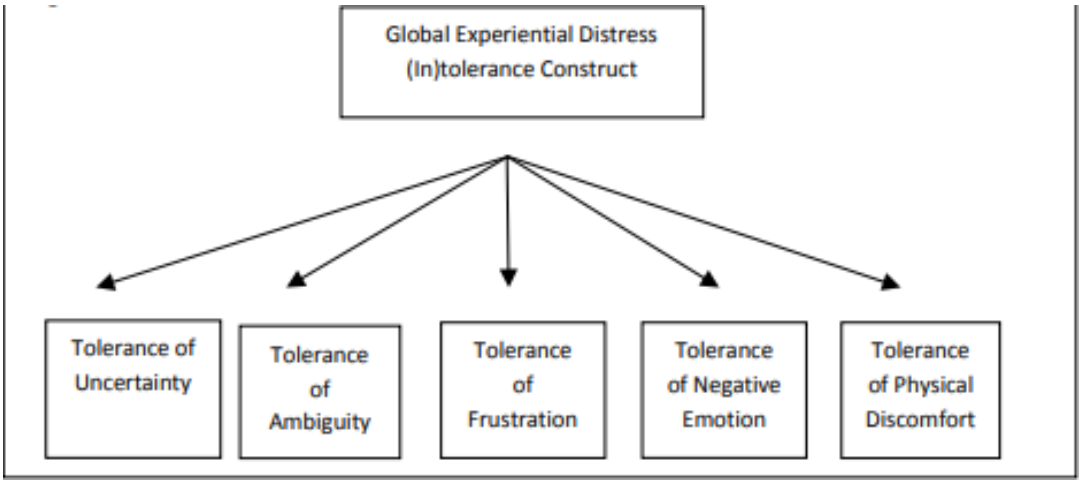


Fig. 1: *A model of emotional distress tolerance* (Simons and Gaher, 2005).

Much attention and research have focused on distress tolerance due to its possible role in psychopathology. Zvolensky, Leyro, Bernstein and Vujanovic (2011), described distress tolerance as an individual factor for stress responsibility and psychological vulnerability.

Distress tolerance can be measured in two dimensions:

(a) As the supposed capability to endure aversive emotional and physical state, using self-report measures e.g. Distress tolerance scale (Simon and Gaher (2005), discomfort intolerance scale (DIS, Schmidt, richey and fitzpatric (2006).

(b) The behavioral acts of holding internal state induced by certain kinds of external stressors i.e. measured via the latency to discontinue distressing tasks like a breath-holding task (Zvolensky et al 2011).

The distress tolerance scale is a 14 item self-report measure by which participants indicate using a 5-point Likert-type scale (1-strongly agree to 5- showing strongly disagree).

2.4 Depression Measuring Instruments

Other scales are used to determine the level of depression but which are applicable for certain instances. For instance, The Hamilton Depression Rating Scale is one of the widely used scales to measure the severity of depression among the inpatients. On the other hand, the Beck Depression Inventory is also a widely used scale used to measure emotional, behavioural, and somatic symptoms. Another major scale used is the Major Depression Inventory used for the diagnosis of depression. The scale is used to test the mood and lack of interest, which are considered as the main symptoms of depression. Conversely, the Geriatric Depression Scale was developed to be used on elderly patients. Although the scale is viable to ascertain the level of depression among the patients, it does not apply to the youths that are the majority of the medical students.

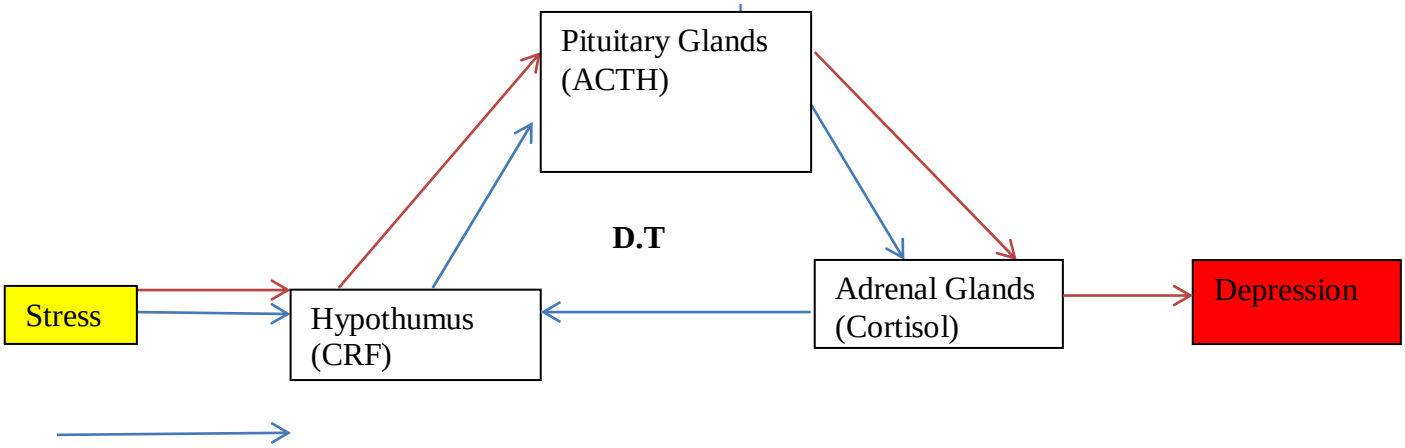
This study will be using the distress tolerance scale (DTS) and Becks depression inventory (BDI). The DTS scale can be used to assess the capacity of the students to withstand negative psychological states. The scale will be indispensable in ascertaining the level of tolerance by the students.

2.5 Theoretical Framework

Concerning theabove-discussed literature and background of information, the researchers postulated that medical students are at risk of stress and that they are afraid of discretion and possible effects of having connected stress issues appearing on their academic records. In her study, a mental health crisis for graduate students Collen (2018) indicated that there is a high rate of depression and anxiety among graduate students, with many of them reporting little help or

support from supervisors. Also, it is also reported that chronic stress can lead to depression as it is stipulated in a study by Kulsoom and Afsar (2015) whereby it was noticed that there was a high level of stress among 1st-year students, with the level peaking up in 4th year.

According to Charmandari et al. (2005), the connection between stress and depression, considering the action of HPA can easily be summarized as shown in the diagram below. However, it is appropriate to have in mind that childhood socialization and biological factors can also determine the capability to tolerate stress and the possibility of going to depression.



Shows short term exposure to stress

Shows long-term exposure to stress which leads to depression

The figure summarizes the part of the stress response system by the hypothalamic pituitary adrenal (HPA) axis. (Blue arrows)

I. The stress response is started by the discovery of an intimidating event(yellow)

II. Neurons in the Para Ventricular Nuclei (PVN) of the hypothalamus discharges corticotrophin-releasing factor (CRF), among other chemicals

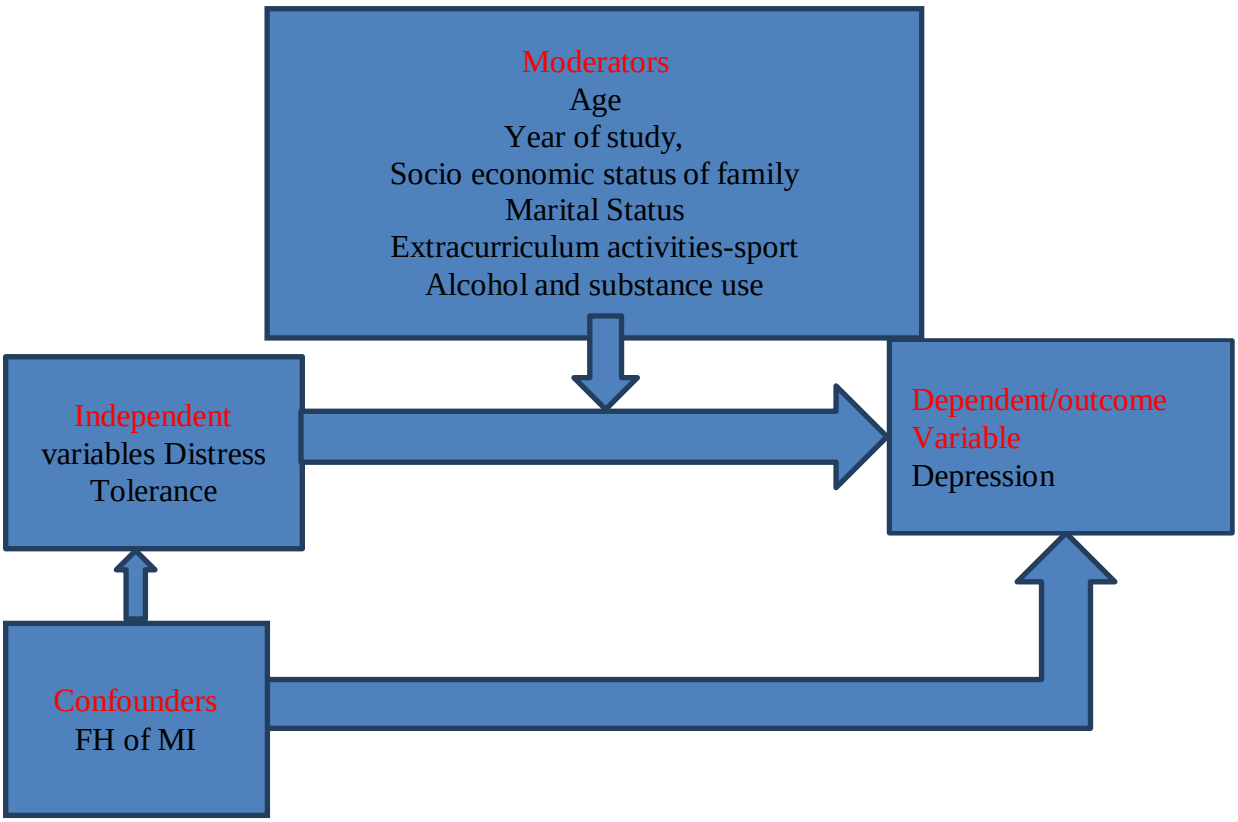
III. . CRF then causes the pituitary gland to release Adrenocorticotrophic Hormone (ACTH), which travels through the bloodstream.

IV. Eventually, ACTH reaches the adrenal cortex (located in the adrenal glands on the kidneys), mandated to synthesize and releasing stress hormones (glucocorticoids), particularly cortisol.

V. Cortisol, often termed as the stress hormone, has various biological functions, including mobilizing energy for action and modulating the cardiovascular and immune systems. Cortisol influences our emotional and cognitive responses to life events. The release and circulation of cortisol is necessary for normal functioning,

VI. (red arrows) but chronic exposure to stressors can induce long-term activation of the HPA and subsequent cortisol release, which is associated with a variety of harmful outcomes, including depressive symptoms, memory problems, immune system suppression, and the development of chronic diseases (Zamans et al., 2014).

2.6 Conceptual Framework



Every situation has some stress on it. Medical students (registrars) experience different stress during their study period, including workload, family issues, and other socioeconomic issues. Studies have shown that each person has got an individual capacity to tolerate stress. This is the reason why distress is presented as an independent variable. Additionally, persons with a weak tolerance to stress are susceptive to different mental disorders, which may include depression. This is the reason why depression is considered as a dependent variable. The above conceptual framework assumes that an individual might be having a family history of depression or other underlying mental illness, which appears as an independent variable. On the other hand, since each individual undergoes stresses, the study wishes to investigate if other moderators such age, year of study, economic status, marital status, drug abuse, and substance abuse, and sports, may contribute as coping strategy to overcome stress and has been found to and this strengthens the capability to tolerate stress, that is why the above variables are being investigated as moderators.

2.7 Justification

Although there are past researches that have been conducted on distress tolerance, none of them has specifically touched on postgraduate medical trainees, and different specializations being studied. In this regard,the proposed study would contribute to developing programs based on distress tolerance to support registrars and other medics to prevent depression.

2.8 Significance

With such a deliberation, it is apparent that the current study is important because it does not only touch on distress tolerance association with a mental disorder but also goes deep to investigate whether the year of study and different specializations have effects on the ability to tolerate different stressors encountered in the course of the medical postgraduate training

program. The study adds knowledge to the already existing literature and forms the basis for future research. The proposed study would contribute to developing programs based on distress tolerance to support registrars and other medics to prevent depression.

2.9 Hypothesis

1. Distress tolerance is inversely related to depression, with negative distress tolerance indicating the risk of going into depression

2. Depression is not related to the individual capability to tolerate stress, with negative distress tolerance not associated with the risk of ending into depression.

2.10 Research Questions

1. What is the level of the levels of distress tolerance among individual medical registrars in the UON College of Health Sciences?
2. What is the severity of depression among individual medical registrars?
3. What is the association between distress tolerance and depression among medical registrars at the University of Nairobi?
4. What is the association between distress tolerance and sociodemographic factors like age, gender, level of study?

2.11 Study Objectives

2.11.1 Broad Objective

To determine if distress intolerance is associated with depression among medical registrars in the UON

2.11.2 Specific Objectives

1. To assess the levels of distress tolerance among individual medical registrars in the UON College of Health Sciences
2. To determine the prevalence and severity of depression among individual medical registrars
3. To determine the association between distress tolerance and depression,medical registrars in the University of Nairobi
4. To determine the association between distress tolerance and sociodemographic factors like age, gender, level of study.

3 METHOD

3.1 Study Design

The current study used an analytical cross-sectional design using quantitative methods of data collection.

3.2 Area of Study

The area of study was the University of Nairobi School of medicine, which is located at Kenyatta national hospital and Mathari teaching and referral hospital.

3.3 Study Population

The study targeted postgraduate medical students from 2013to date since most of the courses last for six years, but there are still some students who take up to 10 years before they complete their course because of different challenges. The population was composed of students who were government sponsored and some of them were self-sponsored, some were married, and some single. And some were employed, while others were unemployed. The whole population of postgraduate students, as by 2019 is 936. The sample size was calculated from this population (reference, appendix IV).

3.4 Sample Size Determination

Postgraduate medical training at the University of Nairobi comprises 16 different courses, i.e., without considering the masters of Science courses. The total population of students as per the records achieved from the dean's office is 936 students, with 551 male students and 385 female students. Amongst the 936, there are 43 international students, mainly from Somali, Botswana, Cameroon, Namibia, Ghana, Nigeria, Uganda, Liberia, Zambia, Zimbabwe, sierra Leon, Burundi, and D.R. Congo.

The sample size was calculated using the Yamane (1967:886) Simplified formula for calculating sample size.

$$n = \frac{N}{1 + (e)2}$$

Where n is the sample size of the target population to be studied

N is the entire population of medical registers in the UON

e is the level of precision, which is (0.05).

Thus, as per the equation, my sample size is supposed to be

$n = \frac{N}{1+ (e)^2}$ = $n = \frac{936}{1+ 936(.05)^2}$ = 280 respondents.

3.5 Sampling Procedure

Thetargeted was 280 students from the University of Nairobi College of health sciences, which is comprised of 16 different departments as indicated in appendix I. A stratified random sampling was used to ensure the sample from each department was proportionate to the size of each department. A list of students was obtained from the departments, names were randomly selected from the list, and the selected was contacted through the chief registrar, who was provided with the Google Formlink so that he or she could post it on the WhatsApp group. For exclusion, in case a selected person refused to participate, the procedure of selection through the acquired list was repeated until the required population was reached.Due to the current coronavirus pandemic, I used Google Form to gather information from the respondents. The information in Google Formincludedan informed concept, approval details from the ethical body, steps to follow in completing the survey, ethical considerations, and any other information that the respondents wanted to know about the study.The respondents had the opportunity to follow up on the study by contacting me through the phone number given below.

3.6 Data Collection Instruments and Procedure

3.6.1 Distress tolerance scale (Simons and Gaher, 2005)

The distress tolerance scale is a 14 item self-report measure by which participants respond to the questions using a 5-point Likert-type scale (1-strongly agree to 5- showing strongly disagree). The scale has been shown to have internal consistency with Cronbach alpha coefficients reported between 0.72 and 0.82. Internal consistency in the scale identified included tolerance, appraisal, adoption, and regulation. This scale was preferred because it assesses the extent to which the respondents believe they can experience and withstand distressing emotional states.

3.6.2 Becks Depression Inventory (BDI)

BDI is known for its construct validity for college students with an alpha rating of 0.93 and outpatients with a rating of 0.92 (Aaron, 2019). BDI consists of statistics solutions that can be used by researchers and statisticians in administering the survey instruments, collecting data, conducting analysis, and when interpreting the results.

Scoring the BDI

After completing the questionnaire, the number to the right of the questions is added for all the 21 questions. The total score may range from anywhere between 0 and 63.

Interpretation

- 1-13 (normal)
- 14-17 (mild depression)
- 18-27(moderate depression)
- 28-63 (severe depression)

3.7 Justification of Research Instruments

Distress tolerance shows the perceived or actual ability to withstand adverse effects or other aversive psychological and/or physical states (Brown et al. 2005; Leyro et al. 2010). Numerous conceptual models of psychopathology suggest distress (in) tolerance may play a central explanatory role in the production and maintenance of a variety of psychological disorders (Zvolensky et al. 2010).

Distress tolerance scale (Simons and Gaher, 2005)

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Becks Depression Inventory (BDI)

BDI is known for its construct validity for college students with an alpha rating of 0.93 and outpatients with a rating of 0.92 (Aaron, 2019). BDI consists of statistics solutions that can be used by researchers and statisticians in administering the survey instruments, collecting data, conducting analysis, and when interpreting the results. Zoilo, E. (2018) used BDI in his study and obtained the results when he wanted to test the validity and reliability of the tool.

Scoring the BDI

After completing the questionnaire, the number to the right of the questions is added for all the 21 questions. The total score may range from anywhere between 0 and 63.

Interpretation

- 1-13 (normal)
- 14-17 (mild)
- 18-27 (moderate)
- 28-63 (severe)

3.8 Data Presentation and Analysis

3.8.1 Statistical Analysis

Descriptive statistics for the baseline subject characteristics was as summarized in (Table 1). Study subjects were categorized into normal, mild, moderate, and severe depression (distress score of 21 and above) and low depression (below score of 21). The means and standard deviation of distress tolerance subscale and depression subscale scores were calculated by the subject characteristics. Measures of internal consistency and reliability (Cronbach's alpha) were performed for the distress items. Regression analysis was used with the continuous dependent variable of depression score, and logistic regression analysis was used with the dichotomous dependent variables of depression score categorized as depression versus no depression. The regression analysis included moderating variables, as described in the conceptual framework. Also, a plot of depression score and distress score were generated to visualize the relationship between the two scores.

3.9 Ethical Consideration

The approval from the University of Nairobi ethics and research committee and the study site administration was sought before the study started. The consent form the respondents were also very important before participation in the study. The informed consent explanation had information about the research objectives, the benefits, or risks for per-taking in the study. All respondents were assured of confidentiality and anonymity. No names were recorded anywhere on the tools, but instead, codes were used. The total number of postgraduate medical trainees was 936, and the study targeted 280 of them. To avoid stigmatization, the anonymity of the students was observed. No student was forced to respond. However, any student that wanted to be updated about the study was allowed to do so without necessarily disclosing their identity. The consenting process involved first introducing the topic to the respondents and the aim of the study. The respondents were also allowed to ask any questions regarding the study. The respondents were also allowed to withdraw from the study at any given time they want. The use of Google Form played a great role in executing the study at this time of coronavirus pandemic because the respondents filled in their responses online.

3.10 Data Management and Analysis

After data collection, quantitative analysis was done, 1st analysis of the general postgraduate population using the two instruments (i.e. DT-scale, BDI).2nd; then the data was analysed as per the different variables (i.e. a year of study, course, and gender) using STATA version16 package. The results from the Distress tolerance scale and the results from BDI were plotted in a linear chat alongside each other, and then the flow of the two lines was analysed to give a conclusion to their correlation.

4 RESULTS

4.1 Table 1: Summary of Participants by Social Demographic Characteristics

A total of 258 post graduate medical students responded to the interview, 51.6% male and 48.4% female. Most of the respondents were in the younger age of 20 -30 years (45.9%) and only 11.9% were above 40 years of age. Among the respondents, 32.3% were in their year one of study, 20.3% in year two, 24.5% in year three and 22.9% in year four or above. majority of the respondents were employed (80.2%) and most of the students were self-sponsored (54.7%). More than half (54.5%) of the respondents were married, and majority (64.4%) were not involved in social activities.

For those that participated in the study, 80.2% were employed while 19.8% were unemployed. Additionally, 116 (45.3%) of the students were government sponsored while 140 (54.7%) of the students were self-sponsored. 140(54.5%) of the students were married while 96 (37.4%) were single while 21 (8.2%) were either divorced or separated.

159 (64.4%) of the students were involved in extra-curricular activities and 88 (35.6%) were not involved in any extra-curricular activities.

For the programs of specialization taken, 63 (24.61%) of the students were undertaking internal medicine program of specialization. 45 (17.58%) of them were undertaking a programme of specialization in surgery. 43 (16.8%) of the students were undertaking a programme of specialization in radiology while 19 (7.42%) of the students were undertaking Obs/Gyn programme of specialization. 18 (7.03%) of the students were undertaking a programme of specialization in pathology. 12 (4.69%) of the participants were undertaking a programme of specialization in paediatrics while 22 (8.59%) of the students undertook other programme of specialization.

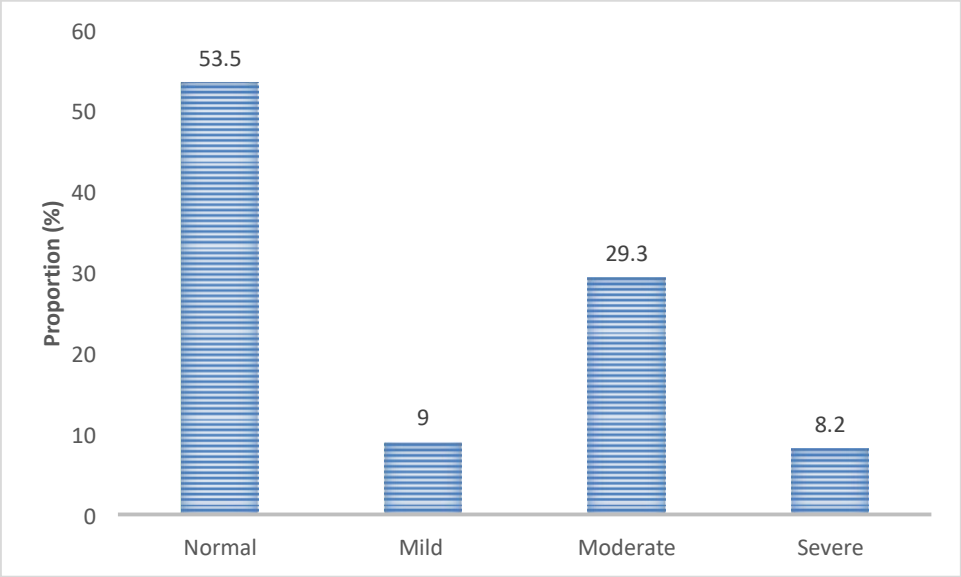
Table 1: Summary of participants by the social demographic characteristics

Social demographic	Category	n	%
Age	20-30	100	45.9
	30-40	92	42.2
	40+	26	11.9
Gender	Male	133	51.6
	Female	125	48.4
Year of study	Year 1	62	32.3
	Year 2	39	20.3
	Year 3	47	24.5
	Year 4+	44	22.9
Employment	Employed	202	80.2
Status	Unemployed	50	19.8
Source of fees	Government-sponsored	116	45.3
	Self-sponsored	140	54.7
Marital status	Married	140	54.5
	Single	96	37.4
	Divorced	21	8.2
Involvement in social activity	Involvement in social activity	159	64.4
	No	88	35.6
Programme of specialization undertaken	Internal medicine	63	24.61
	Surgery	45	17.58
	Radiology	43	16.8
	Obs/Gyn	19	7.42
	Ophthalmology	16	6.25
	Psychiatry	18	7.03
	Pathology	18	7.03
	Paediatrics	12	4.69
	Other*	22	8.59

4.2 Distribution of The Depression Based On BDI

The average BDI score was 13.4 (median score was 12.0) and scores ranged from 0 to 41. The BDI score was categorized into normal (0-13), mild (14-17), moderate (18-27) and severe (28-63) depression. Among the participants, 137(53.5%) reported normal BDI score, while 23(9.0%) reported mild depression,77(29.3%) moderate depression, and 21(8.2%) had severe depression (Figure 1).

Figure 1: Distribution of the depression based on BDI



Numerical representation of General Distribution of Depression Based on BDI

	N	%
Normal	137	53.3
Mild	23	9
Moderate	77	29.3
Severe	21	8.2

4.3 Table 2: Level of Depression by The Social Demographic Characteristics

60 (48%) of the female students had scored normal BDI. 19 (15.2%) scored mild depression while 32 (25.6) of them scored moderate depression and 14 (11.2%) of them scored severe depression. Among the participants, 79 (59.4%) of the males scored normal BDI scores while 4 (3%) scored mild depression and 43 (32.3%) scored moderate depression. Unlike female students that scored 11.2% on severe depression, only 7 (5.3%) of the males scored severe depression as per the BDI scores.

For the year of study, students on year one 28 (45.2%) scored normal while 27 (69.2%) of the students in year two scored normal on BDI score. For students in year three, 27 (57.4%) scored normal and 11 (25%) of the students scored normal. For mild depression, only 2 (3.2%) of the students in year one scored mild depression while 5 (12.8%) of the students in year two scored mild depression. In year three, 7(14.9%) of the students scored mild depression while 5 (11.4%) of the students in year four and above scored mild depression.

For moderate depression, 32 (51.6%) of students in year one scored moderate depression while 2 (5.1%) of the students in year two scored moderate depression. 6 (12. 8%) of the students in year three scored moderate depression while 21 (47.7%) of the ones in year four and above scored moderate depression. 0% of students in year one had severe depression. However, 12.8% of students in year two scored severe depression while 14.9% of the students in year three scored severe depression and 15.9% scored severe depression in year four and above.

In regards to the age, 68 (68%) of the students between 20-30 years scored normal BDI scores while 42 (45.7%) of those between 31-40 years scored normal. Only 6 (23.1%) of

students above 40 years scored normal. 4 (4%) of the students between 20-30 years scored mild depression while 134 (14.1%) of the students between 31-40 years scored mild depression. Only 1 (3.8%) of the students above 40 years scored mild depression. 26 (26%) of the students between 20-30 years scored moderate depression while 27 (29.3%) of the students between 31-40 years scored moderate depression. 12 (46.4%) of the students above 40- years scored moderate depression. Only 2 (2%) of the students between 20-3- scored severe depression. 10 (10.9%) of the students between 31-40 years scored severe depression and 7 (26.9) of the students above 40 years scored severe depression.

In regards to employment status of the participants, 108 (53.5%) of the employed scored normal BDI scores while 25 (50%) of the unemployed scored normal. 19 (9.4%) of the employed participants scored mild depression while 4 (8) of the unemployed scored mild depression. 62 (30.7) of the employed scored moderate depression while 13 (26%) of unemployed scored moderate depression. 13 (6.4%) of employed participants scored severe depression while 8(16%) of unemployed scored severe depression.

In regards to the sources of fees, 79 (56.4%) of self-sponsored participants scored normal BDI scores. 60 (52.7%) of the government-sponsored students scored normal BDI. 10 (7.1%) of self-sponsored students scored mild depression. 13 (11.2%) of the government-sponsored students scored mild depression. 38 (27.1%) of the self-sponsored students scored moderate depression. 35 (30.2%) of government-sponsored students scored moderate depression. For severe depression, 13 (9.3%) of self-sponsored students were found to have severe depression while 8 (16%) of the government-sponsored students were found to have severe depression.

In regards to marital status, 81 (57.9%) of the married students scored normal BDI scores while 57 (59.4%) of the single students scored normal BDI scores. None of the divorcees scored normal BDI scores. 16 (11.4%) of the married students scored mild depression while 7 (7.3%) of the single students scored mild depression. None of the divorcees scored mild depression. 39 (27.9%) of the married students scored moderate depression while 26 (27.1%) of the single students scored moderate depression. 10 (47.6%) of the divorcees scored moderate depression. 4 (2.9%) of the married students scored severe depression. 6 (6.3%) of the single students scored severe depression while 11 (52.4%) of the divorcees scored severe depression.

For participants that were not involved in extracurricular activities, 52 (59.1%) of them scored normal depression while 78 (49.1%) of those that were involved in extracurricular activities scored normal BDI scores. 8 (9.1%) of those that were not involved in extracurricular activities scored mild depression. 13(8.2%) of those that were involved in extracurricular activities scored mild depression. 24 (27.3%) of those that were involved in extracurricular activities scored moderate depression. 51 (32.1%) of those that were involved in extracurricular activities scored moderate depression. 4 (4.5%) of those that were not involved in extracurricular activities scored severe depression while 17 (10.7%) of those that were involved in extracurricular activities scored severe depression.

In regards to programme of specialization undertaken, 45(71.4%) of the students taking internal medicine scored no depression while 12 (26.7%) of students taking surgery scored no depression. 25 (58.1%) of students taking Radiology did not have depression. 7 (36.8%) of the students taking OBS/GYN did not score depression. 10 (62.5%) of those taking psychiatry did not score depression while 6(33.3%) of those taking pathology did not

score depression. 5 (41.7%) of those taking paediatrics also did not score for depression. For students taking other programmes of specialization, 13 (59.1%) of them did not score for depression.

For mild depression, 6 (9.5%) of students taking internal medicine scored mild depression while 7(15.6%) of those taking surgery scored mild depression. 2 (4.7%) of the students taking radiology scored mild depression and 2 (10.5%) of the students taking OBS/GYN scored mild depression. None of the students taking ophthalmology scored mild depression. The same case applied to those taking psychiatry because none of them scored mild depression. 2 (11.1%) of students taking pathology scored mild depression while 2 (16.7%) of those taking paeditrics scored mild depression. 2 (29.3%) of students taking other programmes of specialization scored mild depression.

In regards to moderate depression, 10 (15.9%) of students taking internal medicine scored moderate depression while 22 (48.9%) of those taking surgery scored moderate depression. 10 (23.3%) of students taking radiology scored moderate depression. 7 (36.8%) of students talking OBS/GYN scored moderate depression. 5 (31.3%) of the students taking ophthalmology scored moderate depression. 4 (22.2%) of the students taking psychiatry scored moderate depression. 8 (44.4%) of students taking pathology scored moderate depression while 5 (41.7%) of the students taking paediatrics scored moderate depression. 4 (18.2%) of the students taking other programme of specializations scored moderate depression.

For severe depression, 2 (3.2%) of the students taking internal medicine scored severe depression. 4 (8.9%) of the students taking surgery scored severe depression. On the other hand, 6 (14%) of the students taking radiology scored severe depression while 3 (15.8%) of the

students taking OBS/GYN scored severe depression. 1 (6.3%) of the students taking ophthalmology scored severe depression. None of the students taking psychiatry scored depression. 2 (11.1%) of the students taking pathology scored severe depression while none of those taking paediatrics scored severe depression. 3(13.6%) of those taking other programme of specializations scored severe depression.

Table 2: Level of Depression by The Social Demographic Characteristics

	Normal n (%)	Mild n (%)	Moderate n (%)	Severe n (%)
Gender				
Female	60 (48)	19 (15.2)	32 (25.6)	14 (11.2)
Male	79 (59.4)	4 (3.0)	43 (32.3)	7 (5.3)
Year of study				
One	28 (45.2)	2 (3.2)	32 (51.6)	0 (0)
Two	27 (69.2)	5 (12.8)	2 (5.1)	5 (12.8)
Three	27 (57.4)	7 (14.9)	6 (12.8)	7 (14.9)
Four +	11 (25)	5 (11.4)	21 (47.7)	7 (15.9)
Age				
20-30	68 (68)	4 (4)	26 (26)	2 (2)
31-40	42 (45.7)	13 (14.1)	27 (29.3)	10 (10.9)
41-50	6 (23.1)	1 (3.8)	12 (46.2)	7 (26.9)
Employment status				
Employed	108 (53.5)	19 (9.4)	62 (30.7)	13 (6.4)
Unemployed	25 (50)	4 (8)	13 (26)	8 (16)
Source of Fees				
Self-sponsored	79 (56.4)	10 (7.1)	38 (27.1)	13 (9.3)
Government-sponsored	60 (51.7)	13 (11.2)	35 (30.2)	8 (6.9)
Marital status				
Married	81 (57.9)	16 (11.4)	39 (27.9)	4 (2.9)
Single	57 (59.4)	7 (7.3)	26 (27.1)	6 (6.3)
Divorced	0 (0)	0 (0)	10 (47.6)	11 (52.4)
Involved in extra curriculum activities				
No	52 (59.1)	8 (9.1)	24 (27.3)	4 (4.5)
Yes	78 (49.1)	13 (8.2)	51 (32.1)	17 (10.7)
Program of Specialization				
Internal Medicine	45 (71.4)	6 (9.5)	10 (15.9)	2 (3.2)
Surgery	12 (26.7)	7 (15.6)	22 (48.9)	4 (8.9)
Radiology	25 (58.1)	2 (4.7)	10 (23.3)	6 (14)
OBS/GYN	7 (36.8)	2 (10.5)	7 (36.8)	3 (15.8)

Ophthalmology	10 (62.5)	0 (0)	5 (31.3)	1 (6.3)
Psychiatry	14 (77.8)	0 (0)	4 (22.2)	0 (0)
Pathology	6 (33.3)	2 (11.1)	8 (44.4)	2 (11.1)
Paediatrics	5 (41.7)	2 (16.7)	5 (41.7)	0 (0)
Other	13 (59.1)	2 (9.1)	4 (18.2)	3 (13.6)
Total	137 (53.5)	23 (9)	75 (29.3)	21 (8.2)

4.4 Table 3: Proportion of Subjects with Depression by Social Demographic Characteristics

A total of 65 (52%) female students recorded depression as compared to 54 (40.6%) of male students that recorded depression. However, more males 79 (59.4%) did not score for depression while 60 (48%) of female students did not score for depression. In regards to the year of study, 65 (52%) of students in year one recorded depression and 12 (30.8%) of students in year two scored for depression. 20 (42%) of the students in year three scored for depression and 33 (75%) of the students in year and above scored for depression. 28 (45.2%) of the students in year one did not score for depression and 27 (69.2%) of the students in year two did not score for depression. 27 (57.4%) of the students in year three did not score for depression while 11 (25%) of the students in year four did not score for depression.

For students aged 20-30, 32 (32%) of them scored for depression while 68 (68%) did not score for depression. 42 (45.7%) of the students aged 31-40 years did not score for depression while 50 (53.9%) of them scored for depression. For students above 40 years, 6 (23.1%) did not score for depression while 20 (76.9%) of them scored for depression. On the other hand, 108 (53.5%) of the employed students did not score for depression while 94 (46.5%) of them scored for depression. 25 (50%) of the unemployed students did not score for depression while 25 (50%) of them scored for depression. 79 (567.4%) of the self-sponsored students did not score for depression while 94 (46.5%) of them scored for

depression. 60 (51.7%) of government-sponsored did not score for depression while 56 (48.3%) of them scored for depression. 81 (57.9%) of the married students did not score for depression while 59 (42.1%) of them scored for depression. 57 (59.4%) of the single students did not score for depression while 39 (40.6%) of them scored for depression. None of the divorcees scored normal while 21 (100%) of the divorcees scored for depression.

52% of the students that were not involved in extracurricular activities did not score for depression while 36 (40.9%) of them scored for depression. 78 (49.1%) of the students that were involved in extracurricular activities did not score for depression while 81 (50.9%) of them scored for depression.

On the issue of the programmes of specialization undertaken, 45 (71.4%) of the students taking internal medicine did not score for depression while 18 (28.6%) of them scored for depression. 12 (26.7%) of the students taking surgery did not score for depression while 33 (73.3%) of them scored for depression. 25 (58.1%) of the students taking radiology did not score for depression while 18 (41.9%) of them scored for depression. 7 (36.8%) of the students taking OBS/GYN did not score for depression while 12 (63.2%) of them scored for depression. 10 (62.5%) of the students taking apt6halmology did not score for depression while 6 (37.5%) of them scored for depression. `14 (77.8%) of the students taking psychiatry did not score for depression while 4 (22.2%) of them scored for depression. 6 (33.3%) of the students taking pathology did not score for depression while 12 (66.7%) of them scored for depression. 5 (41.7%) of the students taking paediatrics did not score for depression while 7 (58.3%) of them scored for depression. 13 of the students taking other programmes of specialization did not score for depression while 9 (40.9%) of them scored for depression.

Table 3: Proportion of subjects with depression by social demographic characteristics

	Normal n (%)	Depressed n (%)
Gender		
Female	60 (48)	65 (52)
Male	79 (59.4)	54 (40.6)
Year of study		
One	28 (45.2)	34 (54.8)
Two	27 (69.2)	12 (30.8)
Three	27 (57.4)	20 (42.6)
Four +	11 (25)	33 (75)
Age		
20-30	68 (68)	32 (32)
31-40	42 (45.7)	50 (54.3)
41-50	6 (23.1)	20 (76.9)
Employment status		
Employed	108 (53.5)	94 (46.5)
Unemployed	25 (50)	25 (50)
Source of Fees		
Self-sponsored	79 (56.4)	61 (43.6)
Government-sponsored	60 (51.7)	56 (48.3)
Marital status		
Married	81 (57.9)	59 (42.1)
Single	57 (59.4)	39 (40.6)
Divorced	0 (0)	21 (100)
Involved in extra curriculum activities		
No	52 (59.1)	36 (40.9)
Yes	78 (49.1)	81 (50.9)
Programme of specialization of study		

Internal Medicine	45 (71.4)	18 (28.6)
Surgery	12 (26.7)	33 (73.3)
Radiology	25 (58.1)	18 (41.9)
OBS/GYN	7 (36.8)	12 (63.2)
Ophthalmology	10 (62.5)	6 (37.5)
Psychiatry	14 (77.8)	4 (22.2)
Pathology	6 (33.3)	12 (66.7)
Paediatrics	5 (41.7)	7 (58.3)
Other	13 (59.1)	9 (40.9)
Total	137 (53.5)	119 (46.5)

4.5 The Distribution of Distress Tolerance Score (DTS) Among the Respondents

The average DTS score was 42.6 (median score was 41.0) and the scores ranged from 14 to 70. Figure2, presents the distribution of the DTS score among the participants. Majority of the participants had a score between 20 and 40 with 11.2% of the participants reporting a score of about 50.

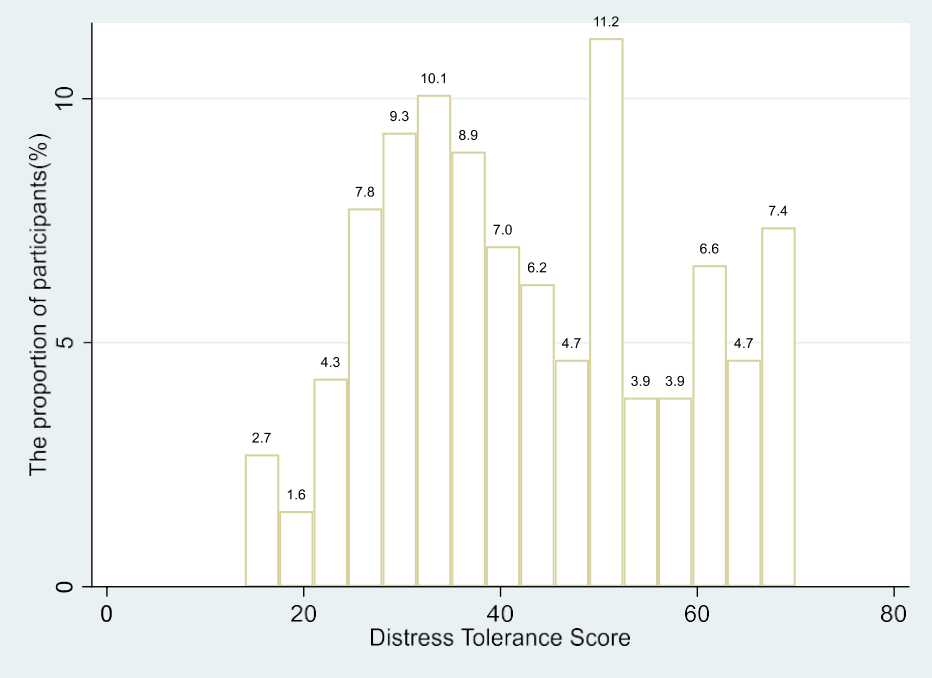


Figure 2: Distribution of DTS score

4.6 Table 4: DTS Summary by The Social Demographic Characteristics

Table 4 presents the distribution summary of DTS scores by the subject social demographic characteristics. Similar distribution score was observed between female and male participants with same median (41.0) and range (14.0 to 70.0). The average DTS score was lower and similar for year one and year four or above of about 40. The DTS score was higher for the younger age group; 20-30 (44.9), 31-40 (42.1) and 41-50 (35.6).

The average score for distress tolerance for employed is hire at 43.0 compared to that of unemployed which is at 40.6. The median for employed students is also hire at 41.0 compared to that of unemployed which is at 36.0. The range of employed students is 15.0 to 70.0 while the range of unemployed is 14.0 to 68.0. Students who are self-sponsored have higher average of 43.0 compared to that of students with government-sponsorship who have an average of 41.2. The median of students that are self-sponsored is 43.5 while that of students with government sponsorship is 39.0. The range of students who are self-sponsored is 14.0 to 70.0 while that of the students with government sponsorship is 15.0 to 70.0.

The average of single students is higher at 43.7 than that of married and divorcees. The average of married students is 42.9 while that of divorcees. The median of married students is 44.0 while that of single students is 39.0 and that of divorcees is 28.0. The range of married students is 15.0 to 70.0 while that of single students is 14.0 to 70.0 and that of divorcees is 21.0 to 70.0. Paediatrics had the highest average of 47.7 and surgery has the lowest average of 36.7. Internal medicine has an average of 47.3 while radiology has an average of 44.6. OBS/GYN has an average of 37.5 while ophthalmology has an average of 45.5. Psychiatry has an average of 44.1 and pathology has an average of 38.3. Students taking other programmes of specialization

have an average of 38.9. The median for internal medicine is 50.0 and that of surgery is 35.0. Radiology has a median of 50.0 while OBS/GYN has a median of 35.0 and ophthalmology has a median of 47.0. Psychiatry has a median of 45.0 while paediatrics has a median of 45.5 and other programmes of specialization have a median of 38.5. The range of students taking internal medicine is 15.0 to 70 and that of students taking surgery is 14.0 to 70.0. Radiology has a range of 19.0 to 70.0. OBS/GYN has a range of 26.0 to 62.0 while that of ophthalmology is 22 to 70. Psychiatry has a range of 18.0 to 70 while pathology has a range of 25.0 to 63.0. Paediatrics has a range of 26.0 to 66.0 while the range of students taking other programmes of specialization is 14.0.

Table 4: DTS Summary by the Social Demographic Characteristics

	Mean	SD	Median	Min	Max
Gender					
Female	42.1	14.6	41.0	14.0	70.0
Male	43.2	14.9	41.0	14.0	70.0
Year of study					
One	40.1	12.2	36.0	26.0	70.0
Two	43.5	17.9	51.0	14.0	70.0
Three	47.7	14.0	50.0	15.0	68.0
Four	39.9	15.0	35.0	19.0	70.0
Age					
20-30	44.9	16.7	44.0	14.0	70.0
31-40	42.1	12.6	40.5	19.0	70.0
41-50	35.6	11.8	32.0	21.0	69.0
Employment status					
Employed	43.0	14.1	41.0	15.0	70.0
Unemployed	40.6	16.2	36.0	14.0	68.0
Source of fees					
Self-sponsored	43.9	16.1	43.5	14.0	70.0
Government-sponsored	41.2	12.9	39.0	15.0	70.0
Marital status					
Married	42.9	13.5	44.0	15.0	70.0
Single	43.7	15.8	39.0	14.0	70.0
Divorced	36.2	16.8	28.0	21.0	70.0
Involvement in extra curriculum					

activities					
No	41.9	13.9	36.5	15.0	70.0
Yes	42.6	15.3	42.0	14.0	70.0
Programme of specialization of study					
Internal Medicine	47.3	15.2	50.0	15.0	70.0
Surgery	36.7	12.4	35.0	14.0	70.0
Radiology	44.6	15.9	50.0	19.0	70.0
OBS/GYN	37.5	8.5	35.0	26.0	62.0
Ophthalmology	45.6	14.1	47.0	22.0	70.0
Psychiatry	44.1	17.2	45.0	18.0	70.0
Pathology	38.3	12.5	39.0	25.0	63.0
Paediatrics	47.7	14.9	45.5	26.0	66.0
Other	38.9	15.0	38.5	14.0	63.0
Depression Status					
Normal	45.3	14.5	45.5	14.0	70.0
Depression	34.5	12.5	31.0	19.0	70.0
Total	**42.6**	**14.7**	**41.0**	**14.0**	**70.0**

4.7 Table 5: Analysis of Depression (BDI) And Distress (DTS) Controlling for Subject Characteristics

The BDI was analyzed as a continuous score ranging from 0 to 41 with high score representing high level of depression and as a binary outcome of normal versus depression. The continuous version was analyzed using linear regression and binary depression indicator was analyzed using logistic regression. The results for both analyses are presented in Table 5. The DTS level was found to be associated with BDI among post graduate medical students after controlling for their demographic characteristics. Respondents with high DTS scores were associated with lower BDI score. Age and marital status were characteristics that seemed to be associated with BDI levels. The depression level was higher among older students compared to younger students. The DTS was still found to be associated with lower odds of depression after controlling for respondent demographic characteristics. However,

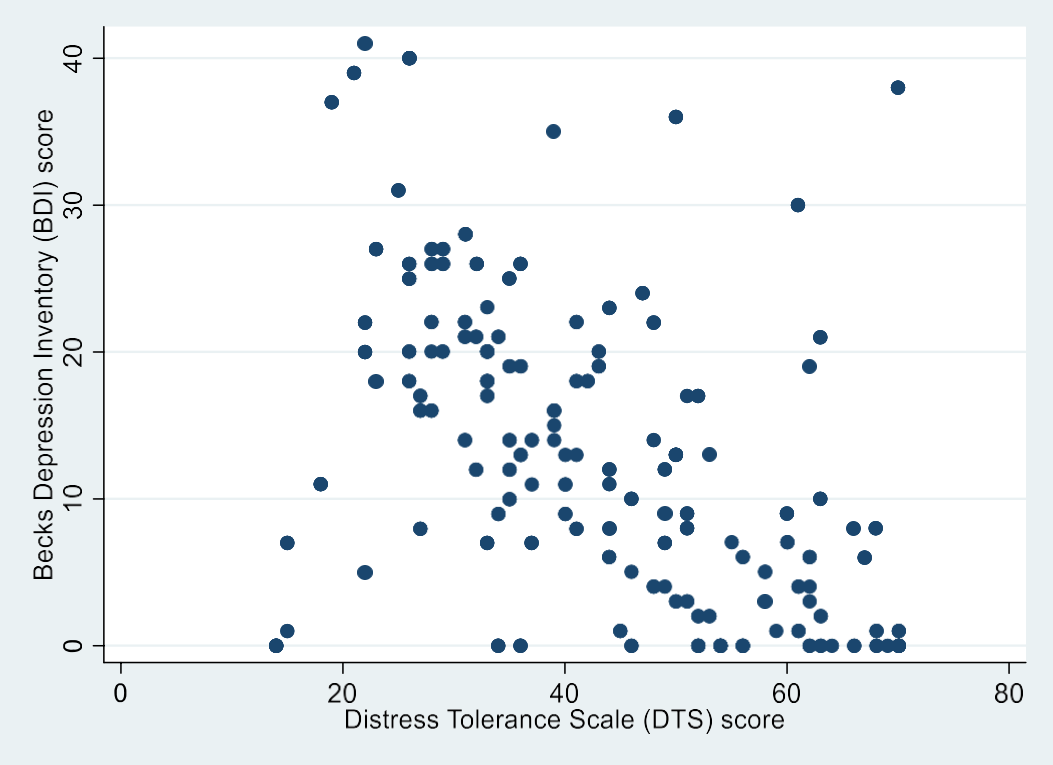
none of the demographic characteristics was found to be significantly associated with odds of depression.

Table 5: Analysis of depression (BDI) and distress (DTS) controlling for subject characteristics.

	Linear regression for BDI score			Logistic regression for depression vs normal		
	Coef.	95% CI	p-value	Odds Ratio	95% CI	p-value
Gender (ref: female)						
Male	-3.22	-5.83; -0.61	0.016	0.69	0.16; 1.13	0.087
Year of study (ref: year One)						
Year 2	-1.03	-4.72; 2.65	0.580	0.38	0.12; 2.45	0.434
Year 3	-1.87	-5.35; 1.61	0.291	0.68	0.3; 3.69	0.933
Year 4+	3.42	-0.12; 6.97	0.058	1.06	0.68; 9.87	0.165
Age (ref: 20-30 years)						
31-40 years	4.58	1.54; 7.63	0.003	1.69	0.91; 7.53	0.075
41-50 years	7.00	2.01; 11.98	0.006	3.90	0.73; 39.5	0.1
Employment status (ref: employed)						
Unemployed	0.44	-3.19; 4.07	0.812	1.92	0.09; 1.8	0.236
Source of fees (ref: self-sponsored)						
Government-sponsored	-0.51	-3.16; 2.14	0.704	0.88	0.24; 1.77	0.394
Marital Status						
Single	4.13	1.07; 7.19	0.009	3.06	0.73; 7.79	0.151
Divorced	17.08	12.73; 21.44	0.000			
Involved in extra curriculum activity	0.18	-2.51; 2.88	0.894	1.06	0.56; 3.6	0.464
Distress Tolerance Scale (DTS)	-0.25	-0.35; -0.16	0.000	0.96	0.86; 0.94	<0.001

4.8 Figure 3: The Association Between BDI Score and DTS Score

A scatter plot of Becks Depression Inventory (BDI) score and the Distress Tolerance Scale (DTS) score was generated to explore the relationship between the two measures. The plot shows that students with high scores of DTS had low score of BDI. However, there were few cases showing the opposite relationship of low DTS associated with low BDI or high DTS scores with high BDI scores.



5 DISCUSSION

Mental health is a concern to society. Medical students go through a lot of stressors due to the complexity of their work, family issues, as well as college work (Mwakoghu, 2011). Therefore, they become vulnerable to mental illnesses, which can negatively affect their grades and lives in general (Ngasa et al., 2017).According to Verna (2005), with the continued different challenges affecting medical students, they end up developing mental illnesses, but they do not want to disclose that information to other people for fear of stigmatization.

The social demographic characteristics of the participants indicate that majority of the participants were aged between 20-30 years and were in year 1 of their studies. Most of them were employed though majority paid their own school fees. According to Datar et al. (2017), this is expected as most of the students opt to study and work at the same time, and also pay their own fees so as to avoid being bonded to a particular employer or county.

The study sought to find the prevalence of depression among medical registrars in the UON. The findings were that 137(53.5%) of the students recorded normal findings as per the BDI,23(9%) recorded mild depression, 75(29.3%) had moderate depression whereas 21(8.2%) recorded severe depression. Cumulatively 137(53.5%) were normal and 119(46.5) recorded some kind of depression, either mild, moderate or severe. The findings are almost similar to results found in a publication on mental health crisis for graduate students by (Collen, 2018). The paper was based on a survey using clinically authenticated scales for anxiety and depression presented to students via email and social media, with 2,279 respondents from 26 countries and

234 institutions, 39% scored in the range of moderate to severe depression as compared to 6% in the overall population which was earlier studied with the similar scale.

The authors asked the respondents if they agreed to the fact that work-life balance being GOOD. Among the students with moderate to severe depression, more than half (55%) disagreed and (21%) agreed with the statement (Coleen, 2018). Thus, the author relates that good work-life stability is considerably linked to better mental health results. The author also found that among the students with anxiety and depression, more than half did not agree that their immediate mentors were providing real mentorship (about 1/3 of both groups agreed). Similar findings were recorded in an article by Zaman et al. (2014), in a survey which was carried out in three postgraduate medical institutions in Dhaka,Bangladesh in February 2013, 100 students were presented with questionnaires that covered work related, social economic and demographic variables and a Hamilton rating scale to diagnose for depression and to assess the severity of depression among the students.53 students (53%) responded at the appropriate time. Among these depressions was diagnosed in 21(39%) of the respondents. among the depressed 17(80.9%) had mild depression while 4(19.1%) had moderate depression. none was diagnosed with severe depression.

Charmandari et al. (2005) suggest that presence of stress depends on the presence of stressors.Causes of stress include environmental factors, psychological factors, biological factors, and social factors and which can either negatively or positively affect an individual based on the strength and persistence of the stressor, the individual's personality, cognitive evaluation of the strain, and social support.

This study sought to determine if certain social demographic characteristics affected the mental wellbeing of medical registrars, i.e. age, gender, employment status, marital status, source

of sponsorship into the university, programme of specialization, involvement in extracurricular activities.The study found that half of the female respondents 65(52%) recorded depression as compared to male students 54(40.6%) and 14(11.2%) of the females suffered from severe depression, as compared to male respondent 7(5.3%).

The findings of this study go hand in hand with the findings of a study conducted by Flaherty (2018) on mental health crisis of post graduate students. Flaherty found out that post graduate students are more likely to experience depression and anxiety than the general population. The findings of that study also show that women are more likely to experience depression and anxiety than men and transgender persons. In his study, Flaherty found out that 43% of women had anxiety and 41% were depressed. However, only 34% of men reported having symptoms of anxiety and 35% of them showed the signs of depression.

Older students (age 40 years and above) scored higher for severe depression in the BDI 7(26.9%) as compared to age 30-40 years (10.9%) and the lowest prevalence of severe depression being in the age below 30 years of age (2%). This suggested that the older the person is, the more the person is susceptible to depression. This actually corresponded with the DTS scores where by older students (40<) scored less DTS at an average of 35.6, while the age group 30-40 scored an average of 42.1 and students agedless than 30 years at the highest at an average of 44.9. This seems to indicate that the older a person (registrar), the less tolerant the person becomes to the different stresses in life. Young students below 30 years tend to have lesser stressors compared to older students above the age of 40 years. Studies have shown that more than 80% of the students' experience depression because of the many responsibilities, tasks, and other personal responsibilities like family matters (Datar, et al., 2017). This argument can be argued to be true because the work load continues to increase as students'progress to final years

of their studies (Kulsoom Nasir, 2015; Ngasa et al., 2017). This means that students in their final years have more responsibilities than students in their first years in college. Studies have also shown that young students in their early years of study do not have many responsibilities (Datar, et al., 2017; Nwobi et al., 2009).

This observation is not quite replicated in this study because we found that 54.8%of the students in year one scored for depression in the BDI, the prevalence dropped to 30.8% in year 2, started going up to 42.6% in year 3 and reached a peak of 75% among the student respondent of year 4 and above, considering that most registrar programs are 3 years long, this is an expected indication that the long one overstays in the program the more likely they are to get depressed. For DTS scores, students above year 4 showed low as to tolerance after they scored an average of 39.9, year 3 scored an average of 47.7, year 2 an average of 43.5 and year1 an average of 40.1. However, the findings for year of study were found not to be statistically significant for both dependent variables for depression and for the dichotomous dependent variables of depression.

Separated or divorced students scored higher in terms of severe depression in the BDI 11(52.4%), as compared to the single 6(6.3%) and lowest for the married 4(2.9%). Outcome of the DTS for marital status recorded low DT for divorced students at an average of 36.2 and single and married scoring 43.7 and 42.9 respectively. Outcome was statistically significant for the dependent variable for depression with a p-value of 0.009 and 0.000 for the single and divorced respectively, but showed insignificance for the dichotomous dependent variables of depression. Studies have shown that stressful events like divorce are linked with significant risk for prolonged emotional distress (Landow, 2006). Further, a study conducted by Sbarra (2013) indicates that the trauma of getting separated from family members due to divorces increases the risks of depression. Sbarra indicated that 60% of the divorced respondents that were interviewed

experienced depression. 10% of the respondents sought professional help and managed to recover. Further, Sbarra also linked high rate of divorce for post graduate students to issues related to balancing family time, workload at job, and college tasks.

The study found out that more unemployed students suffered from severe depression at 8(16%) as compared to the employed ones at 13 representing 6.4%. Likewise, the association with DT was seen as the students who are employed scored more in the DTS 43.0 than the unemployed who scored an average of 40.6 though employment status was found not to be statistically significant. Likewise, no statistical significance was found in the results for source of sponsorship, even though self-sponsored students were found to be more tolerant to stress at an average DTS score of 43.9 and BDI levels at 13(9.3%) as compared with government sponsored who scored less BDI score fore severe depression at 8(16%) and a DTS score at an average score of 41.2. These findings were found not to be statistically significant.

A study conducted by the Institute for Work and Health (2009) found out that unemployment tends to make people more emotionally unstable than employed ones. However, the same study indicated that employed individuals also tend to have high risks of experiencing depression because of the striking balance of work and personal life. Further, the study also shows that some people with underlying mental conditions are unable to keep their job due to their mental disability. These individuals are more likely to be more depressed when they lose their jobs.

Students specializing in surgery scored highest in the BDI for depression 33(73.3%), followed by pathology at 12(66.7%), then OBS/GYN 12(63. 2%). Others were paediatrics at 7(58.3%), radiology 18(41.9%), ophthalmology 6(37.5%), and psychiatry scoring lowest in

terms of depression with 4(22.2%). The DTS score was also found to be inversely associated with BDI score.

A study by Guthrie (1998) indicates that the intensive of a programme of specialization plays a significant role in determining the level of depression experienced by the students. Guthrie further suggests that a 5 years programme of specialization with 2 years preclinical training is less demanding than a 6 years programme of specialization with 3 years of clinical work. Guthrie also points out that students in more demanding programme of specializations are preoccupied with thoughts of dropping out and stressful relationships with other medical students. However, he further proposed that it is important to target students reporting distress for intensive programme of specialization to reduce the rate of drop out.

Considering participation in social and extracurricular activities, 80(50.9) of the respondents reported some kind of depression. Students who did not participate in any extracurricular activity scored lower in terms of depression at 36(40.6%) though the findings were found not to be statistically significant. Majority responded to extracurricular activity as drinking and partying. Studies have shown that drinking and other forms of drug abuse are among strategies used by students that are suffering from depression and anxiety. Ndegwa et al. (2017) found out that this strategy is mostly used by more males than females. According Ndegwa et al. (2017), the behavior of drinking and indulging in drug abuse is documented as unhealthy coping strategy that tends to worsen the situation.

6 CONCLUSION

Based on the objectives of the study, it was found out that medical registrars are vulnerable to depression based on social demographic characteristics like age, gender, and marital status. Females have been found to be more susceptible to depression than male students. It has also been found out that the risk of experiencing depression is also dependent on the age of the students. The older students have been found to be more susceptible to depression compared to the younger students. Marriage life showed good prognosis because they showed to be less depressed than the divorced and singles. The findings also indicate that distress tolerance has been found to be related to depression among the medical registrars and is also associated with the social demographic characteristics.

7 RECOMMENDATIONS

1. There is a need to conduct annual mental assessment of all medical registrars since it is evident that at every year of study presents students with new challenges.
2. It is also important to encourage mentorship from supervisors and fellow students
3. Teaching and formulation of stress coping strategies among registrars is also recommended
4. Participation in extracurricular activities is also recommended
5. Once mental disorders are detected, it is important to recommend treatment.

8 LIMITATIONS OF THE STUDY

1. Time for doing research work was very limited for me since I had to do the research and work at the same time. I overcame this by working night shifts which are usually not very busy, and thus I had enough time to do my writing away from disturbances at home.

2. Financing for research was becoming an issue, since I had to pay for other activities like printing and also had to pay the statistician.

3. The Covid-19 lockdown also affected the study timeline.

4. Google forms were not the best method of data collection since responses are anonymous so it is difficult to follow-up on a student who has been diagnosed to have depression.

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APPENDICES

APPENDIX I: INFORMED CONSENT EXPLANATION

TITLE OF STUDY: ***Association Between emotional distress tolerance and depression among post graduate medical students in the University of Nairobi.***

PRINCIPAL INVESTIGATOR AND INSTITUTIONAL AFFILIATION: Dr. Odhiambo F. Edward, Mmed. Psychiatry student from the University of Nairobi.

INTRODUCTION:

I would like to tell you about a study being conducted by the above listed researcher. The purpose of this consent form is to give you the information you will need to help you decide whether or not to be a participant in the study. Feel free to ask any questions about the purpose of the research, what happens if you participate in the study, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. When we have answered all your questions to your satisfaction, you may decide to be in the study or not. This process is called "informed consent". Once you understand and agree to be in the study, I will request you to sign a form with your details, whereby you may decide to include your name or not.

i) Your decision to participate is entirely voluntary

ii) You may withdraw from the study at any time without necessarily giving a reason for your withdrawal

iii) You will be given a copy of this form for your records.

May I continue? YES/ NO

This study has approval by The Kenyatta National Hospital–University of Nairobi Ethics and Research Committee protocol No. _____

WHAT IS THIS STUDY ABOUT?

The researcher listed above is interviewing medical post graduate students in the University of Nairobi The purpose of the interview is to assess the association of emotional distress tolerance and depression among the post graduate students. Participants in this research study will be assessed on how strongly they can tolerate the many stresses encountered in their study period, and possibility of going into depression because of the stresses. There will be approximately 280 participants in this study randomly chosen. We are asking for your consent to consider participating in this study.

ARE THERE ANY RISKS, HARMS, DISCOMFORT ASSOCIATED WITHTHIS STUDY?

Medical research has the potential to introduce psychological, social, emotional and physical risks. Effort should always be put in place to minimize the risks. One potential risk of being in the study is loss of privacy. We will keep everything you tell us as confidential as possible. We will use a code number to identify you in a password-protected computer database and will keep all of our paper records in a locked file cabinet.

Also, answering questions in the interview may be uncomfortable for you. If there are any questions you do not want to answer, you can skip them. You have the right to refuse the interview or any question asked during the interview.

Consent for Referrals for specialist review will be done for cases which may have been diagnosed in the process while counseling will be done on site for less severe cases. Follow psychotherapy and counseling services will be done.

WHAT IF YOU HAVE QUESTIONS IN FUTURE?

If you have further questions or concerns about participating in this study, please call or send a text message to the researcher at the number provided at the bottom of this page. The researcher will pay you back for your incurred costs related to communication.

For more information about your rights as a research participant you may contact the:

KENYATTA NATIONAL HOSPITAL-UNIVERSITY OF NAIROBI ETHICS AND RESEARCH COMMITTEE

SECRETARY/ CHAIRPERSON,

Telephone No. 2726300 Ext. 44102,

Email uonknh_erc@uonbi.ac.ke..

PRINCIPAL INVESTIGATOR (RESEACHER)

Dr. Odhiambo F. Edward

University of Nairobi

Telephone No. 0729423318

Email:edwardodhiamb38@gmail.com

SUPERVISORS

Dr. Pius kigamwa.

Lecturer

Department of Psychiatry

School of Medicine

College of Health Sciences

University of Nairobi

Telephone No. 0722521261

Dr. MuthoniMathai

Lecturer

Department of Psychiatry

School of Medicine

College of Health Sciences

University of Nairobi

Telephone No.0727329904

APPENDIXII: STATEMENTS OF CONSENT

Participant's statement

I have read this consent form or had the information read to me. I have had the chance to discuss this research study with a study counselor. I have had my questions answered in a language that I understand. The risks and benefits have been explained to me. I understand that my participation in this study is voluntary and that I may choose to withdraw any time. I freely agree to participate in this research study.

I understand that all efforts will be made to keep information regarding my personal identity confidential.

By signing this consent form, I have not given up any of the legal rights that I have as a participant in a research study.

I agree to participate in this research study:	**Yes**	**No**
I agree to have the questionnaire preserved for later study:	Yes	No
I agree to provide contact information for follow up:	Yes	No

Participant printed name(optional):_____

Participant signature_____**Date** _____

Researcher's statement

I, the undersigned, have fully explained the relevant details of this research study to the participant named above and believe that the participant has understood and has willingly and freely given his/ her consent.

Researcher's Name:_____Date _____

Signature _____

Role in the study: _____

APPENDIX III: SOCIO DEMOGRAPHIC QUESTIONNAIRE

Instructions: ***Please Tick the Appropriate Answer***

1. Gender

a) Male ☐

b) Female ☐

2. Age …….

3. Course undertaken and current year of study-

4. Marital status

a) Single ☐

b) married ☐

c) divorced ☐

d) widowed ☐

4b. Any siblings? If yes, how many……

5. Work?

a) Employed ☐

b) Self employed ☐

c) Jobless ☐

6. Fees?

a) Self-sponsored ☐

b) Government sponsored ☐

7. Extra curriculum activities, (specify) _____

_____

APPENDIX IV: SCHOOL OF MEDICINE POST GRADUATE STUDENTS ANALYSIS FOR 2018-2019 ACADEMIC

S/NO	PROGRAMME	MALE	FEMALE	TOTAL
1	HUMAN PATHOLOGY	19	9	28
2	PSYCHIATRY	29	37	66
3	INTERNAL MEDICINE	50	51	101
4	UROLOGY	26	4	30
5	CADRO	20	1	21
6	PLASTIC SURGERY	24	6	30
7	PAEDS SURGERY	13	5	18
8	NEUROSURGERY	25	1	26
9	GENERAL SURGERY	50	51	101
10	ENT	35	16	51
11	OBS/GYNAE	110	51	161
12	ANAESTHESIOLOGY	23	21	44
13	OPTHALMOLOGY	19	16	35
14	RADIOLOGY	30	23	53
15	PAEDS/CHILD HEALTH	25	84	109
16	ORTH/SURGERY	53	9	63
	TOTAL	551	385	936

APPENDIX V: BECKS DEPRESSION INVENTORY

1.	0	I do not feel sad
	1	I feel sad
	2	I am sad all the time and I can't snap out of it
	3	I am so sad and unhappy that I can't stand it
2.	0	I am not particularly discouraged about the future
	1	I feel discouraged about the future
	2	I feel I have nothing to look forward to
	3	I feel the future is hopeless and that things cannot improve
3.	0	I do not feel like a failure
	1	I feel I have failed more than the average person
	2	As I look back on my life, all I can see is a lot of failures
	3	I feel I am a complete failure as a person
4.	0	I get as much satisfaction out of things as I used to
	1	I don't enjoy things the way I used to
	2	I don't get real satisfaction out of anything anymore
	3	I am dissatisfied or bored with everything

5.	0	I don't feel particularly guilty
	1	I feel guilty a good part of the time
	2	I feel quite guilty most of the time
	3	I feel guilty all of the time
6.	0	I don't feel I am being punished
	1	I feel I may be punished
	2	I expect to be punished
	3	I feel I am being punished
7.	0	I don't feel disappointed in myself
	1	I am disappointed in myself
	2	I am disgusted with myself
	3	I hate myself
8.	0	I don't feel I am any worse than anybody else
	1	I am critical of myself for my weaknesses or mistakes
	2	I blame myself all the time for my faults
	3	I blame myself for everything bad that happens
9.	0	I don't have any thoughts of killing myself
	1	I have thoughts of killing myself, but I would not carry them out

	2	I would like to kill myself
	3	I would kill myself if I had the chance
10.	0	I don't cry any more than usual
	1	I cry more now than I used to
	2	I cry all the time now
	3	I used to be able to cry, but now I can't cry even though I want to
11.	0	I am no more irritated by things than I ever was
	1	I am slightly more irritated now than usual
	2	I am quite annoyed or irritated a good deal of the time
	3	I feel irritated all the time
12.	0	I have not lost interest in other people
	1	I am less interested in other people than I used to be
	2	I have lost most of my interest in other people
	3	I have lost all of my interest in other people
13.	0	I make decisions about as well as I ever could
	1	I put off making decisions more than I used to
	2	I have greater difficulty in making decisions more than I used to
	3	I can't make decisions at all anymore

14.	0	I don't feel that I look any worse than I used to
	1	I am worried that I am looking old or unattractive
	2	I feel there are permanent changes in my appearance that make me look unattractive
	3	I believe that I look ugly
15.	0	I can work about as well as before
	1	It takes an extra effort to get started at doing something
	2	I have to push myself very hard to do anything
	3	I can't do any work at all
16.	0	I can sleep as well as usual
	1	I don't sleep as well as I used to
	2	I wake up 1-2 hours earlier than usual and find it hard to get back to sleep
	3	I wake up several hours earlier than I used to and cannot get back to sleep.
17.	0	I don't get more tired than usual
	1	I get tired more easily than I used to
	2	I get tired from doing almost anything
	3	I am too tired to do anything
18.	0	My appetite is no worse than usual
	1	My appetite is not as good as it used to be

	2	My appetite is much worse now
	3	I have no appetite at all anymore
19.	0	I haven't lost much weight, if any, lately
	1	I have lost more than five pounds
	2	I have lost more than ten pounds
	3	I have lost more than fifteen pounds
20.	0	I am no more worried about my health than usual
	1	I am worried about physical problems like aches, pains, upset stomach, or Constipation
	2	I am very worried about physical problems and it's hard to think of much else
	3	I am so worried about my physical problems that I cannot think of anything else
21.	0	I have not noticed any recent change in my interest in sex
	1	I am less interested in sex than I used to be
	2	I have almost no interest in sex
	3	I have lost interest in sex completely

APPENDIX VI: DISTRESS TOLERANCE SCALE

Indicate how you feel in numbers (i.e. 1.strongly agree======5.strongly disagree.)

Item no.	*Questions*	1	*2*	*3*	*4*	*5*
1	*Feeling distress or upset is unbearable tome*					
2	*WhenIfeeldistressedorupset,allIcanthink AboutishowbadIfeel. WhenIfeeldistressedorupset,allIcanthink About ishowbadIfeel. WhenIfeeldistressedor upset, all IcanthinkAboutishowbadIfeel. WhenIfeeldistressedorupset,allIcanthink aboutishowbadI feel. When I am distressed or upset, all I think about is how bad I feel.*					
3	*I can't handle feeling distressed or upset*					
4	*Myfeelingsofdistressaresointensethattheycompletelytakeovermy feelings of distress are so intense that they take over*					
5	*There's nothing worse than feeling distressed or upset*					
6	*I can't handle being distressed or upset as well as other people(reverse score)*					

7	*My feelings of being distressed or upset are not acceptable.*					
8	*I'll do anything to avoid being distressed or upset.*					
9	*Other people seem to be able to tolerate feeling of being distressed or upset better than me.*					
10	*Being distressed or upset is a major ordeal for me*					
11	*I am ashamed of myself when I feel distressed or upset*					
12	*My feelings of being distressed or upset scare me*					
13	*I'll do anything to stop being distressed or upset*					
14	*When I feel distressed or upset, I cannot help but concentrate on howbad the distress feels.*					

APPENDIX VIII: TIMELINE

Activity	**February, 2019**	**November 2019**	**January 2019**	**February 2020**	**March 2020**	**May 2020**	**June 2020**	**September 2020**	**July 2021**
Proposal Writing									
Ethics									
Data Collection and analysis									
Report Writing and									

presentation									

APPENDIX IX: BUDGET & BUDGET JUSTIFICATION

Activities	**Total cost per Activity**
Proposal Writing*-Sourcing For Material & Books.*	*10,000/=*
Sampling of respondents and Piloting of Data Collection Instrument	*10,000/=*
Finalizing The Instruments _ *Which Includes Printing And Photocopying*	*5,000/=*
Data Collection _*This will be conducted for 30 working days & this includes lunch and travelling costs @ 1500/=daily*	*10,000/=*
Presentation Of The Research Project for Approval _ *Printing and Photocopying*	*10,000/=*
Finalizing The Project_ *Presentation to the Librarian*	*3,000/=*
Ethics &Research Committee Fee	*2,000/=*
Miscellaneous Expenses _ *Phone Credits Etc*	*5,000/=*
Contingency @ 10%	*8000/=*
Total cost	***63000/=***