

**ASSESSMENT OF DEPRESSION AND ASSOCIATED FACTORS  
AMONG DIABETIC PATIENTS AT MNAZI MMOJA REFERRAL  
HOSPITAL IN ZANZIBAR, TANZANIA**

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**ASSESSMENT OF DEPRESSION AND ASSOCIATED FACTORS AMONG  
DIABETIC PATIENTS ATTENDING AT MNAZI MMOJA REFERRAL HOSPITAL  
IN ZANZIBAR TANZANIA**

**By**

**Mussa Rashid Mussa, (BScN)**

**A dissertation submitted in partial fulfillment of the Requirements for the Degree of  
Master of Science in Nursing Mental Health of**

**Muhimbili University of Health and Allied Sciences**

**October 2019**

## **CERTIFICATION**

The undersigned certify that they have read and hereby recommend for acceptance by the Muhimbili University of Health and Allied Sciences a dissertation entitled “*Assessment of depression and associated factors among diabetic patients at Mnazi Mmoja referral hospital in Zanzibar, Tanzania*” in partial fulfillment of the requirements for the degree of Master of Sciences in Nursing Mental Health of Muhimbili University of Health and Allied Sciences.

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## DECLARATION AND COPYRIGHT

I, **Mussa Rashid Mussa** declare that this **dissertation** is my original work and that it has not been presented and will not be presented to any other University here in Tanzania or elsewhere for a similar or any other degree award.

Signature \_\_\_\_\_ Date \_\_\_\_\_

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## **DEDICATION**

This work is dedicated to my family, friends and my wife Zuwena A. Ali for her patience, also for my children Abubakar M. Rashid, Harith M. Rashid, Mundhir M. Rashid, and Rashid M. Rashid, who always supported and encouraged me in my academic career. I thank GOD for such kind of family.

## ABSTRACT

**Background:** Depression is a common chronic mental disorder which affects individuals worldwide. Many patients with a chronic physical disease such as diabetes mellitus are estimated to suffer from depression. Depression remains undetected or undiagnosed in patients with diabetes mellitus due to lack of knowledge, skills to diagnose and lack of tools that can be used to diagnose the disease.

**Objectives:** To determine the prevalence and factors associated with depression among patients attending Diabetic clinics at Mnazi Mmoja Referral Hospital in Zanzibar.

**Method:** A descriptive cross-sectional design employing a quantitative approach was used. Simple random sampling technique was used to select the participants in a diabetic clinic at Mnazi Mmoja Referral Hospital. The study participants were diabetic patients aged 18 years and above and accessible during the study period. A structured questionnaire was used to collect data. Data were coded and analyzed using SPSS version 23.0, and Chi-square test was done to find the association between independent variable and depression. Moreover, bivariate and multiple logistic regression analysis were used to identify the statistically significant variables. *P*-value of <0.05 was considered as statistically significant.

**Results:** A total of 267 diabetic patients were interviewed with a response rate of 100%. Of 267 respondents, 142 (53.2%) and 125 (46.8%) were male and female respectively with a mean age of 50 years and standard deviation  $\pm 14$ . The overall prevalence in this study was 73%. Of 267 diabetic patients; most 30% had mild depression, 23% had minimal depression, 12% had moderate depression, 8% had severe and 27% had no depression. After controlling for confounding factors, a logistic regression model showed those who had difficulties in adhering to treatment regime (AOR=5.7: 95% CI, 2.11;15.18,  $p < 0.05$ ), experiences of recently feeling angry or stressed (AOR=4.4: 95% CI, 2.44;8.10,  $p < 0.05$ ), and diabetic retinopathy were more likely to be depressed (AOR=2.8: 95% CI, 1.45;5.28,  $p < 0.05$ ), while those who had diabetic foot (AOR=0.1: 95% CI, 0.04; 0.49,  $p < 0.05$ ) and impotence for male patients (AOR=0.4: 95% CI, 0.20; 0.68,  $p < 0.05$ ) were less likely be depressed

**Conclusions and recommendations:** In the present study, the prevalence of depression was higher than reported in other studies. Our results demonstrate that many patients with

diabetic mellitus attending Mnazi Mmoja clinic experience unrecognized symptoms of depression, and this affects their quality of life in diverse ways. Given the high prevalence of depression in diabetic patients, screening diabetic clients for co-morbid depression and its relevant associated factors is highly recommended.

**Key words:** Prevalence, Depression, Diabetes mellitus, Zanzibar, Tanzania



## **TABLE OF CONTENTS**

CERTIFICATION .....	ii
DECLARATION AND COPYRIGHT .....	iii
Acknowledgment.....	iv
DEDICATION .....	v
ABSTRACT .....	vi
LIST OF FIGURES-.....	xi
LIST OF ABBREVIATION.....	xii
DEFINITION OF TERMS .....	xiii
OPERATIONAL DEFINITION.....	xiv
CHAPTER ONE.....	1
1.0 INTRODUCTION .....	1
1.1 Background .....	1
1.2 Problem statement.....	4
1.3 Conceptual framework.....	5
1.4 Rationale of the Study.....	7
1.5 Purpose of the study:.....	8
1.6 Research questions .....	8
1.7 Broad objectives.....	8
1.7.1 Specific objectives .....	8
CHAPTER TWO .....	9
2.0 LITERATURE REVIEW .....	9
2.1 The magnitude of Depression among diabetes patients .....	9
2.2 The magnitude of diabetes.....	10
2.3 Factors associated with Depression among Diabetic patients .....	11
2.3.1 Psychological factors.....	11
2.3.2 Socio-demographic factors .....	12

2.3.3 Medical factors .....	12
CHAPTER THREE .....	14
3.0 METHODOLOGY .....	14
3.1 STUDY DESIGN.....	14
3.2 STUDY POPULATION .....	14
3.3 STUDY AREA .....	14
3.4 STUDY DURATION .....	14
3.5 SAMPLE SIZE .....	14
3.6 SELECTION CRITERIA .....	15
3.6.1 Inclusion criteria.....	15
3.6.2 Exclusion criteria.....	15
3.7 SAMPLING TECHNIQUE .....	15
3.8 VARIABLES .....	16
3.9 ETHICAL CLEARANCE.....	16
3.9.1 RECRUITING AND TRAINING OF RESEARCH ASSISTANTS.....	16
3.9.2 PRE TESTING OF THE STUDY .....	16
3.9.3 DATA COLLECTION TECHNIQUE.....	17
3.9.4 TOOLS.....	17
3.11 DATA ANALYSIS .....	18
3.12 DISSEMINATION OF THE FINDINGS .....	18
CHAPTER FOUR .....	19
4.0 RESULTS.....	19
4.1 Chapter overview .....	19
4.2 Socio-demographic characteristics of respondents.....	19
4.3 Prevalence of depression among patients attending diabetic clinics .....	19
4.4 Socio-demographic factors related to depression .....	21
4.5 Psychological factors associated with depression.....	24

4.6 Medical factors among patients attending the diabetic clinic .....	27
CHAPTER FIVE .....	31
5.0 DISCUSSION.....	31
5.1 Overview .....	31
5.2 The prevalence of depression.....	31
5.3 The socio-demographic factors associated with depression .....	33
5.4 The psychological factors associated with depression.....	34
5.5 The medical factors associated with depression .....	35
CHAPTER SIX .....	36
6.0 CONCLUSION AND RECOMMENDATIONS .....	36
6.1 Conclusion .....	36
6.2 Recommendations .....	36
6.3 Study limitations and mitigations .....	37
REFERENCES .....	38
APPENDIX 1. INFORMED CONSENT (ENGLISH VERSION) .....	43
KIAMBATANISHO 2. FOMU YA RIDHAA YA KISWAHILI .....	45
APPENDIX 3. STUDY QUESTIONNAIRE. ....	47
KIAMBATANISHO4. DODOSO LA UTAFITI LA KISWAHILI.....	51
APPENDICE 5: ETHICAL CLEARENCE .....	55
APPENDICE 6: PERMISSION OF CONDUCTING RESEARCH ZANZIBAR .....	56
APPENDICE 7: ETHICAL CLEARENCE OF CONDUCTING HEALTH RESEARCH ..	57
APPENDICE 8: PERMISSION OF CONDUCTING RESEARCH AT MNAZI MMOJA HOSPITAL .....	58

**LIST OF TABLES**

Table 1: Frequencies and percentages of PHQ-9 scoring according to sex categories .....21

Table 2: Socio-demographic factors related to depression .....22

Table 3: Bivariate and Multivariate regression analysis for Socio-demographical factors associated with depression .....24

Table 4: Psychological factors related to the occurrence of depression in diabetes patient .....26

Table 5: Bivariate and Multivariate regression analysis for Psychological factors associated with depression .....27

Table 6: Medical factors related to depression among patients attending the diabetic clinic .....29

Table 7: Bivariate and Multivariate regression analysis for Medical factors associated with depression .....31

**LIST OF FIGURES-**

Figure 1: Original conceptual framework.....6

Figure 2: Modified conceptual framework.....7

Figure 3: Prevalence of depression among patients attending diabetic clinics.....21

## **LIST OF ABBREVIATION**

<b>AOR</b>	Adjusted odds ratio
<b>AUROC</b>	Area under the receiver operator curve
<b>CI</b>	Confidence interval
<b>DRC</b>	Democratic Republic of Congo
<b>DSM 5</b>	Diagnostic Statistical Manual 5
<b>MMH</b>	Mnazi Mmoja Hospital
<b>MUHAS</b>	Muhimbili University of Health and Allied Science
<b>ORs</b>	Odds ratios
<b>PI</b>	Principle Investigator
<b>PHQ-9</b>	Patient Health Questionnaires Scale
<b>RA's</b>	Research assistants
<b>SD</b>	Standard deviation
<b>SPSS – 20</b>	Statistical Package for Social Sciences Software version 20
<b>WHO</b>	World Health Organization
<b>ZIHR</b>	Zanzibar Institute of Health Research
<b><math>\chi^2</math></b>	Pearson Chi-square

## **DEFINITION OF TERMS**

### **CONCEPTUAL DEFINITIONS**

#### **Depression**

Is the chronic mental disorder that is characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worthiness, disturbed sleep or appetite, feelings of tiredness, and poor concentration (World Health Organization, 2017).

#### **Major depressive disorder**

Is the condition which involves symptoms such as depressed mood, loss of interest and enjoyment, and decreased energy (Ng, How and Ng, 2016).

#### **Diabetes**

It describes a group of metabolic diseases in which the person has high blood glucose level, either because insulin production is inadequate in the body, or because the body's cells do not respond properly to insulin or both (American International Medical University, 2017).

#### **Diabetes type 2**

Is a long-term metabolic disorder that is characterized by high blood sugar, insulin resistance, and relative lack of insulin in the human body (American International Medical University, 2017).

#### **Diabetes type 1**

Is an auto-immune condition in which the immune system is activated to destroy the cells in the pancreas which produce insulin in the body (American International Medical University, 2017).

### **OPERATIONAL DEFINITION**

**No depression:** An individual assessed using Patient Health Questionnaire 9 and score is 0.

**Minimal depression:** An individual assessed using Patient Health Questionnaire 9 and score is 1–4

**Mild depression:** An individual assessed using Patient Health Questionnaire 9 and score is 5–9

**Moderate depression:** An individual assessed using Patient Health Questionnaire 9 and score is 10–14

**Severe depression:** An individual assessed using Patient Health Questionnaire 9 and score is  $\geq 15$

## CHAPTER ONE

### 1.0 INTRODUCTION

#### 1.1 Background

##### Depression

Depression is a chronic mental disorder which is expected to be a leading cause of disability worldwide; and is a significant contributor to the Global burden of disease, affecting an estimated 350 million people (Hall *et al.*, 2017). The World Health Organization has ranked depression the fourth leading cause of disability worldwide and projected that by the year 2030, it would be the second leading cause (Kessler *et al.*, 2013). Currently, it is the leading cause of disability among populations aged 15 to 44 years, with nearly more than 300 million people affected. It causes adverse complications to the affected individuals as well as the society at large (Kutcher *et al.*, 2017). Furthermore, a previous study indicated that the prevalence of co-morbid major depressive disorder in persons with diabetes ranges from 11 to 33% (Dejenie Habtewold, Radie and Sharew, 2014). Globally, it is estimated that; the epidemiology of depression and the prevalence ranges between 4.4 to 27.0%. It is higher and ordinary among the population in middle and older age groups; other factors is being a female, low socioeconomic status, and poor social relationship (Brody, Pratt and Hughes, 2018). Major depression ranks fourth among disorders with the highest burden of disease worldwide, and it is expected to be ranked first in high-income countries by 2030 (Barger, Messerli-Bürgy and Barth, 2014).

The study conducted in Northern Uganda revealed that, the overall prevalence of depression was 24.7% and among females and males it was 29.2% and 17.0% respectively. This depression is associated with socio-demographic and psychosocial vulnerability factors such as being HIV positive, low social support and increasing previously experienced war trauma events. It is estimated that the epidemiology of depression is common among society living in low socio-economic status, the post-conflict region that is exposed to persistent civil war and conflicts; the latter being characterized by widespread human suffering, long period of displacement and massive genocide like in South Sudan, DRC, Rwanda, and Uganda. Other factors that contribute to the epidemiology of depression are widowhood, disability, being



married for women, unemployment, and absence of formal education, abject poverty, broken families, physical and mental ill-health with poor access to medical care (Mugisha *et al.*, 2015).

In Tanzania, the epidemiology of depression is common in people with psychological trauma such as divorced, neglected and abused, work stress, poverty and positive family history of depression; and the prevalence is 6.5% (Moledina, Bhimji and Manji, 2018). The diagnosis of depression needs at least five of the nine symptoms nearly every day for at least two weeks. Depression is often under-diagnosed in patients with diabetes mellitus and thus contributes to poor self-management and poor health outcome (Park and Reynolds III, 2015).

The psychological distress of the clients with diabetes is very high, quality of life is poor, and daily life of an individual is continuously under threat, making people more vulnerable to stress and depression. The prevalence of major depression is higher in patients with diabetes mellitus compared to non-diabetes mellitus patients within the general population (Sweileh *et al.*, 2014). Some researches indicate that depression is highly prevalent among diabetes mellitus, and that the risk of depression might increase in the presence of other co-morbid conditions. Also, previous studies suggest that being a female, not adherent to anti-diabetic medications, having a low educational level and being unemployed were significant predictors of depression and were associated with an increased likelihood of developing major depressive disorders (Sweileh *et al.*, 2014). A cross-sectional analysis conducted in United Kingdom highly recommends the introduction of the psychological intervention into the diabetic health care plan to reduce the number of the depressed or the unrecognized depressed diabetic patients and consequently offer them a better quality of life. Some studies reveal that there is a positive association between depressive symptoms and glucose levels in women but not in some men (Webb *et al.*, 2017). The direction of this relationship seems to be from depressive symptoms to glucose levels rather than the reverse. This co-morbid, depression, and diabetes carry a massive public health burden in low-income countries. As such, the identification of risk factors for these disorders is critical.

## **Diabetes mellitus**

Diabetes mellitus becomes the major leading chronic physical illness across the world. It is projected that by 2030, around 28 million (82.5%) people with diabetes will live in middle and low-income countries, with many individuals living in urban areas having the highest chance of developing the disease due to unhealthy dietary patterns, lack of physical exercises, lifestyle events and stressful situation in the areas (Leone *et al.*, 2012). Worldwide, the epidemiology of type 1 diabetes mellitus occurs in children and adolescents while type 2 occurs with older age, overweight and obesity, unhealthy diet, physical inactivity, and cigarette smoking; with the prevalence rising from 4.7% to 8.5% in the adult population. In 2013, diabetes mellitus related complications were a major cause of disability and reduced quality of life, and an estimated 5 million people aged 20–79 years worldwide died prematurely from the disease (Gizaw *et al.*, 2015).

Diabetes was the eighth leading cause of death in both sexes and the fifth leading cause of death in women in 2012 (World Health Organization, 2016). It is the disease of developed and developing countries; in America, Asia, and Europe, the majority of young people diagnosed with type 2 diabetes mellitus died due to overweight, heart diseases, and obesity (Mohamadi and Cooke, 2010). In a study conducted in Zambia and South Africa, the prevalence of diabetes mellitus was estimated to be 2.9 to 9.8% (Bailey *et al.*, 2016). Diabetes is likely to increase the risk of several infections in the Sub-Sahara region, including tuberculosis, pneumonia, and sepsis. In Tanzania, about 41% of individuals with Insulin Dependent Diabetes Mellitus died within five years after diagnosed; with half of the deaths being attributed to diabetes-related complications (Hall *et al.*, 2011).

In Tanzania, the epidemiology and the prevalence of diabetes mellitus diabetes was 11.9%, being 4.7% for males and 7.2% for females. Diabetes tends to increase with increasing age as it is shown to be high in ages 41-60 years and to decrease at age >60 years for both men and women (Ruhembe, Mosha and Nyaruhucha, 2014). Most individuals were undiagnosed or untreated, and the prevalence of diabetes-associated complications was high (Stanifer *et al.*, 2016). A previous study indicated that, socio-economic indicators at the individual level such as unemployment, and low levels of education were associated with depression in the

diagnosed depression–diabetes co morbidity. The lifestyle events and stressful situation are the primary criteria and indicators for the increasing prevalence of diabetes mellitus (Gemeay *et al.*, 2015). It imposes a financial burden on the social and economic resources and on the overall government budget. Diabetes mellitus is a complex and long-term disease that affects day-to-day life and can add a burden to an already complicated life. The more complications the person experiences, the higher the possibility that the individual may develop depressive symptoms. Conversely, depressive symptoms are common in the chronically medically ill, although they are frequently undiagnosed and untreated. Furthermore, studies suggest that among patients with co morbid diabetes mellitus and depression, the severity of depression is interconnected with the severity of diabetes-related complications (Igwe *et al.*, 2013).

## **1.2 Problem statement**

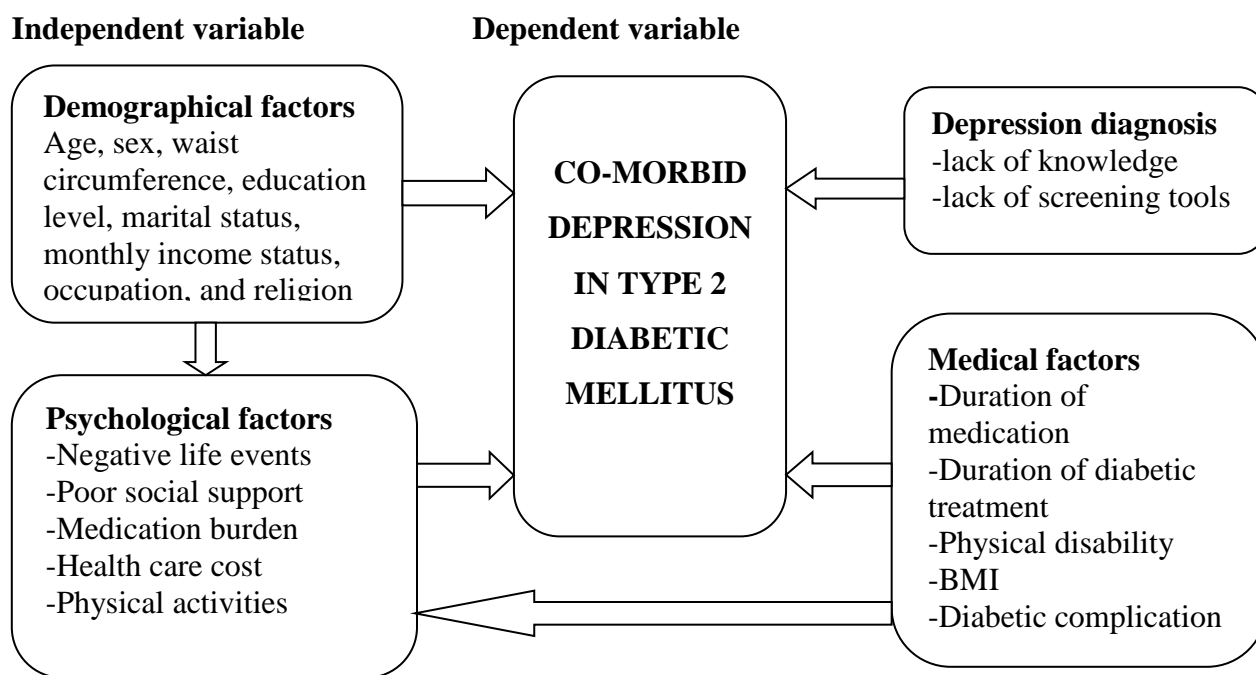
Diabetes mellitus and depression are common health conditions which affect people in the world. A previous study in Kenya showed that 20.9% of the 253 studied patients with diabetes mellitus were screened positive for depression with the prevalence of 27% in females and 15% in males (Shirey *et al.*, 2015). Another study conducted sub-Saharan Africa revealed that undetected depression might contribute to poor health outcome, including poor self-management, poor medication adherence, poor regular clinical attendance, and poor glucose control. These complications were statistically significant risk factors associated with depression (Pettrak *et al.*, 2015). Also, this study revealed that depression in patients with diabetes mellitus resulted from a complex interaction of social, psychological and biological factors. Furthermore, it was found that patients with diabetes mellitus who had gone through difficult life events were more likely to develop depression than those who had not. Although depression is a more common illness in outpatient consultation rooms and clinics, it is often unnoticed and misdiagnosed by many doctors and nurses, with a likelihood of increased stress levels (Bădescu *et al.*, 2016).

In the year 2011, Zanzibar was estimated to have about 1.3 million people. The prevalence of Diabetes mellitus in the general population was moderately high at 3.7%; being 8.4% for the older age group and 2.1% for the younger age group. The prevalence of mental illness in the general population stood at 6.8 % with significant gender difference (Ministry of Health

Zanzibar, 2012). Little is known about the prevalence of depression and associated factors and diabetes mellitus among diabetic patients attending MMH in Zanzibar. Despite the significant negative consequences associated with the co-morbidity of depression and diabetes mellitus, depression among diabetic patients continues to remain undiagnosed and untreated. However, there is limited number of studies conducted in Zanzibar Tanzania to address the gaps. Therefore, this study aimed to identify the existing gaps in clinical practice, knowledge and to determine the prevalence and factors associated with depression among patients attending diabetic clinic.

### **1.3 Conceptual framework**

The conceptual framework below (Habtewold, Yohannes and Gebreegziabhere, 2014), illustrates the association between the dependent variable and independent variables of interest. Although not all patients with diabetes mellitus can develop depression. The independent variables are hypothesized to influence depression. The framework shows the relationship between independent and dependent variables that take part in the co morbid depression in type 2 diabetic mellitus. The researchers illustrated the interaction of different demographic, psychological, and medical associated risk factors in the development of co-morbid depression among diabetic patients. Patients with type 2 diabetes mellitus; their demographical factors, psychological factors, medical factors, and lack of diagnosis of depression by medical personnel, can have a significant influence in the development of depression (Ingle *et al*, 2017).

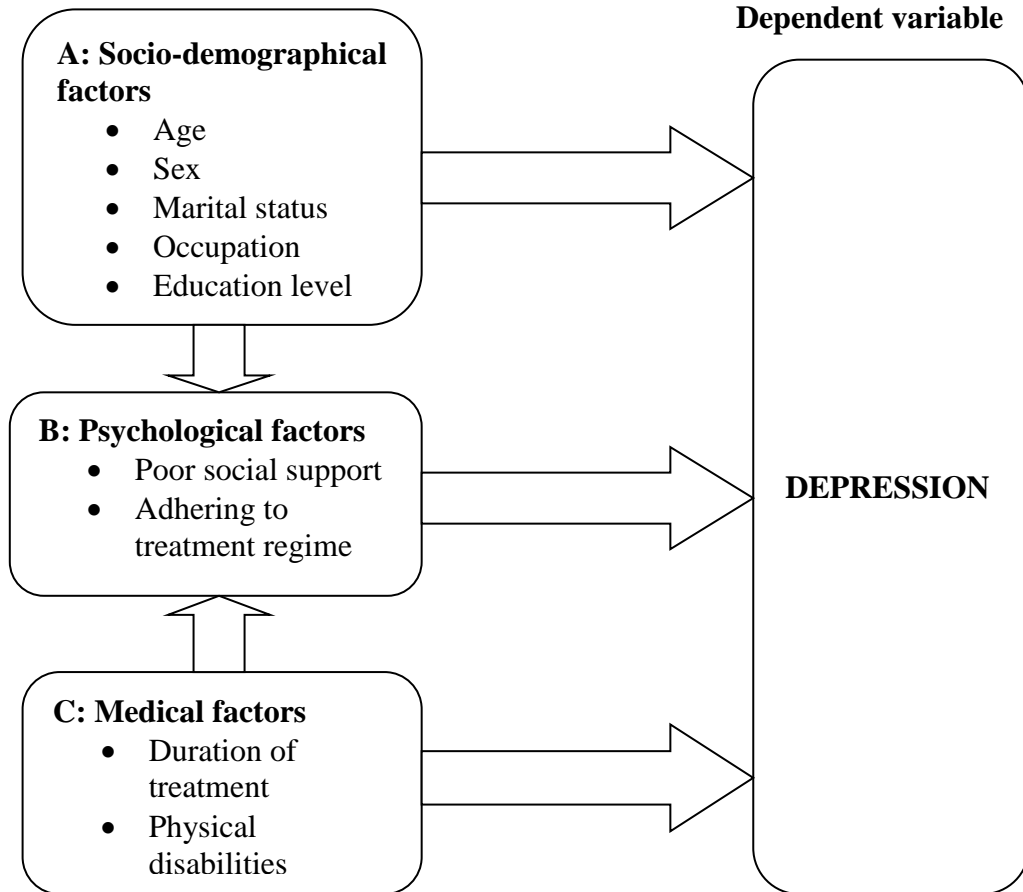


**Figure1.** The original conceptual framework (Source: Black Lion Hospital diabetic clinic, 2013).

### 1.3.1 Modified conceptual framework

The conceptual framework below demonstrates the complex interaction of variables of interest that might cause the development of depression. This can be influenced by patients' socio-demographical factors, medical factors, and psychosocial factors. The previous study demonstrated that depression is a common co-morbid health problem in diabetic patients. It has been demonstrated that low family income, presence of  $\geq 3$  diabetic complications, negative life events, increased health care costs/financial stress, and poor social support were statistically significant risk factors associated with depression (El Mahalli, 2015). Another study revealed that the prevalence of depression among diabetic patients was significantly associated with low socio-economic status, diabetic retinopathy, poor social support, and adverse life events (Suglia *et al.*, 2016).

## Independent variable



**Figure 2. Modified conceptual framework**

### 1.4 Rationale of the Study

The study results will facilitate early detection and diagnosis of depression among diabetic patients, timely referral and management. The result will further inform the development of a strategy for improving the quality of life of diabetic mellitus patients. The study contributes to the literature on depression and diabetes co-morbidity and has indicated gaps for further research.

### **1.5 Purpose of the study:**

The study helps to understand the magnitude or the prevalence of depression and the associated factors among diabetic patients. Moreover, knowing the prevalence may contribute to planning for improvement of clinical practice and care particularly by fostering more positive self-management. Finally, this study may convince policy makers of the need for integration services in patients living with diabetes.

### **1.6 Research questions**

#### **Main research question**

What is the prevalence of depression and associated factors among patients attending Diabetic clinics at Mnazi Mmoja Referral Hospital in Zanzibar?

#### **Specific research questions**

1. What is the prevalence of depression among patients attending diabetic clinics?
2. What are the socio-demographical factors associated with depression among patients attending the diabetic clinic?
3. What are the psychological factors associated with depression among patients attending the diabetic clinic?
4. What are the medical factors associated with depression among patients attending the diabetic clinic?

### **1.7 Broad objectives**

To determine the prevalence and factors associated with depression among patients attending Diabetic clinics at Mnazi Mmoja Referral Hospital in Zanzibar

#### **1.7.1 Specific objectives**

1. To determine the prevalence of depression among patients attending diabetic clinics
2. To determine the socio-demographical factors associated with depression among patients attending a diabetic clinic
3. To determine the psychological factors associated with depression among patients attending a diabetic clinic
4. To determine the medical factors associated with depression among patients attending a diabetic clinic

## CHAPTER TWO

### 2.0 LITERATURE REVIEW

#### 2.1 The magnitude of Depression among diabetes patients

The prevalence of depression is moderately high in individuals with diabetes mellitus, currently affecting 12–24% of diabetes mellitus patients in the world. Depression is not only associated with impaired quality of life, but it is also associated with poor blood glucose control, increased risks for the development of diabetes complications and higher mortality rates among patients (Pouwer *et al.*, 2011). Compared with non-diabetic, people with diabetes mellitus also have a 24% increased risk of developing depression. Depressive signs and symptoms are common in the medically chronically ill patients; such as cancer, hypertension, and cardiovascular diseases. However, patients with co-morbid depression and physical diseases are frequently unrecognized, undiagnosed, and untreated. Furthermore, the prevalence and incidences of depression in diabetes mellitus are still poorly understood (Andreoulakis *et al.*, 2012). Patients may grieve before adjusting their lifestyle; others have prolonged distress, anxious, worries, and may develop mental illness, most commonly depression. The severity of depression is associated with the severity of diabetes-related complication such as depressed mood, fears, and non-compliance of medication. Furthermore, depression was significantly higher in diabetic women (28%) compared with diabetic men (18%). Depression was higher in subjects with diabetic mellitus if they were not married or had no education and or not employed (Igwe *et al.*, 2013). A study in Cameroon revealed that 60% of the participants with diabetic mellitus had clinically significant depressive symptoms (Hall *et al.*, 2017). The prevalence of depressive symptoms in the diabetic population was higher than that seen in diabetic patients in other low, and middle-income countries, and had higher prevalence of clinical symptoms than men. Likewise, the large proportion of diabetic patients may be experiencing depressive symptoms for which they are currently not receiving treatment and other medical support (Andreoulakis E, Hyphantis T, Kandylyis D, 2012; Sweileh *et al.*, 2014). Diabetes and depression have incredibly negative impact on quality of life and overall life expectancy. Compounding the co-morbidity of diabetes mellitus and



depression is the fact that people with depression may develop behavioral factors that may lead to overall lack of self-care, non-adherence to medication and changes in lifestyle.

## **2.2 The magnitude of diabetes**

Diabetes mellitus is a chronic metabolic condition characterized by insufficient production of insulin or the inability to use the insulin that the body produces, resulting in problems of regulating blood sugar. It is estimated that in 2010, 12.1 million people were estimated to be living with diabetes in Africa, and this is projected to increase to 23.9 million by 2030. Diabetes is associated with several complications including loss of vision, kidney failure, cardiovascular disease, and lower limb amputation; and recent evidence indicates that it may lead to increased cognitive decline (Habtewold, Yohannes and Gebreegziabhere, 2014). Diabetes mellitus exist in two forms; type 2 diabetes accounts for well over 90% of diabetes in Sub-Saharan Africa, and population prevalence proportions ranged from 1% in rural Uganda to 12% in urban Kenya and Type 1 diabetes prevalence was low and ranged from 4 per 100,000 in Mozambique to 12 per 100,000 in Zambia. Gestational diabetes prevalence varied from 0% in Tanzania to 9% in Ethiopia (Hall *et al.*, 2011). Diabetes is likely to increase the risk of several infections in the sub-Sahara region, including tuberculosis, pneumonia, and sepsis. In Tanzania, about 41% of individuals with Insulin Dependent Diabetes Mellitus died within five years, and half of these deaths were attributed to diabetes complications (Hall *et al.*, 2011).

Individuals with diabetes are likely to experience one or more chronic illnesses such as heart disease, stroke, physical disability, mental disorders, eye problems, and kidney disease. As the prevalence of diabetes increases, the macro and micro vascular complications associated with the disease will make it a very costly disease to manage, consuming an ever-increasing massive amount of resources and national healthcare budgets. It is estimated that Africa spends 7% of its healthcare budget on the management of diabetes. Healthcare expenditure due to diabetes in 2015 was 3.4 billion dollar and is estimated to increase to 5.5 billion dollar in 2040. However, 66.7% of people with diabetes in Africa are assumed to be undiagnosed. This unmet need for diabetes diagnosis is a result of weak health systems in many Sub-Sahara African countries that fail to screen patients for diabetes. The prevalence of diabetes is rapidly

growing and the disease mostly affects young adults. This has the potential to affect health, economic productivity, and it also threatens the livelihood of many families within the region (Mutumbizi *et al.*, 2018). Another study revealed that 9.8% in patients with type 2 diabetes mellitus had experience symptoms of depression. The co morbidity was more predominant in most areas, and prevalence increases with age (Alonso-Moran *et al.*, 2014). Diabetes mellitus is a complex disease, which affects day-to-day life, and can add further burden to an already complicated life. Depression is not generally listed as a complication of diabetes; however, it can be one of the most common and dangerous complications. The depressed patients with diabetes mellitus cannot achieve self-management behavior, quality of life, which then makes disease control more difficult, the reason that leads to the complications (Gemeay *et al.*, 2015).

## **2.3 Factors associated with Depression among Diabetic patients**

### **2.3.1 Psychological factors**

The increased risk of depression among patients with diabetes has been frequently conceptualized as having two possible mechanisms. First, the psychosocial burden of having a chronic medical condition like diabetes may promote the development of depressive symptoms. Second, having co morbid depression decreases individuals' ability to successfully self-manage diabetes and increases likelihood for poor diabetes outcomes (Park and Reynolds III, 2015). The study in Kenya which involved 253 participants, suggested that depressive symptoms are common among patients with diabetes mellitus, and there are unrecognized mental illnesses among patients attending medical facilities (Shirey *et al.*, 2015), and thus each disease is a risk factor for developing the other. Poor social support is the risk factors significantly associated with depression among diabetes patient (Habtewold, Yohannes and Gebreegziabhere, 2014).

Type 2 diabetes mellitus brings about an increasing psychosocial problem in adult patients. Life routines and social functioning are altered by recurrent symptoms, regular medication taking, and higher demands for healthy lifestyles. Coping with threats on physical health, communication with healthcare professionals about personal health beliefs and illness perceptions may be troublesome. The most common psychological disorders experienced by adult type 2 diabetes mellitus patients are diabetes-related distress and depressive disorders

(Chew *et al.*, 2016). The increase in vulnerability to depression in patients with diabetes is not known, but it is thought to be linked to some physiological changes in the neuroendocrine system (Bădescu *et al.*, 2016).

### **2.3.2 Socio-demographic factors**

A previous study revealed that over 18 months, diabetes mellitus patients who ever experienced major depressive disorder and those who ever experienced diabetes-related distress constituted about 20% and 30% of the sample, respectively. In the United Kingdom among adults with diabetes mellitus, after controlling for age, gender, ethnicity, and socioeconomic status, the relationship between diabetes mellitus and depression was still statistically significant (Chew *et al.*, 2016). A higher number of women screened were found to have depression compared to men. Different studies conducted worldwide have revealed that certain demographical factors are associated with depression. The study conducted in Ethiopia revealed that the prevalence of depressive symptoms was two times higher in female type 2 diabetic patients compared with male (Habtewold, Alemu and Haile, 2016). Another study from the Middle East reported that demographical factors like older age and low income were associated with the risk of depression (Albekairy *et al.*, 2018). The psychosocial burden of having a chronic medical condition like diabetes, stressful life events e.g. grief, financial failures, loneliness and others might promote development of depressive symptoms. Even though depression was found to be common among individual with no formal education and those with low income, it was observed to be more common in female compared to male and more common among married individuals compared to single ones. Likewise, occupation status was found to have a significant relationship with depression (Shittu *et al.*, 2014).

### **2.3.3 Medical factors**

The prevalence of diabetes worldwide has been found to be one in 11 adults, and the estimated prevalence of the impaired glucose at one in 15 adults. These numbers are expected to increase, especially in the urban population, leading to more medical and economic challenges (Bădescu *et al.*, 2016). Depression is a common and severe medical disease with a lifetime prevalence ranging from approximately 11% in low-income countries to 15% in high-income

countries. A survey conducted in Asia showed that the prevalence rate for the symptoms of depression among patients with diabetes mellitus was 5.7%. The prevalence of depression could be up to three times higher in clients with type 1 and twice as high in people with type 2 diabetes compared with the general population worldwide. The presence of depression and anxiety in diabetic patients worsens the prognosis of diabetes and increases non-compliance to medical treatment (Bădescu *et al.*, 2016). Diabetes mellitus is associated with several complications, including loss of vision, kidney failure, impotence, cardiovascular disease, and lower and upper limb amputation that can be associated with sign and symptoms of depression (Danna *et al.*, 2016). Additionally, depression in patients with diabetes mellitus also increases mortality, especially after myocardial infarction, and decreased adherence to diabetes treatment in older adults and in women (Petraik *et al.*, 2015).

The increased risk of depression in patients with diabetes mellitus may be attributed to lifestyle behavior. There is evidence that the prevalence of depression has moderately increased in undiagnosed diabetic mellitus patients, and markedly increased in the previously diagnosed diabetic patients (Bădescu *et al.*, 2016). A previous study suggested that health-care providers should perform a comprehensive assessment to address common mental disorders, especially depression, and need for the development of diagnostic tools and training for the management of depression. The negative consequence of depression in diabetes increases healthcare cost, mortality, and the risk of complications. The diabetes treatment program must incorporate regular screening for depression (Nouwen *et al.*, 2010). Healthcare service and health personnel need to recognize detection of undiagnosed forms of depression, which may be due to lack of awareness among patients and providers (Tilahune *et al.*, 2016). The aim of the present study was therefore to determine the prevalence of and factors associated with Depression among patients attending Diabetic clinics at Mnazi Mmoja Referral Hospital in Zanzibar. Finally, depression in patients with diabetes mellitus remains undetected or undiagnosed due to lack of knowledge to diagnose, skills to diagnose and lack of tools that can be used to diagnose the disease. This can contribute to poor self-management and medication adherence, patients who suffer from diabetic Mellitus are not aware of the depression.

## **CHAPTER THREE**

### **3.0 METHODOLOGY**

#### **3.1 STUDY DESIGN**

This was a descriptive cross-sectional design employing a quantitative approach. This design captures participants at a specific point in time. The participants were readily available and accessible during regular appointments during clinic hours.

#### **3.2 STUDY POPULATION**

Clients aged 18 years and above attending the diabetic clinic at the time of the study were involved. The Mnazi Mmoja Referral Hospital conducts regular clinic every Monday and Wednesday. Approximately 325 clients are served during regular clinic appointment in a week, and 1304 in a month. Patients are served on a first-come-first-serve basis; clients are checked for vital sign, blood glucose level, and bodyweight. The appointment numbers for all patients who were available during regular clinic were put in a lottery box from which the sample was later drawn. Those selected were recruited into the study and asked to provide written informed consent to participate.

#### **3.3 STUDY AREA**

The study was conducted at the diabetic clinic in Mnazi Mmoja Referral Hospital in Zanzibar. It is public referral hospital that receives patients from five regions. It serves about 1.3 million population of Zanzibar (Ministry of Health, Community, Development, Gender, *et al.*, 2016).

#### **3.4 STUDY DURATION**

The study was conducted between March 2019 and June 2019

#### **3.5 SAMPLE SIZE**

The sample size was estimated based on the study done in Ethiopia that showed that the prevalence of depression among Diabetic outpatient patients was 20.9% (Shirey *et al.*, 2015). An estimated sample size for the study was calculated using the following formula.

$$N = \frac{Z^2 P(1-P)}{d^2}$$

Whereby:

N= estimated sample size

Z= confidence level at 95% (standard value of 1.96)

P= Prevalence of Depression among Diabetes 20.9%

d= Margin of error at 5% hence, according to the formula above

$N = 1.96 \times 1.96 \times 0.209 (1 - 0.209) / 0.05 \times 0.05$

**n=254**

Adjusting response =  $n \times 1/R$

n= sample size=254

R= Response rate=95%

Adjusted response=  $254 \times 1/0.95$

Sample size was (n) = **267**

### **3.6 SELECTION CRITERIA**

#### **3.6.1 Inclusion criteria**

1. Clients aged 18 years and above with at least three months of diabetic diagnosis

#### **3.6.2 Exclusion criteria**

1. Clients with a history of any mental disorders (e.g., depression, anxiety, mood disorders, etc.) and on medications for such disorders.
2. Clients who could not communicate or speak, see properly and experiencing hearing problems during the time of the study
3. Diabetic clients who were in critical condition during data collection.

### **3.7 SAMPLING TECHNIQUE**

A simple random sampling technique was used to select the participants. Using the simplest lottery method; patients' registration numbers on separate paper of the same size, color, and shape was located into lottery box. A blindfold selection was performed. Required numbers of papers were selected for the desired sample size. The selection of participants thus depended on chance

### **3.8 VARIABLES**

The independent variables of interest were socio-demographic, medical, and psychological factors. The dependent or outcome variable was Depression

### **3.9 ETHICAL CLEARANCE**

Ethical clearance to conduct the study was sought from the MUHAS Institution Review Board. Also, permission to conduct the study was sought from Mnazi Mmoja Referral Hospital; the Zanzibar Institute of Health Research (ZIHR) and the Office of Second Vice President in Zanzibar. The potential study participants were provided with written informed consent, provided with detailed information about the study before they could consent to participate. The research assistants interviewed the participants after giving informed consent. The consent form clearly stated the benefits, alternatives, and risk of participation in the study. For those participants who were emotionally disturbed due to some questions, they were given time to feel comfortable to continue if they preferred. Participants were informed that there would be no financial gain following participation in the study.

#### **3.9.1 RECRUITING AND TRAINING OF RESEARCH ASSISTANTS**

There were four research assistants (RAs), who helped with data collection. These RAs were the students who recently completed a Diploma in Nursing and Midwifery, competent in data collection, and can assist clients to receive their regular intended services at the clinic and participate in the study. Also, before the commencement of data collection, the selected RAs received three days of training to make sure they had knowledge in research basics and ethical issues.

#### **3.9.2 PRE TESTING OF THE STUDY**

A sample of 15 patients with diabetes mellitus was selected using simple random sampling to pre-test the tool at Kivunge District Hospital at the diabetes clinic. The tool was found valid and consistent among the questions by 99.9%. Some questions were corrected to improve clarity. Also the tool was reviewed by three experts and checked for duration it would take in actual data collection. This enhanced understanding of the approximated duration for the interviews before introducing the instrument to the actual study participants.

### **3.9.3 DATA COLLECTION TECHNIQUE**

Self-administered questionnaires were given to respondents who were able to read and write. The structured self-administered questionnaire in Kiswahili was used for data collection because this is the commonly spoken language by people in the study area. For illiterate's patients, the research assistants collected data by administering the questionnaires. Data obtained included socio-demographic information, psychological factors, and medical factor. Patients were interviewed after signing a written informed consent.

### **3.9.4 TOOLS**

The tool was validated by conducting pre-testing at one selected hospital, distributed to a clinical specialist in mental health and diabetic, and some modifications were made in the tool. Depression was measured using a nine items screening instrument that asks about the frequency of symptoms of depression in the past two weeks. Response categories of “not at all,” “several days,” “more than half the days,” and “nearly every day” gave a score of 0 to 3. PHQ-9 score of 0, 1-4, 5-9, 10-14, and  $\geq 15$  represented no depression, minimal depression, mild depression, moderate depression and severe depression respectively

### **3.10 VALIDITY AND RELIABILITY**

The depressive symptoms were assessed by Health Patient Questionnaire Scale, which is a structured tool for assessing Depressive symptoms (Habtewold, Radie and Sharew, 2015). Two studies explained below had used HPQ-9 scale and provided valid and reliable results. The study conducted in South Africa; PHQ-9 showed reasonably high validity (AUROC 0.85, 95 % CI 0.82–0.88) with a cut point of  $\geq 9$ , the PHQ-9 had sensitivity of 49 % and specificity of 94 %. Internal consistency of the PHQ-9 revealed a Cronbach's alpha of 0.76 (Bhana *et al.*, 2015). For instance, the use of HPQ-9 on the study conducted in Ethiopia showed the internal consistency of the tool and validity of questions. The reliability coefficient, Cronbach's  $\alpha$  for the PHQ-9 scale was 0.72 indicating acceptable consistency of the tool (Habtewold TD, Mulugeta S, 2014). Also, a study conducted in Tanzania, which assesses depression and HIV risk among men who had sex with men using PHQ-9 illustrated participants with depression (Ahaneku *et al.*, 2016). Thus this tool can be used to measure the prevalence of depression and the use of medications in treating mental disorder. The PHQ-9 is useful as a screening tool for



depression among patients receiving treatment for chronic condition care in a public health facility. The tool is a comprehensive, fully structured tool designed to be used by trained interviewers for the assessment of mental disorders.

### **3.11 DATA ANALYSIS**

The data obtained were stored by the Principal Investigator (PI) in a safe place. Data entry was done by the PI, followed by cleaning and coding during and after the data entered in the Statistical Package for Social Science (SPSS version 23.0). In summarizing the data, descriptive statistics illustrated the basic features and provided a summary of sample and measures in the study, including frequencies, percentages, tables, SD, and mean. Inferential statistics were used to determine the association between variables and make a prediction. Cross-tabulation was used to test the relationship between categorical variables by using Chi-square test whereby a P-value was reported. Logistic regression analysis was carried out to determine whether selected independent variables were significantly associated with the occurrence of depression or not. Multiple logistic regression models were used to control for potential confounding factors. Depression was evaluated for an individual client using the PHQ-9 score; the level of depression depended on the score of the test.

### **3.12 DISSEMINATION OF THE FINDINGS**

As the rationale of the study is to fulfill the requirements of Master Degree in Nursing Mental Health, the report will be disseminated to the management of Mnazi Mmoja Referral Hospital for implementation, School of Nursing for educational and reference purposes and Ministry of Health for further researches involving the general population. Also, a dissertation will be sent to the library for further reference to other researchers. Also, research results will be published in a national or international research journal.

## **CHAPTER FOUR**

### **4.0 RESULTS**

#### **4.1 Chapter overview**

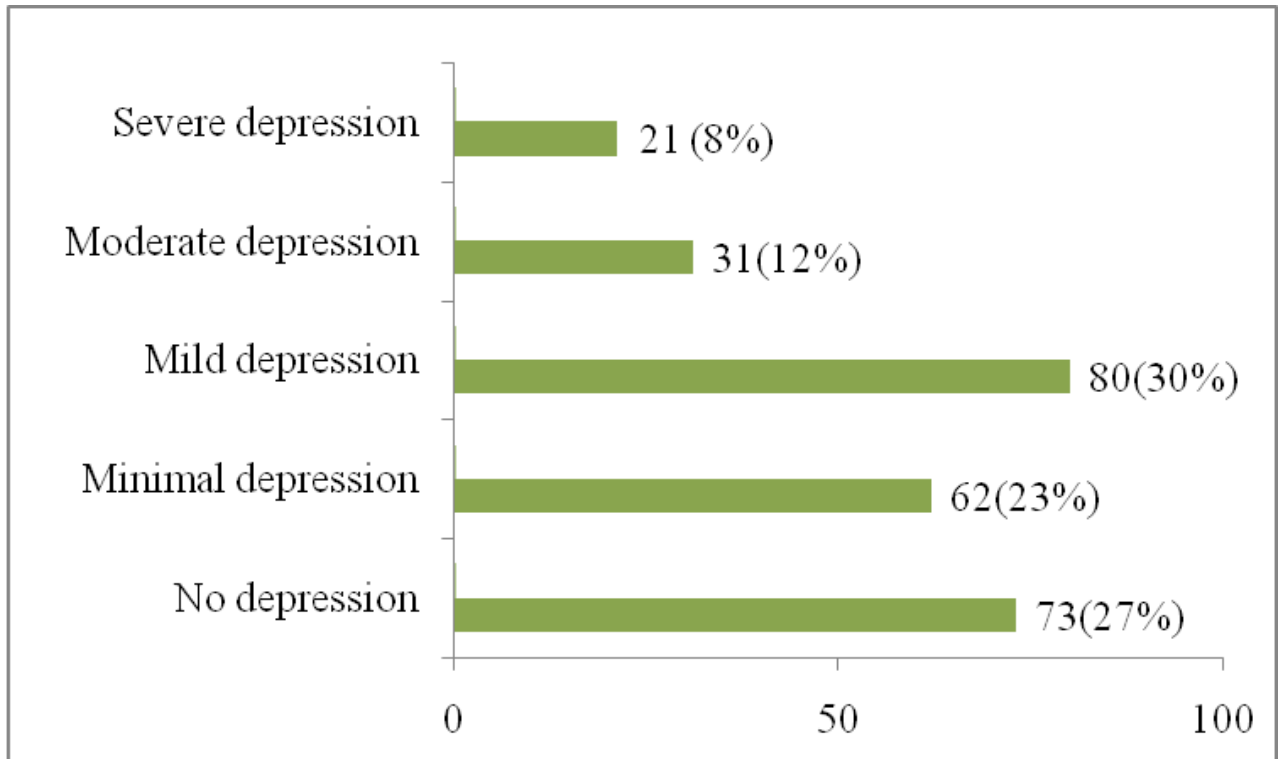
This chapter provides a detailed analysis of the data collected from the field. The chapter starts by presenting the results according to the research questions. It presents the results on the prevalence and factors associated with depression among patients attending Diabetic clinics at Mnazi Mmoja Referral Hospital in Zanzibar. Data were collected from 267 diabetic patients attending the diabetic clinic at Mnazi Mmoja Referral Hospital during the period of data collection. The chapter is divided into sub-sections: socio-demographic characteristics, the prevalence of depression, socio-demographical factors associated with depression, psychological factors associated with depression, and medical factors associated with depression among patients attending the diabetic clinic.

#### **4.2 Socio-demographic characteristics of respondents**

Respondents in this study were heterogeneous with a minimum sample of 267 and a response rate of 100%. According to sex, out of 267 respondents, 142 (53%) of respondents were male. Respondent's age varied between a minimum of 20 years and a maximum of 83 years with a mean age of 50 years and standard deviation  $\pm 14$ . The most (179, 67.0%) prominent age group was between 45 and above years. A large proportion (143, 53.6%) of respondents was not employed. About marital status, out of 267 respondents, 190 (71.2%) were married. Of 267 respondents, the majority (125, 46.8%) had completed secondary school, and only 21 (7.9%) had completed college or university education (Table 2).

#### **4.3 Prevalence of depression among patients attending diabetic clinics**

The prevalence of depression was 73%; about sex, male were more affected (93, 65.5%) than female. Of 194 diabetic patients, the level of depression was categorized according to individual assessment PHQ-9 scoring as follows: 73 (27%) clients had no depression, 62 (23.0%) clients had minimal depression, 80 (30.0%) clients had mild depression, 31 (12.0%) clients had moderate depression, and 21 (8%) clients had severe depression and as shown in figure 3 below.



**Figure3:** Prevalence of depression among patients attending diabetic clinics (N=267)

**Frequencies according to PHQ-9 individual score by sex**

Majority of the participants scored high (80, 30%) in mild depression as illustrated in table1 below

**Table 1: Frequencies and percentages of PHQ-9 scoring according to sex (N=267)**

PHQ-9 Score	Sex categories		Total
	Male	Female	
No depression	49(34.5%)	24(19.2%)	73(27%)
Minimal depression	29(20.4%)	33(26.4%)	62(23%)
Mild depression	36(25.4%)	44(35.2%)	80(30%)
Moderate depression	14(9.9%)	1 (13.6%)	31(12%)
Severe depression	14(9.8%)	7(5.6%)	21(8%)
<b>Total</b>	<b>142</b>	<b>125</b>	<b>267</b>

#### 4.4 Socio-demographic factors related to depression (N=267)

To determine the relationship between the occurrence of depression and demographic variable of the respondents, chi-square test was employed. Results revealed that, only sex showed significant relationship between depression and socio-demographic factors ( $\chi^2=7.841$ ;  $p<0.05$ ). Other results are shown in table 2 below.

**Table 2: Socio-demographic factors related with depression (N=267)**

<b>Variable</b>	<b>n (%)</b>	<b>Depressed</b>	<b><math>\chi^2</math></b>	<b>p-value</b>
<b>Age group</b>				
18-24 years	9 (3.4)	6 (66.7%)	2.26	0.52
25-34 years	32 (12)	20 (62.5%)		
35-44 year	47 (17.6)	34 (72.3%)		
45 and above	179 (67)	134 (74.9%)		
<b>Sex</b>				
Male	142 (53.2)	93 (65.5%)	7.84	0.005
Female	125 (46.8)	101 (81%)		
<b>Occupation</b>				
Government employee	24 (9)	20 (83.3%)	5.26	0.15
Non-government employee	25 (9.4)	16 (64%)		
Self-employed	75 (28.1)	49 (65.3%)		
Not employed	143 (53.6)	109 (76.2%)		
<b>Marital status</b>				
Married	190 (71.2)	131(68.9%)	6.07	0.11
Unmarried	20 (7.5)	15 (75%)		
Divorced	22 (8.2)	17 (77.3%)		
Widow	35 (13.1)	31 (88.6%)		
<b>Level of education</b>				
No formal education	38 (14.2)	32 (84.2%)	4.191	0.24
Primary school	83 (31.1)	58 (69.9%)		
Secondary education	125 (46.8)	87 (69.6%)		
College or university	21 (7.9)	17 (81%)		

#### **4.4.1 Bivariate and Multivariate regression analysis for socio-demographical factors associated with depression (N=267)**

Logistic regression (Bivariate and multivariate analysis) was employed to test the association between demographic variable and the occurrence of depression. The results showed female diabetes patients were 0.5 times less likely to have depression compared to male diabetic patients (OR=0.5: 95% CI, 0.257; 0.793,  $p<0.05$ ). However, gender was observed not to influence the occurrence of depression when other factors were considered. (AOR=1.8: 95% CI, 0.94; 3.31,  $p>0.05$ ). Others demographic factors were not associated with depression as indicated in table 3.

**Table 3: Bivariate and Multivariate regression analysis for socio-demographical factors associated with depression (N=267)**

Variable	OR(95%CI)	p-value	AOR(95%CI)	p-value
<b>Sex</b>				
Male ( <b>ref</b> )				
Female	0.45(0.26-0.79)	0.006	1.8 (0.94-3.31)	0.07
<b>Occupation</b>				
Government employee ( <b>ref</b> )				
Non-government employee	0.34(0.09-1.37)	0.13	0.5 (0.11-1.93)	0.29
Self employed	0.38(0.12-1.22)	0.1	0.4 (0.12-1.59)	0.21
Not employed	0.64(0.21-2.01)	0.44	0.5 (0.15-1.95)	0.34
<b>Marital status</b>				
Married( <b>ref</b> )				
Unmarried	1.35(0.47-3.89)	0.58	1.3 (0.43-4.02)	0.62
Divorced	1.53(0.54-4.35)	0.42	1.4 (0.49-4.17)	0.51
Widow	3.49(1.18-10.34)	0.02	2.3 (0.71-7.34)	0.16
<b>Level of education</b>				
No formal education	1.26(0.31-5.07)	0.75	1.4 (0.29-6.88)	0.66
Primary school	0.55(0.17-1.79)	0.32	0.7 (0.18-2.77)	0.61
Secondary education	0.54(0.17-1.71)	0.29	0.7 (0.91-2.53)	0.58
College or university ( <b>ref</b> )				

#### **4.5 Psychological factors associated with depression (N=267)**

The current study intended to determine psychological factors associated with the occurrence of depression among diabetic patient. Diabetic patients' responses to the three items were generated to understand this objective, which was subjected to descriptive analysis using frequency and percentage. Data were analyzed item by item using frequency and percentage for each item.

The results display the frequency and percentage of each of the three (3) items on psychological factors among diabetic patients attending the diabetes clinic. The results show that, 212 (79.4%) of respondents received psychological and social support, 192 (71.9%) had no difficult in adhering to the treatment regime, and 169 (63.3%) had recently felt angry, sad, scared or stressed. The descriptive statistics for each of the psychological factor items are shown in table 4. Cross tabulations were done to find out the relationship between psychological factors and the occurrence of depression among diabetes patients. The results revealed a significant relationship between the occurrence of depression among diabetes patients and psychological factors such as receiving psychological and social support ( $\chi^2: 4.202^a$ ,  $p<0.05$ ), having difficulties in adhering to the treatment regimen ( $\chi^2:22.440^a$ ,  $p<0.01$ ) and recently felt angry, sad, scared or stressed ( $\chi^2:33.133^a$ ,  $p<0.01$ ) as depicted in table 4.

**Table 4: Psychological factors related to the occurrence of depression in diabetes patient (N=267)**

Variable	n (%)	Depressed	$\chi^2$	p-value
Received any psychological and social support				
<b>Yes</b>	212 (79.4)	148 (69.8%)	4.202	0.04
<b>No</b>	55 (20.6)	46 (83.6%)		
Difficulties in adhering to the treatment regimen				
<b>Yes</b>	75 (28.1)	70 (93.3%)	22.44	0.001
<b>No</b>	192 (71.9)	124 (64.6%)		
Recently felt angry, sad, scared or stressed.				
<b>Yes</b>	169 (63.3)	143 (84.6%)	33.13	0.001
<b>No</b>	98 (36.7)	51 (52.0%)		

#### **4.5.1 Bivariate and Multivariate regression analysis for Psychological factors associated with depression (N=267)**

Logistic regression (Bivariate and multivariate) was employed to measure the association between psychological factors and the occurrence of depression. After adjusting the confounders, results revealed that, diabetes patients who were having difficulties in adhering to the treatment regimen were 5.7 times more likely to have depression as compared to those who were not (AOR=5.7: 95% CI, 2.11; 15.18,  $p < 0.05$ ) Those diabetic patients who had recently felt angry, sad, scared or stressed were 4.4 times more likely to have depression as compared to those who had not (AOR= 4.4: 95% CI, 2.44; 8.10,  $p < 0.05$ ). Other findings are depicted in table 5.



**Table 5: Bivariate and Multivariate regression analysis for Psychological factors associated with depression (N=267)**

<b>Variable</b>	<b>OR(95%CI)</b>	<b>p-value</b>	<b>AOR(95%CI)</b>	<b>p-value</b>
<b>Received any psychological and social support</b>				
Yes	0.45 (0.21-0.98)	0.044	0.5 (0.23-1.24)	0.141
No(ref)				
<b>Have any difficulties in adhering to the treatment regimen</b>				
Yes	7.68 (2.96-19.94)	<0.001	5.7 (2.12-15.18)	0.001
No(ref)				
<b>Recently felt angry, sad, scared or stressed.</b>				
Yes	5.07 (2.85-9.01)	<0.001	4.4 (2.44-8.10)	<0.001
No(ref)				

#### **4.6 Medical factors among patients attending the diabetic clinic (N=267)**

To determine the medical factors related to the occurrence of depression among diabetic patients, responses to 9 items were generated and were subjected to descriptive analysis item by item using frequency and percentage. The results show the frequency and percentage of each of the nine items on medical factors related to depression among diabetic patients. The descriptions of each item of medical factors against its distribution of frequency and percentage are shown in table 6.

Cross tabulation were done to find out the relationship between medical factors and the occurrence of depression among diabetes patients. The results revealed that, there was a significant relationship between the occurrence of depression among diabetes patients and medical factors such as diabetes foot ( $\chi^2: 4.19.457^a$ ,  $p<0.001$ ), retinopathy ( $\chi^2: 11.444^a$ ,  $p<0.05$ ), stroke ( $\chi^2: 5.019^a$ ,  $p<0.05$ ), impotence ( $\chi^2: 4.915^a$ ,  $p<0.05$ ), and amputation ( $\chi^2: 8.832^a$ ,  $p<0.05$ ) as depicted in the table 6.

**Table 6: Medical factors related to depression among patients attending the diabetic clinic (N=267)**

<b>Variable</b>	<b>n (%)</b>	<b>Depressed</b>	<b><math>\chi^2</math></b>	<b>p-value</b>
<b>Been suffering (diagnosed) from Diabetes mellitus</b>				
Less than one year	38(14.2)	27(71.1%)	0.186	0.911
1 year and 5	99(37.1)	71(71.7%)		
More than 5	130 (48.7)	96(73.8%)		
<b>Management</b>				
Injections	148(55.4)	113(76.4%)	2.424	0.298
Oral tablets	98(36.7)	66(67.3%)		
Diet control	21(7.9)	15(71.4%)		
<b>Diabetic foot</b>				
Yes	59(22.1)	56(94.9%)	19.457	0.000
No	207(77.5)	137(66.2%)		
<b>Diabetic Retinopathy</b>				
Yes	200(74.9)	156(78.0%)	11.444	0.001
No	67(25.1)	38(56.7%)		
<b>Diabetic Neuropathy</b>				
Yes	174(65.2)	131 (75.3%)	1.737	0.188
No	93(34.8)	63(67.7%)		
<b>Stroke</b>				
Yes	19(7.1)	18(94.7%)	5.019	0.025
No	248(92.9)	176(71.0%)		
<b>Nephropathy</b>				
Yes	13(4.9)	9(69.2%)	0.081	0.776
No	254(95.1)	185(72.8%)		
<b>Impotence</b>				
Yes	117(43.8)	77(65.8%)	4.915	0.027
No	150(56.2)	117(78.0%)		
<b>Amputation</b>				
Yes	44(16.5)	40(90.9%)	8.832	0.003
No	223(83.5)	154(69.1%)		

#### **4.6.1 Bivariate and Multivariate regression analysis for Medical factors associated with depression (N=267)**

Logistic regression (Bivariate and multivariate analysis) was employed to test the association between the medical factors and the occurrence of depression among diabetes patients. After adjusting for others confounders, findings revealed that clients who had experienced diabetic foot were 0.1 times less likely to have diabetes depression as compared to those who had not (AOR=0.1: 95% CI, 0.04; 0.49,  $p<0.05$ ). In addition, it is observed that those who had experienced diabetes retinopathy were 2.8 times more likely to have depression as compared to those who had not (OR=2.8: 95% CI, 1.45; 5.28,  $p<0.05$ ). On the other hand, male diabetes clients who had experienced impotence were 0.4 times less likely to have diabetes depression as compared to those who had not (AOR=0.4: 95% CI, 0.20; 0.68,  $p<0.05$ ). Other finding illustrated in table 7

**Table 7: Bivariate and Multivariate regression analysis for Medical factors associated with depression (N=267)**

<b>Variable</b>	<b>OR(95%CI)</b>	<b>p-value</b>	<b>AOR(95%CI)</b>	<b>p-value</b>
<b>Experienced diabetic foot</b>				
Yes	0.11 (0.03-0.35)	<0.001	0.1 (0.04-0.49)	0.003
No (ref)				
<b>Experienced diabetes retinopathy</b>				
Yes	2.71 (1.50-4.87)	0.001	2.8 (1.45-5.28)	0.002
No (ref)				
<b>Experienced stroke</b>				
Yes	7.36 (0.97-56.17)	0.054	7.0 (0.82-60.55)	0.075
No (ref)				
<b>Male experiencing impotence</b>				
Yes	0.54 (0.32-0.94)	0.028	0.4 (0.20-0.68)	0.001
No (ref)				
<b>Experienced amputation</b>				
Yes	4.48 (1.54-13.01)	0.006	1.4 (0.41-5.01)	0.566
No(ref)				

## CHAPTER FIVE

### 5.0 DISCUSSION

#### 5.1 Overview

This chapter discusses the major findings of the study. The main focus of the study was to determine the prevalence of depression and associated factors among patients attending the diabetic clinic. Patients who had been suffering from diabetes mellitus for at least three months before the study were eligible to participate in the study.

#### 5.2 The prevalence of depression

This study demonstrates that depression is a common co-morbid health problem with the overall prevalence of 73 %. The higher prevalence of depression among diabetic patients attending a diabetic clinic in Tanzania is associated with some medical and psychological factors. The results revealed that many clients who attended clinic had experienced one or more signs and symptoms of depression. This result implies that depressed clients may remain without any psychiatric intervention and that depression may worsen their physical condition. The significance of this result in forms the hospital management, clinicians, and healthcare providers to improve clinical services including early detection and diagnosis of depression to improve patients care. Furthermore, the prevalence of depression may increase dramatically over the next years in low-income countries if serious psychiatric interventions are not carried out. Besides, clinicians should emphasize the significance and importance of the integrations of mental and physical health services in every diabetic clinic.

Similarly, a recent study at Muhimbili National Hospital diabetic clinic illustrated that the overall prevalence of depression among diabetes patients was 87%. Most patients (56.7%) had minimal depression, 22.1% had mild depression, and 8.2% had moderate depression. The disease was associated with some factors such as smoking and insulin therapy (Zahra D. Khan, Lutale and Moledina, 2019). Another previous study demonstrated that depression was a common co-morbid health problem in diabetic mellitus with a prevalence rate of 44.7 %. In this study, participants were evaluated for depression by administering a validated nine-item questionnaire PHQ-9. Low family income, presence of  $\geq 3$  diabetic complications, diabetic nephropathy, negative life event, and poor social support were statistically significant risk factors associated with depression (Habtewold, Alemu, and Haile, 2016). Also, a community-based study

conducted in southern India revealed that the overall prevalence of depression was 37.5%. The most frequent level of depression was a mild depression 42 (21%), followed by moderate depression 24 (12%), and then severe depression 9 (4.5%). Depression was found to be significantly associated with a number of variables. The statistically significant associated variables included female gender, marital status, rural residence and unemployment (Aminu, Chandrasekaran and Nair, 2017). A cross-sectional study conducted in Palestine with a sample of 294 revealed that the prevalence of depression was higher than that reported in other countries. Although 40% of the screened patients with diabetic mellitus were suffering from depression, none were being treated with anti-depressants (Sweileh *et al.*, 2014). Another study conducted at Basque Country demonstrated that the prevalence of depression among patients with type 2 diabetes was 9.8%, 5.2% for men and 15.1% for women, implying the importance of more precise recognition of depression and provision of periodic screening and monitoring for depression among type 2 diabetes patients. The co-morbidity of diabetes and depression was more prevalent in the most deprived areas, and it increased with age (Alonso-Moran *et al.*, 2014).

Furthermore, a study conducted in China supports our findings with the overall prevalence of comorbid depression being 5.7%, of which, 56 participants had major depression, and 86 had moderate depression. Logistic regression analysis indicated that being single was significantly associated with the development of depression. However, a family history of diabetes and a high social support level were likely protective factors (Zhang *et al.*, 2015). The relationship between diabetic mellitus and depression has been investigated by many researchers. The prevalence of depression among diabetic patients is higher than reported in other communities. Some studies have shown a significant relationship between depression, poor blood glucose control, and a longer duration of diabetes (Kayar *et al.*, 2017). It has been found that the rate of depression is significantly higher in women, those who had diabetes mellitus for a longer duration, poor blood glucose control, and patients who did not comply with diabetes drugs or with the necessary lifestyle changes (Kayar *et al.*, 2017). The previous study identified that a large proportion of clients with diabetic mellitus had depression and identified factors associated with these entities. These results can alert health care providers to identify and treat depression as common components of diabetes care. With the increasing prevalence of diabetic mellitus worldwide and the established higher incidence of depression among diabetes patients, it becomes important to

manage and control depression when treating diabetes mellitus (Khuwaja *et al.*, 2010). The finding of this study will be a source of literature review for other researchers who are intending to conduct studies related to prevalence depression and associated factors among diabetic mellitus patients. This may allow comparison of the results in the general population, and findings could be distributed to other health care workers to improve the care. We recommend additional studies to establish the relationship and to test interventions. Also, we recommend integrating routine screening of depression into diabetic primary care settings that will lead to early detection and treatment of depression that is usually hidden in diabetes patients. Furthermore, the study supports a recommendation for routine screening for depression in patients with diabetes, especially for those in a diabetic clinic in a clinic setting, to reduce the number of the depressed or the misrecognized depressed diabetic patients and consequently offer them a better quality of life.

### **5.3 The socio-demographic factors associated with depression**

This study demonstrates that; the socio-demographic factors give the same result with other studies conducted in different areas in the world, but after adjusting the odds ratios, the results showed that statistically is was not significant. The results showed female diabetic patients were 0.5 times less likely to have depression compared to male diabetes patients. However, sex was observed not to influence the occurrence of depression when it was adjusted with other factors. However, there was no significant association between depression and other factors like employment, marital status, and level of education of diabetic patients in this study. Very new information identified in this study compare to other studies is that; socio-demographic factors have no significant association with the occurrence of depression among diabetic mellitus patients although a higher number of female screened positive depression compare to male screened with severe form of depression.

A study conducted in India illustrated dissimilar results from this study; the results revealed that depression among diabetes was significantly associated with some socio-demographic factors with a higher prevalence in the unemployed population, The results indicated that a substantial number of people with diabetes are at an increased risk of having major depression, and those who care for patients with diabetes should routinely be screened for major depression (Paulraj, Rajasekaran and C Mathew, 2017). Moreover the previous study in the United Kingdom revealed that over 18 months, diabetes mellitus patients who ever experienced major depressive



disorder and diabetes-related distress were about 20% and 30%, respectively, adults with diabetes mellitus, after controlling for age, sex, ethnicity, and socioeconomic status were more likely to suffer from this common depression (Chew *et al.*, 2016). Also, a prior study from Kenya revealed that 53 (20.9%) clients with diabetes mellitus were screened positive for depression. A higher number of women were screened positive for depression compared to men, so the prevalence of depression among female diabetes patient increases with a statistically significant difference between the proportion of women (27%) and men (15%) screening positive using PHQ-2 depression evaluation tool (Shirey *et al.*, 2015). As with socio-demographic associated factors, the effects on co-morbid depression in patients with diabetes mellitus is supported by different studies. There was one study that showed different socio-demographic associated factors affects the development of co-morbid depression among diabetic mellitus patient. Similarly, the study conducted in Ethiopia revealed that; the prevalence of depressive symptoms was two times higher in female patients compared with male. These show that female are more affected than male (Habtewold, Alemu, and Haile, 2016).

A different study conducted at the Middle East coincides that demographic factors like older age, sex, and low income were associated with the risk or occurrence of depression (Albekairy *et al.*, 2018). However, many earlier published studies reported the prevalence rates of depression were significantly higher in females compared with males. Other demographic risk factors that were significantly associated in varying degree with depression in people with diabetes include age at diabetes diagnosis, low educational level, being unmarried, urban residence, nature of the relationship with sexual partners, ethnicity/race, smoking habits, physical activity, sedentary life, and unemployment (Danna *et al.*, 2016).

#### **5.4 The psychological factors associated with depression**

After adjusted with other confounders, our results revealed that, those diabetes patients whom were recently felt angry, sad, scared or stressed were 4.4 times more likely to have depression as compared to those who had not recently felt angry, sad, scared or stressed and patients having difficulties in adhering to the treatment regimen were 5.7 times more likely to have depression as compared those who were not having any difficulties in adhering to the treatment regimen. On the contrary, depression was not associated with receiving any social and psychological support. The study conducted in Sub-Sahara Africa suggested that depressive symptoms are common among patients with diabetes and there are unrecognized mental illnesses among patients

attending medical facilities, it revealed that diabetic mellitus is a risk factor for developing the other disease. It is illustrated that psychological factors which supported our finding are the risk factors significantly associated with depression among diabetic patients (Shirey *et al.*, 2015).

### **5.5 The medical factors associated with depression**

After adjusting with other confounders, those who were experiencing diabetic foot were 0.1 times less likely to have diabetes depression as compared to those who were not experienced diabetic foot, those who were experienced retinopathy were 2.8 times more likely to have diabetes depression as compared to those who were not experienced retinopathy. On the other hand, experienced male impotence was 0.4 times less likely to have diabetes depression as compared to the male who was not experienced diabetes impotence, and the result demonstrated the significant association between medical factors and depression. The reviewed studies resemble this study in the sense that depression was strongly associated with medical factors. They revealed that there was a significant relationship between the presence of depression and both diabetic complications and co-morbid diseases (Habtewold, Yohannes and Gebreegziabhere, 2014). Another different study that supported our finding revealed that; the overall prevalence of depression was 44.7 %. During regression analysis the associated factors for depression were monthly family income, presence of diabetic complications, diabetic nephropathy (Habtewold, Alemu and Haile, 2016). A further study which support our finding revealed that diabetic mellitus is associated with several complications including loss of vision, kidney failure, impotence, cardiovascular disease, and lower or upper limb amputation that can be associated to sign and symptoms of depression (Danna *et al.*, 2016). Additionally, depression in patients with diabetes mellitus also increases mortality, especially after myocardial infarction, and decreased adherence to diabetes treatment in older adults and women (Pettrak *et al.*, 2015). There is evidence that the prevalence of depression has moderately increased in undiagnosed diabetic mellitus, and markedly increased in the previously diagnosed diabetic patients. Our study identified that clients who are depressed are likely to encounter difficulties in the management of their diabetes; for this reason, the high prevalence of depression will increase. We observed in a clinical setting that depressed diabetic patients do not pay much effort on daily self-medication management, poor adherence in clinical schedule and poor quality of life; this situation can worsen the condition.

## **CHAPTER SIX**

### **6.0 CONCLUSION AND RECOMMENDATIONS**

#### **6.1 Conclusion**

This study is among the few studies conducted in Tanzania that assessed the prevalence of depression and associated factors among diabetic mellitus clients. This study has identified depression as a significant health problem among patients with diabetes mellitus and highlighted some of the factors associated with depression. Our findings demonstrated that many diabetic mellitus patients attending clinic had experienced unrecognized one or more signs of depression. The study underscores the need to fully integrate mental health services in a clinic setting to decrease the prevalence of depression. Finally, we argue that the burden of mental health, especially depression, is high in the population with diabetic mellitus and requires attention to diagnose early and treat promptly.

#### **6.2 Recommendations**

Based on the findings of this study, the following recommendations are made.

##### **6.2.1 Policy**

- i. Ministry of health is recommended to facilitate development of or use of guidelines and screening tools available to assist in assessing and evaluating the patients in every diabetic clinic

##### **6.2.2 Practice**

- ii. The hospitals are recommended to conduct regular and timely screening for depression amongst diabetic patients and integrate mental health services in a clinic setting. This will assist early detection of depression that is usually hidden in patients suffering from diabetes mellitus.

##### **6.2.3 Education**

- iii. Education session is recommended in every diabetic clinic to detect unrecognized sign and symptoms of depression

##### **6.2.4 Research**

- iv. Further research is recommended that will involve many public and private hospitals to obtain results that can be generalized. .

### **6.3 Study limitations and mitigations**

- i. It should also be noted that the composition of the participants was heterogeneous since it comprised of one referral hospital. More meaningful results would have been produced if the scope of the study was extended to more than one public hospital, including private hospitals for one to get a better understanding of the results.
- ii. The study was conducted in a clinical setting. The sample drawn from a clinical setting is not representative of the general population. It was, therefore, difficult to generalize the findings of the study to the general population. So further research is recommended that involves many public and private hospitals in order that the findings can be more generalizable.
- iii. Also, another important limitation of this study was that a psychiatric interview and DSM 5 criteria for mental illness diagnosis, which is considered as the gold standard for the diagnosis of depression was not used. Meaningful results would have been produced if this golden standard was used, but we believe the obtained results can be used to improve practice on diabetic patients' care if they happen to suffer from depression.
- iv. Furthermore, there was no similar study done in Zanzibar Tanzania to compare and contrast our finding. Therefore, these studies provide information that will inform future studies in the similar context.

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## APPENDICES

### APPENDIX 1. INFORMED CONSENT (ENGLISH VERSION)

#### MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES DIRECTORATE OF RESEARCH AND PUBLICATIONS, MUHAS CONSENT FORM



<b>ID NO</b>
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Consent to participate in a study: "**ASSESSMENT OF DEPRESSION AND ASSOCIATED FACTORS AMONG DIABETIC PATIENTS ATTENDING MNAZI MMOJA REFERRAL HOSPITAL IN ZANZIBAR TANZANIA.**"

Hello Greeting! My name is Mussa Rashid Mussa, a second-year student from Muhimbili University of Health and Allied Sciences; studying Master of Sciences in Nursing Mental Health. I want to welcome you to participate in this study that will help Mnazi Mmoja Referral Hospital and the population to deal with health problems. This study sponsored by Ministry of Health Zanzibar.

**Purpose of the Study:** To determine the prevalence of depression and associated factors among patients attending Diabetic Clinics at Mnazi Mmoja Referral Hospital in Zanzibar

**What Participation Involves:** The study will include all clients aged 18 years and above attending and treated at the diabetic clinic at Mnazi Mmoja Referral Hospital. If you agree to participate in the study, you will be given the questionnaire after consent to interview you. So we need your corporation. This study is currently taking place at Mnazi Mmoja Referral Hospital in Zanzibar.

**Procedure:** If you agree to join the study, you are not required to write your name and will be required to answer the questions provided to you. There are no invasive procedures that will be done to you like pricking a finger, drawing blood or any others.

**Confidentiality:** The information provided will not be disclosed to anyone. It will only be used for research purposes. Personal information will not be disclosed. You may be contacted by the research team again only if it is necessary to complete the information on the questionnaire.

**The right to anonymity:** The information provided will be confidential; no name will be used during the study. The participants will be coded by numbers only.

**Risks:** I do not expect that any harm will happen to you because of joining this study; however if any physical injury resulting from participation in this research will happen, we will assist you to get medical treatment according to the current standard treatment and care in Zanzibar.

**Rights to withdraw:** Your participation is voluntary, and you have the right to withdraw from the study any time after having agreed to participate. If you have any questions about this study, you may ask me Mussa Rashid Mussa mobile number +255777488783

**Potential benefits:** There will be no direct benefits for your participation; your contribution will help to identify the prevalence of Depression and associated factors. It will help the Hospital and Ministry of Health in their plan in health sectors. Also, it will be an opportunity for you to volunteer in this study for the benefit of others and the country.

**Compensation:** There will be no compensations to you for your participation in the study.

**Who to contact:** If you ever have questions about this study, you should contact the study PI Mussa Rashid Mussa, Muhimbili University of Health and Allied Sciences, School of Nursing P.O. Box 65001; mobile phone +255777488783 or Director of Research and Publication MUHAS, Dr. Bruno Sunguya telephone number +255222152467.

I have read and understood the contents of this form, my questions have been answered, and I consent to participate in this study.

Signature of participant \_\_\_\_\_

Signature of researcher \_\_\_\_\_

Date of signature \_\_\_\_/\_\_\_\_/\_\_\_\_

## KIAMBATANISHO 2. FOMU YA RIDHAA YA KISWAHILI



### CHUO KIKUU CHA SAYANSI ZA AFYA NA SAYANSISHIRIKISHI MUHIMBILI IDARA YA UTAFITI NA MACHAPISHO

ID NO

Ridhaa ya kushiriki katika utafiti wenye jina “**TATHMINI YA UGONJWA WA SONONA (DEPRESSION) NA MAHUSIANO YA SABABU NYENGINEZO KWA WAGOJWA WA KISUKARI WANAHUDHURIA KATIKA HOSPITALI YA RUFAA YA MNAZI MMOJA ZANZIBAR TANZANIA**”

Habari na salamu sana! Jina langu Mussa Rashid Mussa, mwanafunzi wa mwaka wa pili wa Shahada ya Uzamili ya Sayansi ya Uuguzi ya Afya ya Akili katika Chuo Kikuu cha Afya na Sayansi Shirikishi Muhimbili. Napenda kukuaribisha katika utafiti ambao utaisaidia Hospitali ya Rufaa ya Mnazi Mmoja na wananchi kukabiliana na changamoto za afya. Utafiti huu umefadhiliwa na Wizara ya Afya Zanzibar.

**Dhumuni la utafiti:** Kuamua ukubwa au kiwango cha ugonjwa wa sonona (depression) na mahusiano ya sababu nyenginezo kwa wagojwa wa kisukari wanaohudhuria kliniki ya Hospitali ya Rufaa ya Mnazi Mmoja Zanzibar

**Watakaoshiriki katika utafiti huu:** Wagonjwa wote wenye umri wa miaka 18 na kuendelea ambao wanahudhuria na kutibiwa katika kliniki ya Hospitali ya Rufaa ya Mnazi Mmoja. Endapo utakubali kushiriki katika utafiti huu, tutakupatia dodoso baada ya fomu ya ridhaa na kuchukua maelezo. Vile vile tunahitaji ushirikiano wako. Utafiti huu kwa sasa unafanyika Hospitali ya Rufaa ya Mnazi Mmoja Zanzibar pekee.

**Utaratibu:** Kama utakubali kushiriki katika utafiti, hautotakiwa kuandika jina lako katika dodoso uliopatiwa, aidha utatakiwa kujaza kwa usahihi dodoso ulilopewa. Hakutakuwa na

utaratibu wa kuumizwa kama vile kutobolewa kidole au kutolewa damu kupitia mishipa ya damu au nyenginezo.

**Usiri:** Maelezo yote yatakayokusanywa wakati wa utafiti huu hayatotangazwa kwa mtu mwengine yoyote nje ya timu ya utafiti. Maelezo yatatumika kwa madhumuni ya utafiti tu. Taarifa zako binafsi hazitowekwa wazi. Utaonana na timu ya watafiti kwa mara nyingine kama ikihitajika tu kukamilisha taarifa za dodoso

**Hatari au madhara:** Hatutarajii kutokea madhara yoyote kwa sababu ya kujiunga na utafiti huu. Kama ikitokea madhara ya kimwili kwa kushiriki utafiti huu, tutakusaidia kupata huduma za matibabu kama muongozo wa matibabu wa Zanzibar unavyoongoza.

**Haki ya kutotumia jina:** Taarifa zilizotolewa zitakuwa za siri, jina lako halitotumika wakati wote wa utafiti. Washiriki watapewa nambari kama utambulisho wao wakati wote wa utafiti

**Haki ya kujitoa:** Kushiriki katika utafiti huu ni uchaguzi wako mwenyewe. Ukiamua kujitoa kutoshiriki kwenye utafiti wakati wowote au ukiamua kusimama kushiriki unakubaliwa. Kama una swali lolote kuhusiana na utafiti huu unaweza kumuuliza Mussa Rashid Mussa simu ya mkononi +255777488783

**Faida:** Hapatakuwa na faida ya moja kwa moja kwako kwa kushiriki kwenye utafiti huu. Ushiriki wako utasaidia kugundua uhusiano wa ugonjwa wa sonona (depression) na kisukari. Ushiriki wako utasaidia hospitali na wizara ya afya katika mipango ya afya; vile vile itakuwa fursa kwako kwa kujitolea katika utafiti kwa faida ya watu wengine na nchi pia

**Fidia:** Hakutakuwa na fidia yeyote kwako kwa kushiriki katika utafiti huu

**Mawasiliano:** Iwapo utakuwa na swali kuhusu utafiti huu wasiliana na mtafiti Mussa Rashid Mussa, Chuo Kikuu cha Afya na Sayansi Shirikishi Muhimbili simu ya mkononi nambari +255777488783, au Mkurugenzi Idara ya Utafiti na Machapicho MUHAS Dr. Bruno Sunguya simu nambari +255222152467, P.O. Box 65001

Mimi nimesoma na kuelewa maudhui ya fomu hii, maswali yangu yamejibiwa na nimekubali kushiriki katika utafiti huu

Sahihi ya mshiriki \_\_\_\_\_

Sahihi ya mtafiti \_\_\_\_\_

Tarehe ya sahihi \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

### **APPENDIX 3. STUDY QUESTIONNAIRE.**

**TOPIC:** Assessment of depression and associated factors among diabetic patients attending Mnazi Mmoja Referral Hospital in Zanzibar Tanzania

**Objectives:** To determine the prevalence depression and associated factors among patients attending diabetic clinics at Mnazi Mmoja Referral Hospital in Zanzibar

Dear participant, I would like you to fill this questionnaire very carefully and correctly. Tick all (√) option(s) applied. Read carefully the instructions provided

#### **A. Social and Demographical Data**

**1. Age:** \_\_\_\_\_

#### **2. Sex**

1. Male

2. Female

#### **3. Occupation**

1. Government employee

2. Non-government employee

3. Self-employed

4. Not employed

#### **4. Marital status**

1. Married

2. Unmarried

3. Divorced

4. Widower

#### **5. Level of education.**

1. No formal schooling

2. Primary school

3. Secondary school

4. College or university education

**B. Assessing medical information**

6. For how long have you been suffering (diagnosed) from Diabetes mellitus?

1. Less than one year

2. One year and five years

3. More than five year's

7. What management are you using to manage the condition (diabetes mellitus)?

1. Injections

2. Oral tablets

3. Diet control

8. Have you experienced any of the following diabetes complications? (Please tick the box (√) as much as applied)

Complication	Yes	No
a. Diabetic foot		
b. Retinopathy		
c. Neuropathy		
d. Stroke		
e. Nephropathy		
f. Impotence (applicable for male)		
g. Amputation		

**C. Psychological information**

9. Have you received any psychological and social support from family members, neighbors or parents during illness?

1. Yes

2. No

10. Do you have any difficulties in adhering to the treatment regimen?

1. Yes

2. No

11. Regarding diabetic disease, have you recently felt angry, sad, scared or stressed?

1. Yes

2. No

**D. Prevalence of depression: Assessing the sign and symptoms of depression (using PHQ-9 scale)**

12. Over the last two weeks, how often have you been bothered by any of the following problems? Please select one option in every column (Use tick (√)to indicate your answer)

	<b>Not at all (0)</b>	<b>Several days (1)</b>	<b>More than half the days (2)</b>	<b>Nearly every days (3)</b>
1. Are you feeling down, depressed, irritable or hopeless?				
2. Little interest or pleasure in doing things?				
3. Trouble falling or staying asleep, or sleeping too much?				
4. Poor appetite, weight loss or overeating?				
5. Feeling tired or having little				



energy?				
6. You are feeling bad about yourself — feeling that you are a failure, or that you have let yourself or your family down?				
7. Trouble concentrating on things like school, at work, reading or TV?				
8. Moving or speaking so slowly that other people could have noticed? Alternatively, the opposite — being so fidgety or restless that you have been moving around a lot more than usual?				
9. Thought that you would be better off dead or thoughts of hurting yourself in some way?				
<p>10. If you are experiencing any of the problems on this form, how difficult have these problems made it for you to do your work, take care of things at home or get along with other people?</p> <p>a) Not difficult at all <input type="checkbox"/> b) Somewhat difficult <input type="checkbox"/></p> <p>c) Very difficult <input type="checkbox"/> d) Extremely difficult <input type="checkbox"/></p>				
<p><b>(For researcher use only)</b></p> <p><b>Add column</b> <input type="text"/> + <input type="text"/> + <input type="text"/> + <input type="text"/></p> <p><b>Total score =</b> <input type="text"/></p>				

**Thank you for your participation**

## **KIAMBATANISHO4. DODOSO LA UTAFITI LA KISWAHILI**

**Mada ya utafiti:**Tathmini ya ugonjwa wa sonona (depression) na mahusiano ya sababu nyenginezo kwa wagojwa wa kisukari katika Hospitali ya Rufaa ya Mnazi Mmoja Zanzibar Tanzania.

**Dhumuni la utafiti:** Kuamua ukubwa au kiwango cha ugonjwa wa sonona (depression) na mahusiano ya sababu nyenginezo kwa wagojwa wa kisukari wanaohudhuria kliniki ya Hospitali ya Rufaa ya Mnazi Mmoja Zanzibar

Ndugu mshiriki, ningelipenda ujaze dodoso hili kwa umakini na usahihi kabisa. Tafadhali weka alama ya vyema (✓) katika jawabu linalostahiki. Soma kwa usahihi maelekezo uliyopatiwa

### **A: Taarifa za kijamii na binafsi**

**1. Umri** \_\_\_\_\_

#### **2. Jinsia**

1. Mume

2. Mke

#### **3. Kazi**

1. Muajiriwa wa taasisi ya serekali

2. Muajiriwa wa taasisi isiyo ya serekali

3. Nimejiajiri

4. Sina ajira

#### **4. Hali ya ndoa**

1. Nimeoa/ Nimeolewa

2. Sijaoa/Sijaolewa

3. Nimeachika/Nimeacha

4. Mjane

**5. Kiwango cha elimu.**

- 1. Elimu isiyo rasmi
- 2. Elimu ya msingi
- 3. Elimu ya sekondari
- 4. Elimu ya chuo au Chuo kikuu

**B: Taarifa za ugonjwa wa kisukari**

**6.** Muda gani hadi sasa unaugua (umegunduliwa) ugonjwa wa kisukari?

- 1. Chini ya mwaka
- 2. Mwaka mmoja hadi mitano
- 3. Miaka mitano na zaidi

**7.** Ni aina gani ya matibabu unayotumia ya ugonjwa wako (kisukari)?

- 1. Sindano
- 2. Vidonge
- 3. Kurekebisha mlo

**8.** Je ulishawahi kupata miongoni mwa matatizo yafuatayo ya ugonjwa wa kisukari? (Tafadhali weka alama ya vyema (√) sehemu inayohusika)

<b>Matatizo</b>	<b>Ndio</b>	<b>Hapana</b>
a. Kidonda mguuni		
b. Uoni hafifu		
c. Ganzi mwilini		
d. Kiharusi		
e. Tatizo la figo		
f. Kupungua nguvu za kiume (inapaswa kwa wanaume pekee)		
g. Kukatwa kiungo mwilini		

**C: Taarifa za kisaikolojia**

9. Je unapata msaada wa kisaikolojia au wa kijamii kutoka kwa familia yako, jirani au wazee wako katika kipindi cha ugonjwa huu?

1. Ndio

2. Hapana

10. Je una tatizo lolote katika matumizi au ufuasi wa matibabu yako?

1. Ndio

2. Hapana

11. Kuhusiana na ugonjwa wa kisukari, katika siku za karibuni ulishawahi kujisikia ni mwenye hasira, huzuni, kuogopa au mwenye hofu?

1. Ndio

2. Hapana

**D: Kiwango au ukubwa wa Ugonjwa wa sonona: Tathmini ya dalili na ishara za ugonjwa wa Sonona**

11. Katikakipindi cha wiki mbilizilizopita, ni kwa kiasi gani ulikwazwa na matatizo au dalili zifuatazo. Tafadhali chagua jawabu moja katika kila mstari (weka vyema (√) kuashiria jawabu lako sahihi)

	Haijatokez ea kabisa	Siku kadhaa	Zaidi ya nusu ya siku hizi	Kila siku
1. Kutokuwa na hamu au raha ya kufanya kitu, huzuni au kukosa matumaini?				
2. Mwelekeo mdogo au kukosa raha kufanya vitu?				
3. Matatizo ya kupata usingizi au kuweza kulala au kulala kupita kiasi?				

4. Kutokuwa na hamu ya kula, kupungua uzito au kula kupita kiasi?				
5. Kujisikia kuchoka au kutokuwa na nguvu?				
6. Kujisikia vibaya au kujiona kuwa umeshindwa kabisa au umejishusha, au kuikatisha tamaa familia yako?				
7. Kushindwa kuwa makini kwenye vitu kama kufanya kazi, kusoma gazeti au kangalia runinga/televisheni?				
8. Kutembea au kuongea taratibu sana mpaka watu wakawa wameona tofauti? Au kinyume chakekwambahutulizanaunahanga ikasanakulikoilivyokawaida				
9. Mawazo kuwa ni afadhali kufa, au kufikiria kujidhuru kwa njia fulani?				
10. Kama ulitia alama ya matatizo <u>yeyote</u> , matatizo hayo yamefanya iwe vigumu kivipi kwako kufanyakazi yako, kushughulikia vitu nyumbani au kutangamana na watu wengine? a) Sio ngumu hata kidogo <input type="checkbox"/> b) Ngumu kiasi <input type="checkbox"/> c) Ngumu sana <input type="checkbox"/> d) Ngumu zaidi <input type="checkbox"/>				
<b>(Kwa matumizi ya mtafiti)</b>				
<b>Jumlisha kwenda chini</b>				
<div style="display: flex; justify-content: space-around; align-items: center;"> <input style="width: 40px; height: 20px;" type="text"/> +          <input style="width: 40px; height: 20px;" type="text"/> +          <input style="width: 40px; height: 20px;" type="text"/> +          <input style="width: 40px; height: 20px;" type="text"/> </div>				
<b>Jumla kuu =</b> <input style="width: 60px; height: 20px;" type="text"/>				

**Ahsante sana kwa kushiriki**

## APPENDICE 5: ETHICAL CLEARANCE

**MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES  
OFFICE OF THE DIRECTOR OF POSTGRADUATE STUDIES**

P.O. Box 65001  
DAR ES SALAAM  
TANZANIA  
Web: [www.muhas.ac.tz](http://www.muhas.ac.tz)



Tel G/Line: +255-22-2150302/6 Ext. 1015  
Direct Line: +255-22-2151378  
Telefax: +255-22-2150465  
E-mail: [dpgs@muhas.ac.tz](mailto:dpgs@muhas.ac.tz)

Ref. No. DA.287/298/01A/

19<sup>th</sup> March, 2019

Mr. Mussa Rashid Mussa  
MSc. Mental Health  
MUHAS.

**RE: APPROVAL OF ETHICAL CLEARANCE FOR A STUDY TITLED:  
"ASSESSMENT OF DEPRESSION AND ASSOCIATED FACTORS AMONG  
DIABETIC CLIENTS AT MNAZI MMOJA REFERRAL HOSPITAL IN  
ZANZIBAR TANZANIA "**

Reference is made to the above heading.

I am pleased to inform you that, the Chairman has, on behalf of the Senate, approved ethical clearance for the above-mentioned study. Hence you may proceed with the planned study.

The ethical clearance is valid for one year only, from **19<sup>th</sup> March, 2019 to 18<sup>th</sup> March, 2020**. In case you do not complete data analysis and dissertation report writing by **18<sup>th</sup> March, 2020**, you will have to apply for renewal of ethical clearance prior to the expiry date.

Dr. Emmanuel Balandya  
**ACTING: DIRECTOR OF POSTGRADUATE STUDIES**

cc: Director of Research and Publications  
cc: Dean, School of Nursing, MUHAS

# APPENDICE 6: PERMISSION OF CONDUCTING RESEARCH ZANZIBAR

## REVOLUTIONARY GOVERNMENT OF ZANZIBAR

SECRETARY  
ZANZIBAR RESEARCH COMMITTEE  
P. O Box 239  
Tel: 2230806  
FAX: 2233788



### RESEARCH/FILMING PERMIT

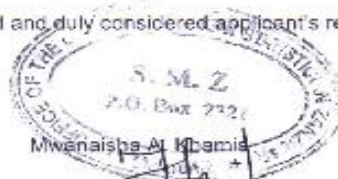
(This Permit is only Applicable in Zanzibar for a duration specified)

#### SECTION

Name:	Mussa Rashid Mussa
Sex	Male
Date and Place of Birth	09/06/1975
Nationality:	Tanzanian
Passport Number:	AB708004
Date and Place of Issue	-
Date of arrival in Zanzibar	-
Expected date of departure	-
Duration of study	Six Months
Research Tittles:	Assessment of Depression and Associated Factors Among DIABETIC CLIENTS ATTENDING At Mnazi Mmoja Referral Hospital Zanzibar

Full address of Sponsor: P.O. Box 236

This is to endorse that I have received and duly considered applicant's request I am satisfied with the descriptions outlined above.



Name of the authorizing officer: Mwanaisha Al Mbarika  
**Signature and seal:**  
**Institution:** Office of Chief Government Statistician  
**Address:** P. O Box 2321  
Zanzibar.

**Date:** 29/03/2019

## APPENDICE 7: ETHICAL CLEARENCE OF CONDUCTING HEALTH RESEARCH

### ZANZIBAR HEALTH RESEARCH INSTITUTE



Ministry of Health Zanzibar, P.O. Box 236, Vuga Zanzibar  
Tel: +255 772 605 560 Fax: +255-24-2231613  
Email: info@zahri.org Website: http://www.zahri.org

Ref: NO.ZAHREC/02/APR/2019/17

4<sup>th</sup> April, 2019

**Mr. Mussa Rashid Mussa,**  
Student Researcher.

**PROTOCOL TITLE:** Assessment of depression and associated factors among diabetic clients at Mnazi Mmoja referral Hospital in Zanzibar – Tanzania.

**RE: ETHICAL CLEARENCE FOR CONDUCTING HEALTH RESEARCH IN ZANZIBAR:**

This to certify that research protocol entitled " **Assessment of depression and associated factors among diabetic clients at Mnazi Mmoja referral Hospital in Zanzibar – Tanzania**" was received and reviewed by the Zanzibar Health Research Ethical Committee (ZAHREC) on April, 2019.

We would like to inform you that the decision of the committee to this protocol was "Approved".

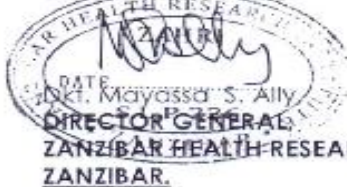
The permission to undertake data collection is for one year beginning from the date of this letter.

The principal investigators have to provide progress report after six months and final report to the Zanzibar Health Research Institute.

Seek permission to publish your findings from ZAHRI.

Any change made to the protocol need to be submitted to the ZAHREC for approval prior to its implementation.

Thanks in advance.



  
Dr. Jamala A. Taib,  
DIRECTOR GENERAL,  
MINISTRY OF HEALTH,  
ZANZIBAR.



## APPENDICE 8: PERMISSION OF CONDUCTING RESEARCH AT MNAZI MMOJA HOSPITAL



HOSPITALI YA MNAZI MMOJA ZANZIBAR



Simu Namba: + 255 24 223 19 87  
Nukushi : + 255 24 223 19 87  
Barua pepe: [mnrefhospital@hotmail.com](mailto:mnrefhospital@hotmail.com)

Wizara ya Afya  
S. L. Posta 672  
Zanzibar

Kumbu Na: MMH/274/019

Tarehe: 29 Machi 2019

Nd. Mussa Rashid Mussa  
Mwanafunzi Mental Health  
Chuo kikuu cha Muhimbili  
Tanzania

KUH: UTAFITI "TATHMINI YA UGONJWA WA SONONA NA MAHUSIANO YA SABABU NYENGINEZO  
KWA WAGONJWA WA KISUKARI WANAOHUDHURIA KLINIK HMM"

Mada ya hapo juu inahusika na barua hii.

Ombi lako la kudadisi na kuhoji wagonjwa 264 wanaokuja kwenye klinik ya magonjwa ya magonjwa ya kisukari hapa Hospitali ya Mnazi mmoja (HMM) limepokewa, kuzingatiwa na kukubaliwa.

Unatakiwa kuwasilisha matokeo ya utafiti wako ofisini kwa Mkurugenzi Mtendaji mara baada ya kazi ya uandishi wa ripoti hiyo kumalizika na kuwasilisha kwenye Taasisi husika.

Unatakiwa kuvaa kitambulisho chako/wasaidizi wako muda wote wa kazi hii kwenye maeneo ya hospitali. Pia uwe na kopi ya barua hii pamoja na barua ya ridhaa kutoka Baraza la Utafiti la Wizara ya Afya. Kutokana na upungufu wa wafanyakazi hospitalini hapa huruhusiwi kutumia wafanyakazi wa hospital hiyo kwa kazi yako hii.

Natanguliza shukurani za chati kwa mashirikiano

  
Mwynyi I. Msellem  
/Mkurugenzi mtendaji  
Hospitali Mnazi mmoja  
Zanzibar



Nakla:

- Mkurugenzi, Huduma ya Uuguzi -MMH
- Daktari dhamana, Klinik ya magonjwa ya kisukari HMM

*Dhamira yetu ni HMM kuwa caazif bure kwa kutaa huduma za afya za kwanza cho juu na rahisi kwa viwango vya nchi za Afrika ya Mashariki*