# PREVALENCE OF DEPRESSION AMONG DIABETIC PATIENTS ATTENDING DIABETIC CLINIC AT THIKA LEVEL 5 HOSPITAL

## DISSERTATION IN PARTIAL FULFILMENT FOR AWARD OF DEGREE OF MASTERS OF SCIENCE IN CLINICAL PSYCHOLOGY

### BY

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# DECLARATION

I, Catherine N Kaleli, do hereby declare that this is my original work and that it has not been presented for award of any degree or to any other university.

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# CERTIFICATE OF APPROVAL

This is to certify that this dissertation is research work carried out independently by Catherine N Kaleli under our guidance and supervision

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## DEDICATION

To my husband Solomon, children Bancy, Naomi and Lazarus and all the people of good will for their support, prayers and every good wish they extended to me.

In loving memory of my late mother Naomi Nditi who valued education and kept on encouraging me to further my studies.

## ACKNOWLEDGEMENTS

## ABBREVIATIONS

| | |
|---|---|
| BDI | Becks depression inventory |
| DSM-IV-TR | Diagnostic Statistical Manual, fourth edition |
| ID | Identification |
| NRB | Nairobi |
| WHO | World Health Organization |

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# ABSTRACT

The study topic is on prevalence of depression among diabetic patients. Both males and females suffer from depression and also from diabetes. The aim of this study was to determine the prevalence of depression on newly diagnosed diabetic patients and also to determine the socio demographic correlates of depression among diabetic patients. A cross sectional descriptive study was conducted in the year 2012 among patients who attended the diabetic clinic with a laboratory and a clinical evidence of Diabetis mellitus. The respondents in this research are above 18years old, have been diagnosed as diabetic for the last one year and are attending diabetic clinic in Thika Level 5 Hospital and they should not have been diagnosed with depression prior to the onset of diabetes. Broadly, the objective is to determine the prevalence of depression among adult diabetic patients visiting Thika Level 5 Hospital and specifically, prevalence of depression among newly diagnosed adult diabetic patients and the socio demographic correlates of depression among diabetic patients.

Convenience sampling technique was used to identify the sample. Standardized questionnaire and a checklist were administered to collect data. The data collected was analyzed using statistical package for social sciences computer programme (SPSS) version 13 and presented inform of frequency tables, bar charts and pie charts. The study demonstrated the prevalence of depression in patients presenting with diabetes at the Thika level 5 Hospital. The study results were documented, analysed and the findings communicated to the health care givers who will use that information to better the management of newly diagnosed diabetic patients.

The results reflect the need to screen diabetic patients for depression to enable early detection and treatment.

There will be need by the care givers to find new ways to integrate medical and psychological care with social and behavioral interventions for those patients with cormobidity of diabetes and depression.

# CHAPTER ONE

This chapter covers introduction and background, statement of the problem, research objectives, research questions, research hypothesis and justification of the study.

## 1.1  INTRODUCTION AND BACKGROUND INFORMATION

Depression is a mood disorder characterized by five or more of the following symptoms: Depressed mood most of the day, diminished pleasure in all or most activities, weight loss or gain, insomnia or hypersomnia, psychomotor agitation or retardation, fatigue, feeling of worthlessness, diminished ability to think or concentrate, bowel disturbance, and recurrent suicidal ideation (Garard JA, 1993).

Depression can affect anyone at anytime though certain factors seem to increase the risk of developing or triggering it. These include: Having biological relatives with depression, being a woman, having traumatic experiences as a child, experiencing stressful life events such as the death of a loved one, recently having given birth (postpartum depression), having been depressed previously, having a serious illness such as cancer, diabetes, heart disease, Alzheimer's or HIV/AIDS, having certain personality traits such as having low self-esteem and being overly dependent, self-critical or pessimistic, and abusing alcohol, nicotine or illicit drugs (Haggerty J, 2006).

Depression is a chronic medical condition such as diabetes and it is the most common psychiatric disorder worldwide (Garard JA, 1993). Like diabetes, depression is a major health problem seen in primary care facilities which has been found to be more disabling disease compared to many other chronic medical illnesses (Barnard K.D. et al 2006).

Mcquaid JR 1999 predicts that depression will be the 2nd leading cause of disability for all age groups by the year 2020.

Diabetes mellitus is a group of metabolic diseases in which a person has high blood sugars either because the body does not produce enough insulin, or because the cells do not respond to the insulin that is produced. Lack of insulin affects the metabolism of carbohydrates, proteins and fats. This results into a condition in which glucose, which is normally stored in the liver as glycogen accumulating in the blood and eventually appearing in the urine. The high levels of blood sugar may have an effect on the brain ranging from confusion to emotional outbursts or other abnormality (Nicki R C 2010).

There are several types of diabetes namely:

- Type 1 diabetes: This results from the body's failure to produce insulin, and requires the person to inject insulin. (Also referred to as *insulin-dependent* diabetes mellitus, *IDDM* for short, and *juvenile* diabetes).

- Type 2 diabetes: It results from insulin resistance, a condition in which cells fail to use insulin properly, sometimes combined with an absolute insulin deficiency. (Also referred to as *non-insulin-dependent* diabetes mellitus, *NIDDM* for short, and *adult-onset* diabetes).

- Gestational diabetes: Is diabetes with first onset or recognition during pregnancy. It may precede development of type 2 diabetes although majority of women can expect to return to normal glucose tolerance immediately after pregnancy

- Steroid diabetes (induced by high doses of glucocorticoids)

Both type 1 and 2 are more common worldwide and usually they cannot be cured but managed.

The prevalence rates of diabetes vary from one region to another and the number of the affected people is expected to be around 366million globally by the year 2030 (Joshi SR et al, 2008). The variations around the world are related to differences in genetic and environmental factors. However, the global pandemic is associated with greater longevity, obesity, unsatisfactory diet, sedentary lifestyle and increasing urbanization (Nicki R C 2010).

The symptoms of diabetes include polyuria, thirst, loss of weight and sugar and acetone in the urine. The treatment of diabetes includes diet, drugs (injectable and /or orals) and health education on the condition. Complications are arteriosclerosis, infections such as tuberculosis and cystitis, diabetic nephritis, cataract and nephritis (Winfred Hector, 1982).

## 1.2    STATEMENT OF THE PROBLEM

Health workers attending newly diagnosed diabetic patients put more emphasis on convention management and little or no emphasis on the psychological impact that the condition can have on the individual. According to Anderson et al (2001), mental health problems are common place in people with diabetes.

Each year, 7 million people develop diabetes and 3.8 million deaths are attributable to diabetes yet there are very few studies on the relationship between diabetes and depression (Joshi SR et al, 2008).

Depression in particular has a significant impact on morbidity and quality of life in the population.

A study conducted by Cohen (2006), showed that people with long-term conditions are at risk of depression and co morbid depression can cause functional disability, decreased adherence to diet, exercise, and medication regimens. This is likely to worsen blood glucose levels and diabetes complications such as coronary heart disease. Depression significantly increases the overall burden of illness in patients with chronic medical conditions.

## 1.3 RESEARCH OBJECTIVES

### 1.3.1 Broad Objective

The study aims to determine the prevalence of depression among adult diabetic patients visiting Thika Level 5 Hospital

### 1.3.2 Specific objectives

1. To determine the prevalence of depression among newly diagnosed adult diabetic patients.
2. To determine the socio demographic correlates of depression among diabetic patients.

## 1.4 RESEARCH QUESTIONS

1. Is there depression among newly diagnosed diabetic patients visiting Thika Level 5 Hospital?

2. Is socio-demography a contributory factor in development of depression in newly diagnosed diabetic patients?

## 1.5 RESEARCH HYPOTHESIS

**Null hypothesis 1(Ho1):** There is no relationship between diabetes mellitus and depression disorder.

**Alternative hypothesis 1 (H1):** There is a relationship between diabetes mellitus and depression disorder.

## 1.6 JUSTIFICATION OF THE STUDY

Development of mental disorders among diabetic patients is a serious handicap with profound negative impact on overall care and management (Edwards H 2008).

Despite the enormous advances in brain research, depression often goes undiagnosed and untreated. People with diabetes, their families and friends, and even their physicians may not distinguish the symptoms of depression from merely the low moods in patients suffering from diabetes.

However, skilled health professionals should recognize these symptoms and inquire about their duration and severity, diagnose the disorder, and suggest appropriate treatment.

There is a lot of research on diabetic and psychiatric connectivity but no studies of prevalence of depression among diabetic patients and specifically, of newly diagnosed diabetic patients without prior history of depression.

Furthermore, this study has not been done in Thika level 5where most diabetic patients are seen initially by a specialist after having been referred from sub-district hospitals, health centres, and dispensaries

This study has opened doors for further research among diabetic patients on psychiatric disorders and it will provide data that can be used by health professionals to diagnose the disorder, and suggest appropriate treatment. The outcomes of this study will highlight the importance of assessing and treating co morbid mental health concerns as part of a comprehensive management plan for diabetes.

The study will be very useful since there is limited literate on the association between depression and diabetes from South-Asian countries (Sridhar GR at el 2002).

# CHAPTER TWO

## 2.1 LITERATURE REVIEW

This chapter captures the relevant literature review to establish what other researchers have said about the problem being investigated.

### 2.2 Prevalence of depression on diabetes

Diabetes currently affects 246 million people worldwide and is expected to affect 380 million by 2025 (Joshi SR et al, 2008).

The co morbidity of mental and physical illness is currently of considerable interest. It is generally accepted that an increased risk of psychiatric impairment accompanies the presence of a medical illness (Thomas Janet et al, 2008)

Several studies suggest that the risk of depression is twice as much for individuals with diabetes compared to those without the disorder (Anderson RJ, Lustman PJ, Clouse RE, et al 2000).

Ciechanowski et al (2000) on a study on depression and diabetes further found out that high glucose levels were associated with negative mood ratings which are one of the symptoms of depression.

Anderson et al (2001) and Hellman (2008) substantiates that: cultural, economic, social and family factors influence the diagnosis of depression in diabetes. In addition, biological mechanisms can also determine whether or not the individual can get both disorders (Fisher & Chan 2008).

Other studies suggest that people with diabetes who have a history of depression are more likely to develop diabetic complications than those without depression.

This implies that people who suffer from both diabetes and depression have a higher health care cost compared to those who suffer from either diabetes or depression (Ciechanowski PS, Katon WJ, Russo JE, 2000).

Mary de Groot et al (2010) in a study of diabetes and depression further found out that, patients with both diabetes and depression have 4.5times higher medical expenditures than patients with diabetes only.

Depression is a condition of much concern because it can affect all aspects of life, including change in appetite; sleep patterns, interest in everyday activities, work productivity, and relationships with others. A person's concentrations as well as ability to make decisions are other key areas that are affected.

A meta-analysis carried out by Anderson and colleagues (2001) on the prevalence of co-morbid depression in adults with diabetes led to the principal conclusion that the prevalence of depression in individuals with diabetes is almost triple that of non-diabetic individuals.

A study carried out by Katon et al (2009) revealed that, the prevalence of depression together with diabetes is on the increase. This supports the findings of other researchers like Anderson and colleagues on the increase of depression among diabetic patients

In the U.S, over 6.5% of the adult population has been diagnosed with diabetes and the incidence of type 2 diabetes is increasing, partly due to the increase in obesity.

Approximately 16% of U.S adults will suffer major depressive disorder at some point in their lives and this proportion is greater when other forms of depressive disorder, such as dysthymia and minor depression, are included (Mezuk B et al 2008). The increase in obesity is as a result of the commonly used diet and their sedentary life style.

Diabetes has been associated with poor quality of life in previous Indian studies (Prisciandaro JJ et al 2011; Ali S et al 2010). The issues of stress and role of psychosocial factors in diabetes has also been addressed by Indian authors (Sridhar et al 2007).

Popkin et al (1993), in a series of studies from the University of Minnesota showed that 51% of a group of patients with longstanding type 1 and 2 diabetes mellitus received one or more significant psychiatric diagnoses. The studies showed the prevalence of generalized anxiety disorder at 31.7%.

Peyrot and Rubin (1997) studied 634 patients in an out-patient diabetes education program for the presence of depression and anxiety. Depression occurred in 41.3% of patients. Anxiety disorders were reported in 49.2% of the patients.

They concluded that diabetes is associated with an increased risk of psychological disturbance particularly for those patients with more diabetic-related complications. They also concluded that socio-demographic factors accounted for much of the risk differential among patients with diabetes.

Lloyd, C. E et al (2000), in their study revealed that the prevalence rates of psychological symptoms in diabetic patients were high (overall 28% of study participants reported moderate–severe levels of depression or anxiety or both).

These results suggests a positive contribution of type 2 diabetes to increased rates of depressive disorders and support prior research that, type 2 diabetes may serve as an indicator of depression and anxiety in low-income adults treated in primary care clinics. The chances of one becoming depressed increases as diabetes complications worsen (Nouwen, 2010).

There is limited literate on the association between depression and diabetes from South-Asian countries (Sridhar GR at el 2002).

The present study aims at assessing the prevalence of depression among outpatients receiving treatment for diabetes. It will also explore the correlation between different parameters of diabetes and depression.

In Africa, the literature on depression among diabetes is minimal, however it exists. In Nigeria, findings from a community-based study in Lagos metropolis in 1969 by Johnson yielded a prevalence of 0.55%. In 1992, the national expert committee on non communicable diseases quoted the crude prevalence of Diabetes Mellitus in Nigeria as 2.73 %.(Agbir TM et 2010).

# CHAPTER THREE

This chapter comprises of the methodology to be used to collect data, analysis, time frame and a tentative budge.

## 3.1   RESEARCH METHODOLOGY

### 3.2   Study Site

The study was conducted in the diabetic clinic at Thika Level 5 hospital.

### 3.3   Study Design

This was a cross sectional descriptive study.

### 3.4   Study Population

The study population comprised of the adult attendees of the diabetic clinic visiting Thika Level 5 hospital and those who met the inclusion criteria.

### 3.5   Sampling method

The method used in this study was systematic random sampling. Every third patient who met the inclusion criteria for the study was chosen. About 80 patients attend the diabetic clinic at Thika level 5 hospital every week. For the period of one month about 320 patients had attended the clinic. Out of this number, about 160 patients met the inclusion criteria. This formed the basis for determining the sample size.

## 3.6 Sample size

Using the formula;

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

Where

n: is the desired sample size,

N: is the population

and

e: is the precision level of -+10% at 95% confidence interval.

Therefore,

$$n = \frac{160}{1+160(0.01)} \qquad = 160/2.6 = 62$$

The formula gave a population sample size of 62 respondents.
(Yamane, Taro. 1967)

## 3.7 Criteria

### 3.7.1 The Inclusion Criteria

i) Adult attendees of the diabetic clinic who assented to the study.

ii) Adult attendees above 18 years

iii) Adult attendees who had been diagnosed with diabetes in the last one year.

iv) Adult attendees who had not been diagnosed with depression before they developed diabetes

### 3.7.2 The Exclusion Criteria

i) Adult attendees who were diagnosed with depression before they developed diabetes

ii) Adult attendees unwilling to give consent and assent to participate in the study

iii) Diabetic attendees below 18 years.

iv) Adult diabetic attendees who were too ill

v) Adult attendees who have been diabetic for more than one year.

### 3.8 Instruments

The researcher used instruments designed to measure depression which were appropriate for the study. These are:

Becks Depression Inventory (BDI) checklist

Socio- demographic questionnaire

### 3.9 Data Collection Procedure

The data was collected primarily by use of questionnaire and check list. The structure of the questionnaire was based on the specific objectives of the study and the questions were closed ended. The respondents were explained what was required of them. Those who consented were allowed to complete the questionnaire that was provided in the waiting room. Their queries and any help in the filling of the questionnaire were responded to appropriately. Afterwards the researcher thanked the participants for taking part in the study.

At the end of each data collection, the completed questionnaire was put in a safe box where only the principle researcher could access.

## 3.10 Variables

Dependent variable…….. Depression

Independent variable……Diabetes

## 3.11 Ethical considerations

This protocol has been designed with the patient's confidentiality in mind. The code of Professional Conduct and Discipline (1949) Medical ethics and the 1965 declaration of Helsinki (on human experimentation and statute laws) were adhered to in this research.

The research process begun by obtaining approval from the medical superintendent of Thika level 5 hospital and application of research permit from the Kenyatta National Hospital research and ethics committee. The participants gave informed consent. There were no names written in the questionnaire.

## 3.12 Risks

There were no anticipated risks. However, the researcher normalized the situation by giving relaxation exercise techniques before administration of the tool. This included Deep breathing exercises which were explained, demonstrated and practiced with the patients.

### 3.13 Benefits

Although there were no monitory gains, it is hoped that the outcome of the study and the recommendations given will ensure better management of newly diagnosed diabetic patients with co-morbidity disorder of depression.

### 3.14 Delimitation

The researcher was only interested with adult diabetic patients attending and referred to the diabetic clinic at Thika level 5 Hospital and those who met the inclusion criteria.

### 3.15 Limitations

The research covered only those adults who had been diagnosed with diabetes within the last one year.

### 3.16 Data Analysis

The statistical package for social sciences (SPSS) version 13 for windows was used to analyze the data by applying descriptive and inferential statistics. The results were presented in narratives, tables, bar charts and pie charts.

The socio demographic questionnaire data was analyzed to show the correlation with depression among diabetic patients.

# CHAPTER FOUR

# RESULTS

This chapter gives the outcome of the research study. The results are represented in narrative, tables and diagrams

## 4.1 Introduction

A sample size (N) of 62 patients from Thika Level 5 diabetic clinic was interviewed and assessed for depressive symptoms using the Beck's Depression Inventory. BDI has high validity and reliability. These participants were 18years old and above, had been diagnosed with diabetes within the last one year and had consented to take part in the research.

## 4.2 Table 1: Social Demographic Characteristics of Patients

|  | Frequency (n) | Percentage (%) |
|---|---|---|
| **Gender of patient** | | |
| Male | 36 | 58.1 |
| Female | 26 | 41.9 |
| **Age of patients** | | |
| 18 - 25 year | 11 | 17.7 |
| 26 – 35 year | 10 | 16.1 |
| 36 -45 year | 16 | 25.8 |
| 46 – 55 year | 16 | 25.8 |
| 56 and above | 9 | 14.5 |
| **Education level** | | |
| None | 10 | 16.1 |
| Primary | 22 | 35.5 |
| Secondary | 23 | 37.1 |
| College | 7 | 11.3 |
| **Occupation** | | |
| Business | 14 | 22.6 |
| Casual | 6 | 9.7 |
| Farmer | 17 | 27.4 |
| Housewife | 9 | 14.5 |
| Skilled | 11 | 17.7 |
| Student | 5 | 8.1 |
| **Marital Status** | | |
| Single | 21 | 33.9 |
| Married | 38 | 61.3 |
| Widowed | 3 | 4.8 |
| **Religion** | | |
| Protestant | 52 | 83.9 |
| Catholic | 6 | 9.7 |
| Muslim | 4 | 6.5 |

## Social Demographic Characteristics of Patients

With regards to age, the youngest participant was 18 years and the oldest was 70 years giving a range of 48 years. The mean age was 41.19 years while the median age was 40 years with a standard deviation of 14.038 and variance of 197.077.

When the study participants are classified according to gender, 36 (58.1%) of them were male whereas 26 (41.9.9%) were female.


Majority of the participants 52 (83.9%) had some formal education ranging from primary, secondary and college levels.

In regards to marital status, most of the participants were married 38 (61.3%), 21 (33.9%) were single and 3(4.8%) were widowed.

When asked about their religion, most of them said they were protestants 52 (83.9) whereas only 4 (6.5%) of the participants were Muslims and Catholics were 6 (9.7%).

## 4.3    Number of Children

**Figure1: Number of Children**
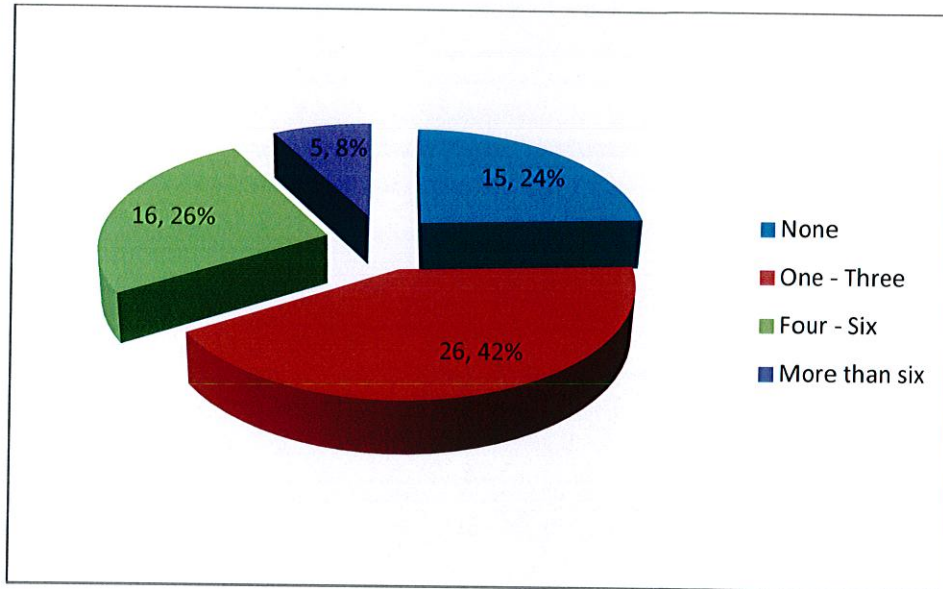


Majority of the patients 26 (42%) had between one to three children whereas 15 (24%) of them had no child and a minority of them 5 (8%) had more than 6 children as illustrated in Figure 1 above.

## 4.4    Spouse Occupation

**Figure 2: Spouse Occupation**
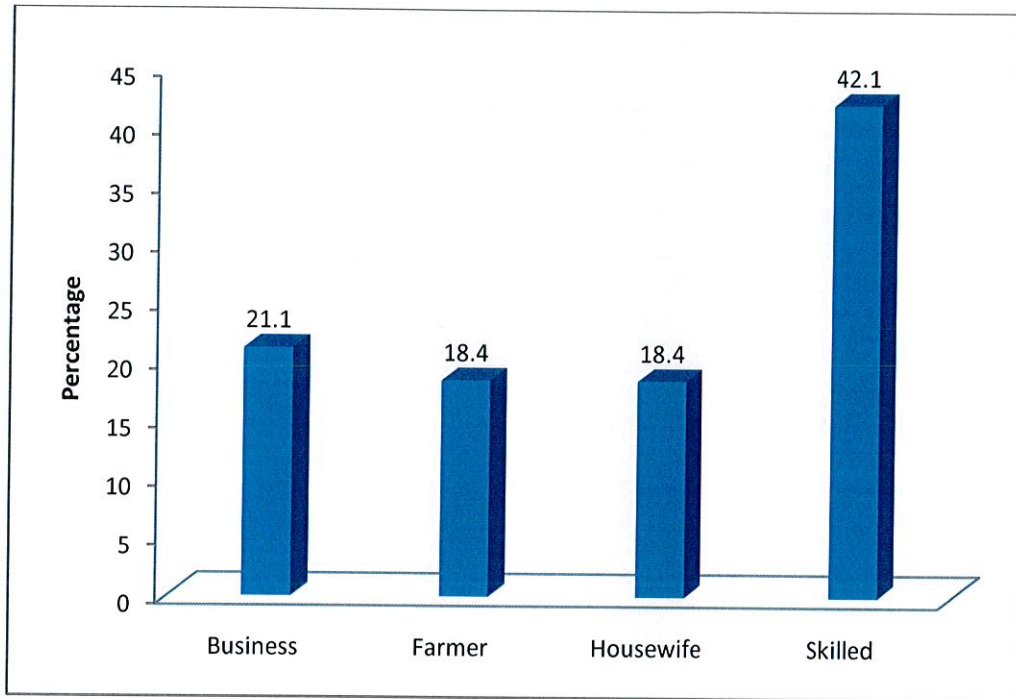


The married participants were (38). Their spouse's occupations were 16 (42.1%) skilled, 8 (21.1%) Business and 7(18.4%) farmers and Housewives as shown in Figure 2 above

## 4.5    Treatment for Diabetes

**Figure 3: Treatment for Diabetes**
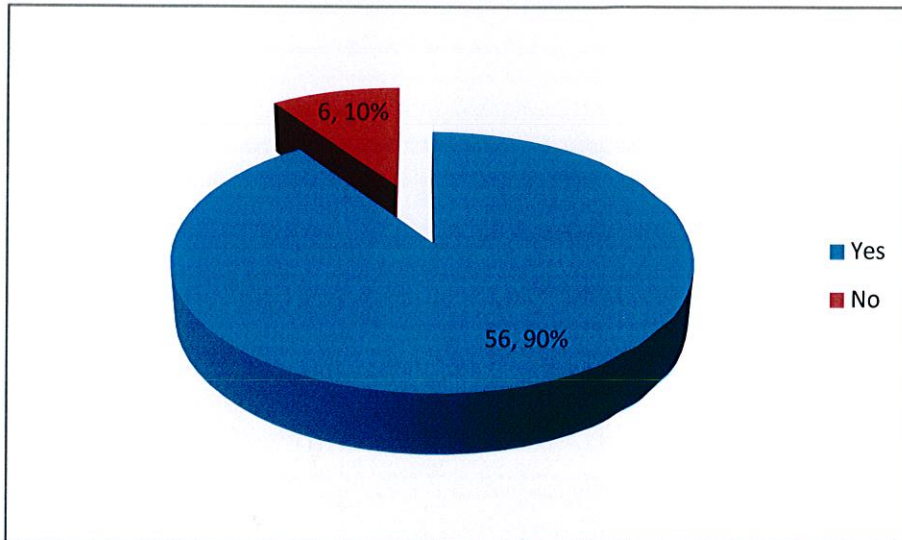


All the study participants were asked if they were on medication for diabetes. The response was as follows: 56 (90%) of them said that they were on treatment for the diabetes whereas 6 (10%) were not on any medication. Those who were not on treatment said that they were managing the condition by use of diabetic diet and physical exercises

## 4.6    Type of Treatment for Diabetes

**Figure 4: Type of Treatment for Diabetes**
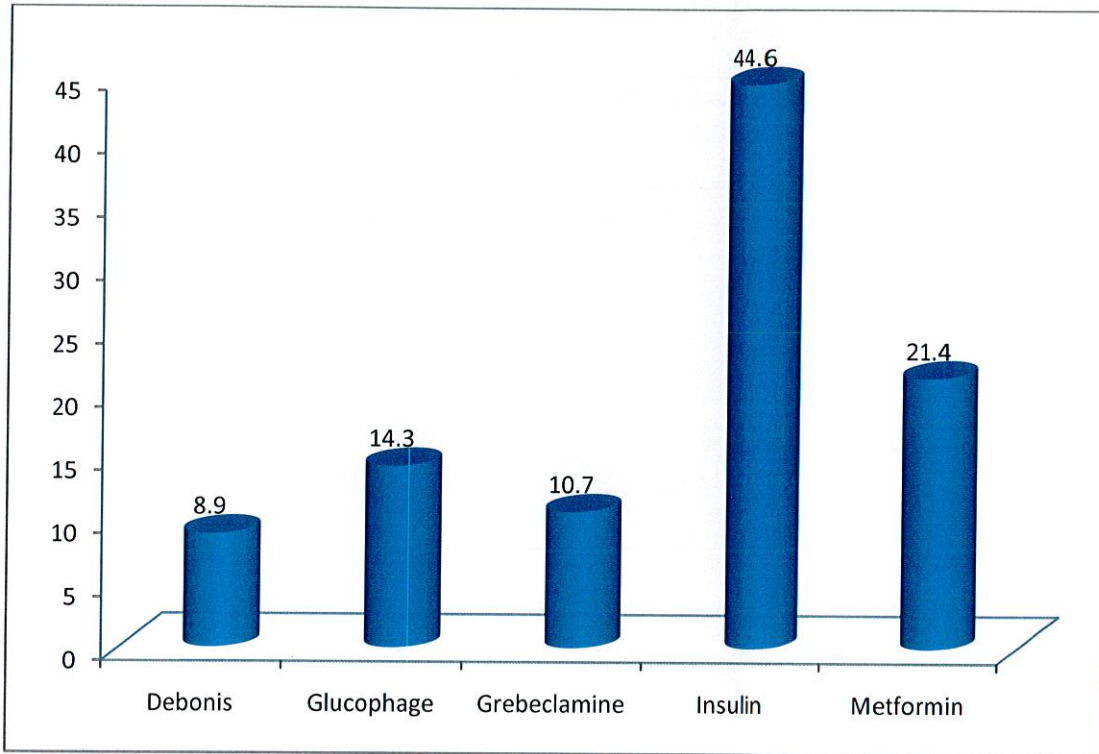


Out of the 56 study participants who said they were on treatment for diabetes, majority of them 44.6% used insulin followed by those who used Metformin (21.4%), Glucophage (14.3%), Grebeclamine (10.7) and lastly Debonis (8.9%).

## 4.7 Cases of Diabetes in the Family

### Table 2: Cases of Diabetes in the Family

|  | Frequency (n) | Percentage (%) |
|---|---|---|
| **Any relative who is diabetic** |  |  |
| Yes | 42 | 67.7 |
| No | 20 | 32.3 |
| **Relationship** |  |  |
| Father | 15 | 35.7 |
| Mother | 8 | 19.0 |
| Brother | 4 | 9.5 |
| Sister | 3 | 7.2 |
| Other relatives | 12 | 28.6 |

Over two thirds of the respondents 42 (67.7%) had at least a relative who had been diagnosed with diabetes either before or after the patient. The relatives are mostly parents 23 (54.7%) followed by other relatives 12 (28.6%) and siblings 7 (16.7%).

## 4.8 Cases of Mental Illness in the Family

### Table 3: Cases of Mental Illness in the Family

|  | Frequency (n) | Percentage (%) |
|---|---|---|
| **Any relative diagnosed with mental illness** |  |  |
| Yes | 13 | 21.0 |
| No | 49 | 79.0 |
| **Relationship** |  |  |
| Mother | 1 | 7.7 |
| Brother | 4 | 30.8 |
| Other relatives | 8 | 61.5 |

Thirteen (21.0%) participants had a relative with mental illness as shown in the above table. The relative was either a mother 1 (7.7%), brother 4 (30.8%) or other relatives 8 (61.5%).

## 4.9    Prevalence of Depression

### Table 4: Prevalence of Depression in the Patients Population

|  | Frequency (n) | Percentage (%) |
|---|---|---|
| Unlikely (0 – 9) | 6 | 9.7 |
| Possible minor depression (10 – 18) | 31 | 50.0 |
| Verge of depression (19 – 21) | 5 | 8.1 |
| Minor to moderate depression (22 – 35) | 14 | 22.6 |
| Moderate to severe depression(36-53) | 6 | 9.7 |

From the results, it was found out that 32.3% of the diabetic patients have depression, as they scored 22 or more on the BDI score. Of these, 14 (70%) had minor to moderate level of depression as they scored 22 – 35 on the BDI while 6 (30%) had moderate to severe depression as they scored 36 – 53 on the BDI. None of the study participants had severe depression-that is a score of 54 and above on the BDI whereas 6 (9.7%) of the study participants were unlikely to have depression-that is a score of 9 and below on the BDI as illustrated in Table 4 above.

**4.10  The Association between Duration of Diabetes and Depression**

**Table 5: Correlation and Significance between Duration of Diabetes and Depression**

| | Depression | | (N) | $X^2$ | r | P-value |
|---|---|---|---|---|---|---|
| | Yes | No | | | | |
| **Duration since diagnosis** 4 and less months | 0 | 8 (100%) | 8 | 7.995(2) | **0.307** | **0.018** |
| 5 – 8 months | 6 (24.0%) | 19 (76.0%) | 25 | | | |
| 9 – 12 months | 14 (48.3%) | 15 (51.7%) | 29 | | | |

In this study the prevalence of depression varied with the duration one had been diagnosed with diabetes. From 0-4 months from the time the diagnosis was done, none of the patients had depression but as time progressed, depression set in. 24% of the participants developed depression within $5^{th}$ - $8^{th}$ months and 48.3% were depressed by the $9^{th} - 12^{th}$ month. These results show a statistically significance (p= 0.018) and that there is a correlation between depression and the duration from the time of diagnosis with diabetes was made (r = 0.307).

## 4.11 The Association between Diabetes and Social Demographics

### Table 5: Correlation and Significance between Depression and Social Demographics

| Demographic | Depression | | (N) | $X^2$ | R | P-value |
|---|---|---|---|---|---|---|
| | Yes | No | | | | |
| **Age** | | | | | | |
| 18 to 25 | 6 (54.5%) | 5 (45.5%) | 11 | 8.766 (4) | 0.228 | 0.067 |
| 26 to 35 | 2 (20.2%) | 8 (80.0%) | 10 | | | |
| 36 to 45 | 8 (50%) | 8 (50%) | 16 | | | |
| 46 to 55 | 2 (12.5%) | 14 (87.5%) | 16 | | | |
| 56 and above | 2 (22.2%) | 7 (77.8%) | 9 | | | |
| **Gender** | | | | | | |
| Male | 6 (16.7%) | 30 (83.3%) | 36 | 9.550 (2) | **0.392** | **0.002** |
| Female | 14 (53.8%) | 12 (46.2%) | 26 | | | |
| **Marital status** | | | | | | |
| Single | 8 (38.1%) | 13 (61.9%) | 21 | 1.764 (2) | 0.138 | 0.414 |
| Married | 12 (31.6%) | 26 (68.4%) | 38 | | | |
| Widowed | 0 | 3 (100%) | 3 | | | |
| **Religion** | | | | | | |
| Protestant | 16 (30.8%) | 36 (69.2%) | 52 | 11.310 (2) | 0.218 | **0.004** |
| Catholic | 0 | 6 (100%) | 6 | | | |
| Muslim | 4 (100%) | 0 | 4 | | | |
| **Education level** | | | | | | |
| None | 4 (40%) | 6 (60%) | 10 | 0.888 (3) | 0.105 | 0.828 |
| Primary | 8 (36.4%) | 14 (63.6%) | 14 | | | |
| Secondary | 6 (26.1%) | 17 (73.9%) | 23 | | | |
| College | 2 (28.6%) | 6 (71.4%) | 7 | | | |
| **Occupation** | | | | | | |
| Business | 4 (28.6%) | 10 (71.4%) | 14 | 6.789 (5) | 0.261 | 0.237 |
| Casual | 2 (33.3%) | 4 (66.7%) | 6 | | | |
| Farmer | 6 (35.3%) | 11 (64.7%) | 17 | | | |
| Housewife | 2 (22.2%) | 7 (77.8%) | 9 | | | |
| Skilled | 2 (18.2%) | 9 (81.8%) | 11 | | | |
| Student | 4 (80%) | 1 (20%) | 5 | | | |
| **On treatment** | | | | | | |
| Yes | 20 (37.7%) | 36 (64.3%) | 56 | 0.739 (2) | 0.226 | 0.362 |
| No | 1 16.7%) | 5 (83.3%) | 6 | | | |

**Age**: Depression was shown to be present in all the age groups of the study participants. Among the 18 to 25 years, 6 (54.5%) of them had depression; of those aged between 26 to 35 years, 2 (20.2%) of them had depression where as those aged between 36 to 45 year 8 (50%) of them had depression. The analysis revealed that there was no correlation or statistical significance between depression and the age of the patients with diabetes ($p = 0.067$, $r = 0.228$).

**Gender**: The prevalence of depression varied with the difference in gender of the patients. Of the 36 male patients, 6 (16.7%) of them had depression while of the 26 female patients, 14 (53.8%) of them had depression. These results are statistically significant ($p = 0.002$) and there is a correlation between depression and gender ($r = 0.392$).

**Marital status**: While there was no significance and correlation between marital status of the patients and depression ($p = 0.414$, $r = 0.138$); there was a statistical significance of religion and depression as illustrated in Table 5 above where the p value was 0.004 but a weaker correlation where $r = 0.218$.

**Education level**: Although the prevalence of depression varied with the education levels of the patients, neither was this significant nor was there a correlation between these two variables ($p = 0.828$, $r = 0.105$).

**Occupation**: The results also showed that there was no significance or correlation between occupation of the patient and depression ($p = 0.237$, $r = 0.261$) and whether the patient was on treatment and depression ($p = 0.362$, $r = 0.226$).

**Religion:** The Catholics and Protestants were less likely to suffer from depression (30.8%) as compared to Muslims (100%). This results showed a significance (p=0.004) and a weak correlation of 0.218

# CHAPTER FIVE

# DISCUSSION AND CONCLUSION

This is the final chapter and it discusses the findings of the research, conclusion and recommendations based of the findings.

## 5.1    DISCUSSION

The results of this study have demonstrated that the prevalence of depression in patients presenting with diabetes at the Thika level 5 Hospital was 32.3%. This is similar to a study done by Peyrot and Rubin in 1997 who studied 634 patients in an out-patient diabetes education program for the presence of depression and anxiety and found out that depression occurred in 41.3% of patients they studied

Many studies have addressed the risk of depression developing in patients with medical illnesses especially diabetes. According to the World Health Organization (WHO) Collaborative Study, patients with diabetes have been shown to have significantly more depressive symptoms. Newly diagnosed Type2 Diabetes Mellitus patients are the specific population who suffer from somatic symptoms of the disease due to lifestyle alteration. This can cause depressive emotions on the 1$^{st}$ year of diagnosis (Helz JW et al, 1990).

According to the research findings which were reported at the American Diabetes Association's 66th Annual Scientific Session, held in Washington, stresses and health problems that accompany diabetes can certainly bring on depression. However, there is also some suggestion that the metabolic factors that drive diabetes also play a role in depression.

The findings of present study concurred with those of Helz JW et al (1990) in that depression affected all the age groups as well as people of all levels of educations of the participants.

The study also showed that being of the female gender would more likely make one suffer from depression (53.8%) than of the opposite gender male (16.7%). This finding concurs with a previous study by Anderson *et al* (2000) who reported depression to be significantly higher in diabetic women (28%) than in diabetic men (18%). He attributed this to gender-specific issues like menstrual cycle changes, pregnancy, miscarriage, postpartum period, pre menopause, and menopause. Besides these gender specific issues, many women also face additional stresses such as responsibilities both at work and at home, single parenthood, caring for children, and for aging parents, ( Blehar M et al 1997) which could all lead to depression. The other finding is that the participants who were Christians never suffered from depression whereas all those of Muslim faithful- 4 (100%) suffered from depression. This could be attributable to the Christians specific issue like a strong belief on the power to heal by their maker-God Almighty.

Depression in this study was significantly associated with the un-married status. The over representation of the non-married among the depressed suggests some relative protection offered by being married and is similar to that reported in a study in the United Kingdom,(Faire JD et al 1994) where depression among diabetics was reported to be significantly related to the marital status of the subjects studied.

This finding could be explained by the fact that married people are more likely to have a confidant whom they can share their problems with and who can give them the needed support when in a stressful situation like having a chronic illness such as diabetes.

## 5.2 LIMITATIONS OF THE STUDY

1. The sample size in the study was abit small because not many patients attending the diabetic clinic met the criteria

2. The study was carried out within a limited time period

3. It was difficult to effectively communicate with some of the participants since they could not communicate in English or Swahili. This forced me to look for a translator.

4. My area of research study (Thika) was quite far(40kms) from my area of study (University of Nairobi)

5. It was very expensive to carry out this research in terms of money and time since I was still required at my place of work

# CHAPTER SIX

# CONCLUSIONS AND RECOMMENDATIONS

## 6.1 CONCLUSION

The purpose of this study was to determine the prevalence of depression among newly diagnosed adult diabetic patients attending diabetic clinic at Thika level 5 Hospital.

The study concludes that depression is significantly associated with newly diagnosed Type2 diabetes. Therefore, patients, clinicians and psychiatrists should be informed and educated about the associated burden of depression with newly diagnosed type2 diabetes. All diabetic patients over 18 years should be simultaneously screened for depression.

The study further confirms the impression that depression is highly co-morbid with the disease. The negative effect of depression on achieving good glycaemic control means that physicians need to screen for and manage this disorder to improve not only the quality of life of diabetes patients but also reduce overall treatment costs, which are generally unaffordable by most individuals with the disease.

My research findings strongly support the association of nuclear family with newly diagnosed type 2 diabetes hence it reaffirms the positive association of family history of diabetes with depression.

Screening for depression among diabetic patients is important for proper management. A big number of diabetic patients develop depression due to lifestyle alteration which causes negative emotions in them.

During the course of diabetes, fear of complications, feeling of helplessness and non-compliance to treatment may cause depression in the diabetic patients.

## 6.2 RECOMMENDATIONS

1. The public should be educated on how to prevent type 2 diabetes from ever occurring through the type of diet they take and also the kind of lifestyle they lead.

2. It is important to create public awareness on how to identify psychological problems by people suffering from chronic illness like diabetes and seek help before they get worse.

3. Continued education for health professionals on symptoms and prevention of depression.

4. Patients, clinicians and psychiatrists should be informed and educated about the associated burden of depression with newly diagnosed type 2 diabetes

5. Every health facility that runs a diabetic clinic should organize a support group for the diabetic patients attended in that facility. Sharing about their common challenges can reduce the chances of developing depression.

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# APPENDICES

## APPENDIX 1: CONSENT

### APPENDIX 1A: CONSENT EXPLANATION FORM

My name is Catherine Nzisa Kaleli, a Master of Science in Clinical Psychology student at the Department of psychiatry, university of Nairobi. I am carrying out a study to determine on *"prevalence of depression among adult diabetic patients visiting Thika Level 5 Hospital."* This is in partial fulfillment for the degree award.

**My supervisors are:**

Dr. Fred Owiti

MBChB (Nrb), MRC PSYCH, London

Lecturer, Department of psychiatry

psychiatry

University of Nairobi

Dr. Pius Kigamwa

MBChB (Nrb), M. Med (Psych.) Nbi

Senior Lecturer, Department of

University of Nairobi

I am requesting you to participate in the study by completing two instruments namely: a socio-demographic questionnaire and Beck's Depression Inventory. This study has been approved by Kenyatta National Research and Ethical Committee. Your participation is completely voluntary and you may withdraw your participation anytime in the course of completing the questionnaire. I also request that if you accept to complete the questionnaire, please do so as truthfully as possible. It takes about 20 minutes to complete.

Do not write any personal identity to ensure confidentiality. There are no risks to you except that it may be emotionally painful.

There will be no financial incentives for taking part in this study. The Ministry of Health, other key players in the health sector as well as the facility you are attending will get copies of the findings and the recommendations which they may use to improve the management of diabetic patients.

If you choose to complete the questionnaires it will be an indication that you have voluntarily consented to participate in the study. If you need further clarification, you can get in touch with me or my supervisors whose telephone numbers are indicated above against their names.

Thank you in advance,

**Catherine Nzisa Kaleli**

Msc. Clinical Psychology Student, Tel: + 254723300061

Department of Psychiatry

University of Nairobi

## APPENDIX 1B: PARTICIPANTS CONSENT FORM

I, whose signature appears below, confirm that I have been explained the nature of this study and I have agreed to participate. I understand that this is my own choice and if I stop participating, that will not in any way affect my medical care in this clinic.

Signature ……………………………….Date…………………………………..

**Witnessed**

Name ………………………………signature……………………Date……………

Name of researcher…………………………………………………………………..

Signature……………………………….Date ……..………………………………

## APPENDIX 1C: FOMU YA IDHINI YA KUSHIRIKI

Mimi, ambaye sahihi yangu iko hapa chini, nathibitisha ya kwamba nimeelezewa kuhusu utafiti huu na nimekubali kuhusika nao. Naelewa ya kwamba huu nimusimamo wangu na ikiwa nitawacha kujihusisha, msimamo huu hautaathiri huduma zangu katika cliniki hii

Sahihi……………………………………Tarehe …………………....................................

**Shahidi**

Jina …………………….Sahihi………………Tarehe……………………………

**Jina ya mtafiti**……………………………………………..………………………….

Sahihi …………………….Tarehe……………….…….. …………………….…...

## APPENDIX B: STUDY INSTRUMENTS

## APPENDIX 4: SOCIO- DEMOGRAPHIC QUESTIONAIRE

Serial Number.....................

1. How old are you?

   ..............................................................................

2. What is your Gender

   ..............................................................................

3. What is your marital status?

   ..............................................................................

4. How many children do you have?

   ..............................................................................

5. What is your religion?

   ..............................................................................

6. What is the highest level of education that you have completed?

   ..............................................................................

7. What is your occupation?

   ..............................................................................

8. What is the occupation for your spouse?

   ..............................................................................

9.  Where do you reside?

    ……………………………………………..…….

**History of the illness**

1)  When were you diagnosed to be diabetic….….…………………..…………

2)  Are you on any treatment?...................................…....…............................

    a.  If yes, which one?…………………….…..………………….………….....

    b.  If no, please explain…….……………….…..……………………..…….

3)  Approximately how much does the treatment cost you per month…………

4)  Is there anyone in your family who is diabetic?.........….............................

    a.  If yes, how are you related?..............…..….....................................

5)  Is there anyone in your family with mental illness?.....................................

    a.  If yes, how are you related?..............…..….....................................

6)  Do you have anything else about yourself that you would like me to know?

## APPENDIX 5: BECK'S INVENTORIES
## EMOTIONAL WELL-BEING (BECK'S DEPRESSION INVENTORY-BDI)

Now I would like to ask you about your feelings. Some people feel sad, some feel happy and some people have feelings somewhere in the middle. It is normal to feel all these feelings. Please tell me honestly which honestly describes the way you have been feeling during the past two weeks including today.

**The first groups of statement are about**

1. **Sadness**

   I do not feel sad… ………. ……………………………….....  0

   I feel sad much of the time…… …………………………….  1

   I am sad all of the time…………………………………………  2

   I am so sad or unhappy that I can't stand it………………………..  3

   DK…………….. …………… ……………………………….  7

   Refused ……………………….. …………………………………  8


2. **Pessimism**

   I am not discouraged about my future………………………………..  0

   I feel more discouraged about my future than I can't stand it………..  1

   I don't expect things to work out for me……….. .. ……… …………  2

I feel my future is hopeless and will only get worse...................... 3

DK.......... ...................... ...................... ...................... 7

Refused............... ...................... ...................... ............... 8

3. **Past failure**

I don't feel like a failure. ... ........... .............. ......................0

I have failed more than I should have....................................1

As I look back, I see a lot of failures.......... ............................ 2

I feel I am a total failure as a person. ........... ......................... 3

DK.............. ...................... ...................... ...................... 7

Refused ..................... ...................... ...................... 8

4. **Loss of pleasure**

I get as much pleasure as I ever did from the things I enjoy ..............0

I don't enjoy things as much as I used to........... ..................... 1

I get very little pleasure from the things I used to enjoy ..................2

I can't get any pleasure from the things I used to enjoy ................ 3

DK.............. ...................... ...................... ...................... 7

Refused ............... ...................... ...................... ..... 8

## 5. Guilty feeling

I don't feel particularly guilty………….. …….…………………….. 0

I feel guilty over many things I have done or should have done……… 1

I feel quite guilty most of the time ………. ….………………..…….2

I feel guilty all of the time …………….. …….………………….. 3

DK………………….. …………….. …………………………….. 7

Refused ………………………….. ……………………………….. 8

## 6. Punishment feeling

I don't feel I am being

punished………………………………………………………….0

I feel I am being punished ….. …………………………………… 1

I expect to be punished ………… ………………………………… 2

I feel I am being punished …………………………………………… 3

DK…… …… … ……….. …………………………………… 7

Refused …. ………... …………….. ….. ……………………….. 8

### 7. Self-dislike

I feel the same about myself as ever ..................................................... 0

I have lost confidence in myself.......... ............................................. 1

I am disappointed in myself ................ ........................................2

I dislike myself................ ........................................................... 3

DK. ........... ................. ........................................................7

Refused ........... ...................... ....................................... 8


### 8. Self-criticalness

I don't criticize or blame myself more than usual ....................... 0

I am more critical of myself than I used to be ............................ 1

I criticize myself for all of my faults......... ...............................2

I blame myself for everything bad that happens ........... .................3

DK... ......... ........................................................................7

Refused ............ ........................................................8


### 9. Suicidal thoughts

I don't have any thoughts of killing myself......... ..................... 0

I have thoughts of killing myself but I would not carry them out ........ 1

I would like to kill myself.......... ...................... ......................... 2

I would like to kill myself.............. ............ ....... ............... 3

DK......... ................................................................ .........7

Refused ..... ......... .............................................…..................8


## 10. Crying

I don't cry any more than I used to................ ....................... 0

I cry more than I used to........................................…................... 1

I cry over every little thing....................…....... ..…............. 2

I feel like crying but I can't cry..................….……….....……… 3

DK............ ................................................................……..7

Refused…….. ......................................................……............... 8


## 11.    Agitation

I am not more restless or would up than usual... ……….. ……….... 0

I feel more restless or would up than usual.…………..……………….. 1

I am so restless or agitated that it is hard to stay still. …….…........ ……2

I am so restless or agitated that I have to keep moving or doing something ..3

DK. ……… ..................................................……................ 7

Refused ……. ………. ......................................…….. ……8

## 12. Loss of interest

I have not lost interest in other people or activities …….…..…… …… 0

I am less interested in other people or things that that before …………..1

I have lost most of my interest in other people or things ……. ……... 2

It is hard to get interested in anything…. ………….…………….............3

DK…. ……………………………………………………………………..7

Refused …………... ………………………….……………………… 8

## 13. Indecisiveness

I make decisions about as well as ever... …………………… ………… 0

I find it more difficult to make decisions that usual……. …………......... 1

I have lost most of my interest in other people or things… ………..…... 2

It is hard to get interested in anything ….. ………... ………………… 3

DK……… ……… ……………………………………….……….. ……… 7

Refused ……… ………... ……………………….……………………… 8

## 14. Worthlessness

I don't feel I am worthless………….. …………………………….. 0

I don't consider myself as worthwhile and useful as I used to……….. 1

I feel more worthless as compared to other people ……… …………. 2

I feel utterly worthless……….… …………………………….. 3

DK………. ……………… …………………………...……... 7

Refused ……………….. …………………………….…….....8


## 15. Loss of energy

I have as much energy as ever ……………….….. …………... ……… 0

I have less energy than I used to have ……………………….. 1

I don't have enough energy to do very much………………….…. 2

I don't have much energy to do anything …………………….... 3

DK ….. ……………………………………………………... 7

Refused…………………………………...…………………. 8


## 16. Changes in sleeping pattern

I have not experience any changes in my sleeping pattern……. 0

I sleep somewhat more than usual ………….. ………………….. 1a

I sleep somewhat less than usual………... …….………..………… 1b

I sleep a lot more than usual …………………..…………………… 2a

I sleep lot less than usual…………………………………….. 2b

I sleep most of the day …… ………………….…………………...3a

I wake up 1-2hours early and can't get back to sleep……..…….. 3b

DK…... ……………………………………………………………………… 7

Refused…. …………………………………………………………..8


## 17. Irritability

I am no more irritable than usual………………………..……………. 0

I am more irritable than usual…. ………………………………. 1

I am much more irritable than usual…………….…………… 2

I am irritable all the time ………. ………………………..……….. 3

DK…… ………………………………………………………….. 7

Refused … …………………….…..…. ………………………… 8


## 18. Changes in appetite

I have not experienced any changes in my appetite… ……………. 0

My appetite is somewhat less than usual……. ……………………….. 1a

My appetite is somewhat greater than usual….. …………..……… 1b

My appetite is much less than before ……… …..……………….. 2a

My appetite is much greater than usual…….. …..………..………… 2b

I have no appetite at all…. ………… …………...….. ……………… 3a

I crave food all the time……….. ………………………………… 3b

DK… ……………………………………..………………….. 7

Refused………………………………………………….……….. 8

## 19. Concentration

I can concentrate as well as ever …..... …………..… ………………… 0

I can't concentrate as well as usual………….……………………….. 1

It is hard to keep my mind on anything for very long ……… ……….. 2

I am irritable all the time …………… ………...………………. 3

DK………………………………………………...………………......... 7

Refused………. ……………………………………………………….. 8

## 20. Tiredness or fatigue

I am no more tired or fatigued than usual….. .…………………............. 0

I get more tired or fatigued more easily than usual ……………………. 1

I am too tired or fatigued to do a lot of the things I used to do… …..... 2

I am too tired or fatigued to do most of the things I used to do… . 3

DK…………………………………………………………………..... 7

Refused…………………………………………………………….... 8
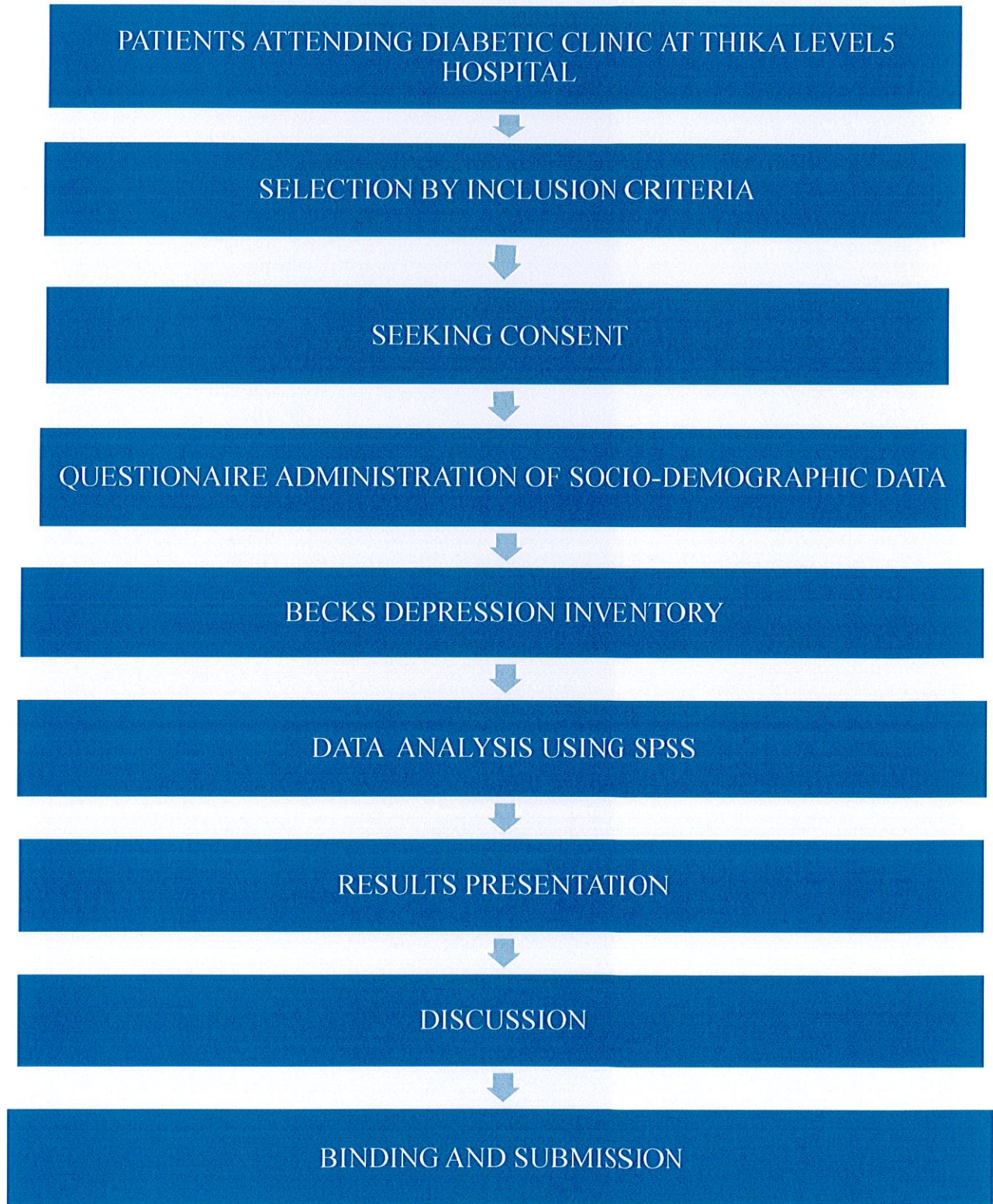
### 21. Loss of interest in sex

I have not noticed any recent change in my interest in sex…………….. 0

I am less interested in sex than I used to be … ……………......... 1

I am much less interested in sex now……….. …………….…………..2

I have lost interest in sex completely………………………………… 3

DK….. ……………………………………………………………...………7

Refused……………………………………………………...…………… 8

**Is there anything else that you feel or think about that is bothering you?**

# APPENDIX 6: TIME SCHEDULE 2011-2012

| MONTH | NOV 2011TO FEB 2012 | MARCH 2012 | APRIL 2012 | APRIL TO MAY TO 2012 | JUNE 2012 |
|---|---|---|---|---|---|
| DEVELOPMENT OF PROPOSAL | ■ | | | | |
| APPROVAL BY PSYCHIATRIC DEPARTMENT | | ■ | | | |
| APPOVAL BY ETHICAL COMMITTEE | | | ■ | | |
| DATA COLLECTION & ANALYSIS | | | | ■ | |
| RESULTS PRESENTATION | | | | | ■ |

## APPENDIX 4: RESEARCH FLOW CHART

PATIENTS ATTENDING DIABETIC CLINIC AT THIKA LEVEL5 HOSPITAL

⬇

SELECTION BY INCLUSION CRITERIA

⬇

SEEKING CONSENT

⬇

QUESTIONAIRE ADMINISTRATION OF SOCIO-DEMOGRAPHIC DATA

⬇

BECKS DEPRESSION INVENTORY

⬇

DATA ANALYSIS USING SPSS

⬇

RESULTS PRESENTATION

⬇

DISCUSSION

⬇

BINDING AND SUBMISSION

# APPENDIX 8: BUDGET FOR THE RESEARCH

| S/NO | ITEM | DETAILS OF THE ITEM | TOTAL COST |
|------|------|---------------------|------------|
| 1 | Payment to the University of Nairobi for the purpose of supervision. | Entire Research period | 136,000 |
| 2 | Reimbursements for transport | Transport within Nairobi and to Thika during the research period | 50,000 |
| 3 | Air time for making telephone calls. | Communication expenses over the research period | 5,000 |
| 4 | Hiring Research Assistant for three months @shs.10,000 per month. | Biostatician | 30,000 |
| 5 | Data entry and Analysis. | Biostatician | 10,000 |
| 6 | Typing, Printing and binding | Document preparation | 15,000 |
| 7 | Approval by Ethics committee | Research and ethics committee –KNH | 1000 |
| | | **Total Costs.** | **247,500** |

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4th July 2012

Catherine N. Kaleli
Dept.of Psychiatry
School of Medicine
University of Nairobi

Dear Catherine

**Research proposal:   "Prevalence of depression among Diabetic patients attending Diabetic clinic at Thika Level 5 Hospital"(P219/04/2012)**

This is to inform you that the KNH/UoN-Ethics & Research Committee (ERC) has reviewed and **approved** your above revised research proposal. The approval periods are 4th July 2012 to 3rd July 2013.

This approval is subject to compliance with the following requirements:

a)   Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
b)   All changes (amendments, deviations, violations etc) are submitted for review and approval by KNH/UoN ERC before implementation.
c)   Death and life threatening problems and severe adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH/UoN ERC within 72 hours of notification.
d)   Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH/UoN ERC within 72 hours.
e)   Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
f)   Clearance for export of biological specimens must be obtained from KNH/UoN-Ethics & Research Committee for each batch of shipment.
g)   Submission of an *executive summary* report within 90 days upon completion of the study
This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/or plagiarism.

For more details consult the KNH/UoN ERC website **www.uonbi.ac.ke/activities/KNHUoN**

Yours sincerely

PROF. A.N. GUANTAI
SECRETARY, KNH/UON-ERC

c.c.

The Deputy Director CS, KNH
The Principal, College of Health Sciences, UoN
The Dean, School of Medicine, UON
The Chairman, Dept. of Surgery, UON
The HOD, Records, KNH
Supervisors:      Dr. P. Kigamwa, Dept. of Psychiatry, UON
                  Dr. Fred Owiti, Dept. of Psychiatry, UON