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Prevalence and Determinants of Depression among Type 2 Diabetic Patients at UNRWA Healthcare Centers in Gaza Strip.

Mohammed Said Ismail Mousa

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Prepared by

Mohammed Said Ismail Mousa

Bachelor of Medicine- Al-Quds University

Supervisor: Dr. Ahmed El-Hawajri

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School of Public Health

Thesis Approval

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Prepared By: Mohammed Said Ismail Mousa

Registration: 21412104
Supervisor : Dr. Ahmed El-Hawajri

Master thesis was submitted and accepted, date:……..……...

The names and signatures of examining committee members were as follow:

1- **Head of committee: Dr. Ahmed El-Hawajri** Signature:……
2- **Internal examiner: Dr. Najah Al-Khatib** Signature:…….
3- **External examiner: Dr. Suhail S. Kishawi** Signature:……

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Dedication

I dedicate this thesis to my parents who keep on giving me unlimited love and support; to my wife who shared me with happiness and hard times.
To the light of my eyes... my kids (Said, Ayham and Yomna).

Thanks also extend to my brothers, sisters, to all my friends, and my beloved ones with who I spend lovely times and learn a lot.

In addition, I dedicate this work to all diabetic patients in Palestine. Finally, thanks a lot to all health workers in healthcare providers in my country, Palestine.

The researcher

Mohammed Said Ismail Mousa

Masters student -Public Health

Declaration:

I certify this thesis submitted for the degree of Master is the result of my own work, and this study (or any part of the same) has not been submitted for higher degree at any university or institution.

Signed:

……

Mohammed Said Ismail Mousa

…/……/2018

Acknowledgement:

Firstly, thanks to Allah who inspired me with the needed patience and power to accomplish this work.

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The researcher

Mohammed Said Ismail Mousa

Master's student -Public Health

Abstract:

Around 9% of the world populations are currently living with diabetes mellitus. Depression is a significant contributor to the global burden of disease; it was estimated to affect 350 million people. Moreover, it may be an important barrier for an effective diabetes management. In Palestine, political instability, low quality of life, high degree of poverty, unemployment and high daily psychological stress increase the prevalence of depression among Palestinians. This study explores the prevalence and determinants of depression among diabetic patients at UNRWA healthcare centers in Gaza Governorates.

The design of this study is a descriptive, analytical, cross-sectional design. One stratified proportional sampling method was followed, using a random sampling method to select six UNRWA healthcare centers which were targeted within the research. In addition, this study depended on quantitative method in which 360 participants perfectly completed the interview questionnaire with a response rate of 96.5%.

The General Health Questionnaire 12 which is an international scale was used to determine the prevalence of depression with a cut point of 4 or more for suspicion of depression among type II diabetic patients. Also, another interview questionnaire was used to indicate the determinants of depression among participants. The questionnaire included demographic and socioeconomic position. It also included health factors and patients' beliefs variables.

The results showed that the overall prevalence of depression among diabetic participants who scored 4 or more of General Health Questionnaire 12 was 30.8%. Inferential analysis showed that the prevalence of depression was the highest among singles 80% whereas the divorced patients had elicited the lowest 16.7%. in addition, the findings showed that unemployed patients had more risks for depression with an average of 36.6% .Also, the results indicated that the participants with high educational level were less susceptible for depression with a rate of 24%. Moreover, there was a significant correlation between depression and the monthly average income in which the prevalence of depression was the lowest among the participants with high monthly income with a rate of 15.4%. The findings indicated that there were a significant correlation between the controlled status of diabetes mellitus and depression as uncontrolled participants with high HbA1c were more depressed with a rate of 39.5%. Additionally, the results showed that there were a significant positive correlation between depression and smoking as the prevalence of depression was the highest

among smokers with an average of 42.4%. On the other hand, depression was the lowest among participants who were working in health field with a rate of 15.6%. Regarding health education, the findings showed that the prevalence of depression was higher among participants who did not receive health education sessions compared with the ones who received it with a rate of 56.7%. Furthermore, most of the depressed patients believed that the cause of diabetes mellitus is due to sadness or psychological shock with a rate of 36%. The prevalence of depression was the lowest among the participants who considered the cause of disease is the heredity with a rate of 24%. The findings indicated that, the prevalence of depression was higher among the participants who were not able to cope with diabetes with the rate of 67%. Finally, there were no significant correlations between depression and gender, type of treatment, life style and compliance with treatment.

The study recommended that Integration and expansion of mental health program at primary healthcare centers as the main component of health services by healthcare providers sectors.

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List of Abbreviations

BDI	Beck Depression Inventory
DM	Diabetes Mellitus
GDM	Gestational Diabetes Mellitus
GHQ-12	General Health Questionnaire- 12
GS	Gaza Strip
HA1c	Hemoglobin A1C
MOH	Ministry of Health
NCD	Non Communicable Diseases
OGTT	Oral Glucose Tolerance Test
PCBS	Palestinian Central Bureau of Statistics
PHC	Primary Health Care
SPSS	Statistical Package of Social Science
UNRWA	United Nations Relief and Work Agency for the Palestinian Refugees in the Near East.
WHO	World Health Organization

Chapter one

1. Introduction

1.1 Background

Epidemiologic transition and life style changes play an important role in making NCD as a global public health issue such as DM. Diabetes is a chronic disease, which affects virtually every organ in the human system. WHO reported that around 9% of the world populations are currently living with DM (WHO, 2015). The majority are from the developing countries. Diabetes caused 5 million deaths in 2014 (International Diabetes Federation, 2014). Almost 80% of diabetes death occurs among low and middle-income countries (WHO, 2010). DM is accompanied by serious life threating complication including blindness, kidney failure, cardiovascular disease, limp amputation and stroke (Kikuchi et al., 2015).

According to Guariguataetal (2013), the total number of diabetic patients was 382 million worldwide. This number became more frightening when you know that it will have grown to 642 million by the year 2035.

According to WHO (2012), about 350 million people suffered from depression over the world. The literature reported that depression in diabetic patients had negatively affected patients' quality of life, medication adherence, and treatment outcome (Goldneyetal, 2004).

In Palestine, DM was considered as one of the major problems facing health care system especially the main health providers such as Ministry of Health (MOH) and United Nations Relief and Work Agency for the Palestinian Refugees in the Near East (UNRWA). It was considered the fourth leading cause for death in Palestine (MOH, 2015). In addition, MOH recorded that the total number of new diabetic patients who were registered in the West Bank (WB) was 3690, while in Gaza Strip (GS)the total number of the registered diabetic patients in primary health centers (PHC) was 13476 (MOH, 2015). Also, UNRWA reported that 13557 diabetic patients were registered in their health centers in GS, while new registered diabetic patients for the same year was 1648 cases distributed in 22 health centers in GS(UNWA, 2015). Moreover, UNRWA reported that 6099 diabetic patients developed 6957complications secondary to DM distributed as cardiovascular, renal failure, limbs amputation, blindness and strokes (UNRWA, 2015).

Depression is a significant contributor to the global burden of disease and affects people in all communities across the world. Today, depression is estimated to affect 350 million

people. The World Mental Health Survey that was conducted at 17 countries have an average of one out of every 20 people having an episode of depression in the previous year (WHO, 2012). In addition, patients with diabetes were twice as likely to be depressed compared to general population (Anderson et al., 2001). Depression leads to negative effects on diabetic patients including quality of life, compliance to regimen self-care and medication compliance (Goldneyet al., 2004). Depression may be an important barrier to effective diabetes management. Patients with depression and diabetes were more likely to have higher macrovascular, microvascular complications and higher mortality rate (Katon et al., 2005).

In Palestine, due to political instability, low quality of life, high degree of poverty, unemployment and high daily psychological stress Palestinian people are high risk for depression (Husseini, 2009).

In 2010, MOH integrated mental health-care with PHC services as part of a WHO-led program. About 38% of the attended patients to PHC centers of MOH in GS had mental health problem, 60% of the depressed patients had NCDs (El Masriet al., 2013). Furthermore, a study was conducted in the West Bank reported that 40% of assessed diabetic patients were considered as potential cases of depression, none of them was being treated with antidepressant treatment (Hadeed,2014). In February 2016, UNRWA decided to integrate mental health in their health centers, starting with Al- Saftawi health center as a pilot study.

In the current research the investigator selected one of a very common mental illness that is depression in order to determine its effect on one of the global public health issue such as Diabetes Mellitus.

1.2 Research problem

Depression is a growing public health problem, affecting hundreds of million people, and creating an enormous suffering, disability and economic loss (WHO, 2008). Depression in diabetic patients has a negative effect on patients' quality of life, medication compliance, and treatment outcome (Goldneyet al., 2004). Furthermore, undiagnosed depression among diabetic patients made them less likely to comply with recommended self-care and less

compliance for special diet or physical activities (El Mahalli, 2015).Therefore, early prediction of risk factors of depression among diabetic patients may decrease life threatening complication and improves their quality of life.

In GS, the lack and shortage of data about the effect of depression on DM in relation to compliance with treatment, development of complication and control status played an important role for the researcher to study this subject. So, this study was conducted to measure the prevalence and determinants of depression among diabetic patients who attended health centers of UNRWA in GS in order to increase awareness of depression and its effect on prognosis of participants. In addition this research investigated the relationship between DM and depression. Also, it determined if diabetic patients were more liable to depression or not. Moreover, it explored if diabetic patients with depression had higher risk for DM complication in comparison to other diabetic patients without depression.

1.3 Justification

Globally, one third of persons visiting PHC facilities had issues related to mental health and psychological problems. WHO recommend that 70% of those cases could be managed at primary health level (UNRWA, 2015). Depression in diabetic patients had a negative effect on patients' quality of life, medication adherence, and treatment outcome (Goldneyet al., 2004). Undiagnosed depression among those patients made them less likely to comply with recommended self-care and less compliance for special diet or physical activity (El-Mahalli, 2015).

Early proper intervention to predict exposure to depression among diabetic patients may reduce the risk of life threatening complication or delay the onset of depression. The limitation of information regarding the prevalence of depression and its determinants among diabetics raised the need to conduct such study in GS and to provide effective recommendations to decision- makers in UNRWA. It aimed to support the integration of psychiatric approach at primary health care services of UNRWA clinics. With the administration of proper timely interventions, diabetic patients at risk of depression will hopefully avoid complication, have higher life expectancy and have improved quality of life.

1.4 Study objectives

1.4.1 General objective

The overall objective of this study was to determine the prevalence and determinants of depression among diabetic patients in UNRWA clinics in Gaza Strip Governorates.

1.4.2 Specific objective

1. To assess the prevalence of depression among type 2 diabetic participants in UNRWA healthcare centers.
2. To assess the different demographical status as predictor to depression among diabetic participants.
3. To determine the health factors in diabetic participants as predictor for depression.
4. To examine diabetic participants' beliefs as predictor for depression.
5. To support & integrate the mental health of diabetic participants in primary health care services.

1.5 Study questions:

1.5.1 Research questions

1. What is the prevalence of depression among type2 diabetic participants at UNRWA healthcare centers?
2. Is there a significant relation between depression in diabetic patients and socio demographic variables?
3. What are the health factors in diabetic participants that could be predictors for depression?
4. What is the range of commitment of diabetic participants who have depression to management plan?
5. Are the healthcare services including mental health at UNRWA health centers helpful for diabetic participants?
6. Is there a significant relation between depression and diabetic participants' beliefs related to variables about DM?
7. Is there a relation between DM complication and depression?
8. Which suggestions could be recommended to support integration of mental health approach in primary health services for diabetic patients?

1.6 Context of the study

It is known that the area of the historical land of Palestine totals about 27,000 km^2. In 1948, 1.4 million Palestinians lived over all of historic Palestine (Palestinian Central Berau of Statistics - PCBS, 2011). The same source denoted that more than 800 thousands of them were forcibly displaced from their original towns and cities into the West Bank and Gaza Strip, neighboring Arab countries, and other countries of the world. Since then, UNRWA was established as a subsidiary body of the United Nations General Assembly on 8 December 1949 to carry out direct relief and works programs for Palestine refugees (UNRWA, 2013).

GS is a small piece of land (about 365 Km2); it is located in the southern area of Palestine (PCBS, 2015). The total number of population who were living in GS at the end of 2014 were 1,790,010. For these reasons, GS is characterized by a very high population density especially on a very small are of land, which is not well occupied by human activities. PCBS (2015) mentioned that, the percentage of refugees in GS is 66.8% out of the total population. People in GS are living in bad socioeconomic situations, where the average household size in 2013 was 5.8; with unemployment rate for people whose ages are 15 year and above in 2014 was 43.9% (PCBS, 2015). Adding to this, the Israeli siege since 2006 and the repeated aggressions on the GS have exhaustive consequences.

UNRWA provides health care services for the Palestinian refugees in GS through 22 primary health care centers, which are characterized by a very high workload. Therefore, the centers are distributed into three geographical areas (north with Gaza city, middle and south area) for better managerial control and supervision. The health services provided are primary ones, which include:

- Maternal and child health: Preconception care, antenatal care, postnatal care, family planning, vaccination and growth monitoring.
- Non communicable diseases.
- General curative services.
- Physiotherapy and dental services.
- Some laboratory and radiologic services.
- School health.

  Annex (1) shows the (Distribution of the UNRWA healthcare centers across the Gaza Strip)

1.7 Definition of terms

Define the terms scientifically then operationally for each one of them

These definitions that researcher decides to measure variables in the study.

1.7.1 Prevalence

The rate or the level of the spread of depression among diabetic patients who are already diagnosed by specialists, they are treated with antidepressant drugs (old cases), and new cases who are discovered by the researcher by using General Health Questionnaire GHQ-12 scoring technique (new cases).

1.7.2 Depression

A common mental disorder characterized by sadness and loss of interest or pleasure. Feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness and poor concentration (WHO, 2012).

By the researcher, depression is defined as the participants who scored 4 or more on GHQ 12 items.

1.7.3 Type 2 Diabetes Mellitus

Diabetes is a disorder characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both (ADA, 2013).

It's defined as the participants who their HbA1c is or above 7%

1.7.4 Determinants

Any factor, whether event, characteristic, or other definable entity that brings about change in a health condition, or in other defined characteristics (Abed, 2014).

By the researcher, determinants refer to the various conditions and situations surrounding the patients, including their economic level, health conditions, provided healthcare services, awareness and discipline to take the medications (Self-care).

1.7.5 UNRWA

Is an international agency that provides health, education and relief services for Palestinian refugees in the Near East that becomes the largest humanitarian operation in the occupied Palestinian territory (UNRWA, 2015)

1.7.6 Gaza Strip

Is a narrow band of land lying on the Mediterranean Sea; it is 45 kilometers long and 6-12 kilometers wide with an area of 378 square kilometers that suffered from many recurrent occupations (PCBS, 2015).

Chapter two

2. Literature Review and Conceptual Framework

2.1 Conceptual Framework

The researcher constructed that the conceptual framework is based on literature and personal experience in mental and NCDs health mainly DM. The conceptual framework aimed to determine prevalence and predictive risk factors of depression among diabetic participants of UNRWA clinics in Gaza Strip Governorates.

2.1.1 Dependent Variables

In this study, determination of prevalence and predictive risk factors of depression among diabetic patients are dependent variable. The researcher conducted to measure demographic factors, commitments of patients and health factors among diabetic patients which lead to depression which had negative effect to adherence with medication and self-care. This would result in an increase of an uncontrolled status and complications of DM.

2.1.2 Independent Variables

In this study, the independent variables are the demographic factors, beliefs, commitment of diabetic patients, and health factors. Those independent variables were explained in the review of literature.

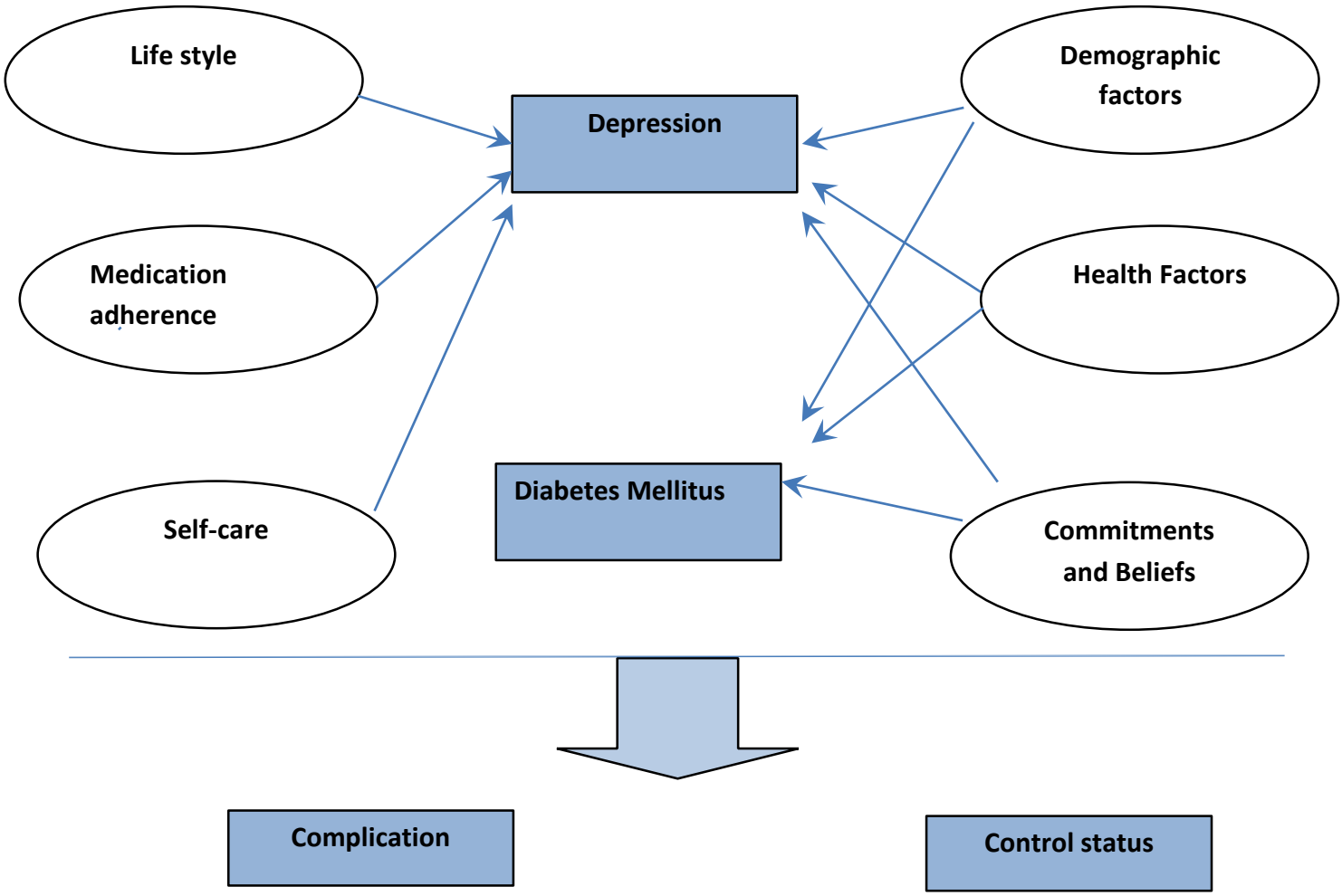


Figure (1): Conceptual framework, self-constructed.

2.2 Diabetes Mellitus

2.2.1 Definition

Diabetes is a metabolic disorder that is characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. The chronic hyperglycemia of diabetes is associated with long-term damage, dysfunction, and failure of different organs especially the eyes, kidneys, nerves, heart, and blood vessels (ADA, 2013).

On the other hand (Mayo clinic, 2014) study defined it as a group of disorders that affect how one's body uses blood sugar (glucose). Glucose is vital to health because it is an important source of energy for the cells that make up the muscles and tissues. It is the brain's main source of fuel. Regardless of the type of diabetes which patients have, it means that they have high level of glucose in their blood which lead to serious and dangerous health problems. In the view of the WHO(2011) who considered it as a chronic, metabolic disease, it is characterized by elevated levels of blood glucose (or blood sugar), which leads over time to serious damage to the heart, blood vessels, eyes, kidneys, and nerves.

2.2.2 Types of diabetes

According to ADA (2013) DM is classified into:

- **Type 1 A Diabetes Mellitus:**

  It account for 5%-10% of patients with DM; it results from autoimmune destruction of Beta cells of pancreas.

- **Type 1 B Diabetes Mellitus:**

  This form is an inherited type; characterized by permanent insulin apenia with high risk to ketoacidosis. It does not have autoimmune cause or HLA association. Insulin therapy is mandatory for this type.

- **Type 2 Diabetes Mellitus**

  This form account for 90%-95% of patients with DM. It is called non-insulin dependent type due to insulin resistance or relative insulin deficiency. Globally, in 2006 there were approximately 285 million people who were diagnosed with this type (Smyth and Heron, 2006).

- **Gestational Diabetes Mellitus (GDM)**

GDM is defined as any degree of glucose intolerance with onset or first recognition during pregnancy. The definition applies regardless of whether insulin or only diet modification is used for treatment or whether the condition persists after pregnancy. The prevalence may range from 1 to 14% of pregnancies. GDM is a complication of nearly 90% of all pregnancies.

- **Other specific types**
- **Maturity Onset Diabetes of the Young (MODY)**

It is characterized by impaired insulin secretion with minimal or no defects in insulin action. They are inherited in an autosomal dominant pattern. Onset occur in early age generally before age 25.

2.2.3 Prevalence of Diabetes Mellitus

DM Type 2 is a major problem to the community as it has been estimated to affect about 415 million people worldwide. This number becomes more frightening when you know that the number of cases will be 642 million by the year 2035(Guariguata et al., 2013). In addition, the WHO (2015) reported that the global prevalence of DM was 9% among adults whose ages are 18 year and more in 2014. Nearly 1.5 million deaths directly related to DM in2012; 80% of the deaths occurred in low- and middle-income countries (WHO, 2014). Also, the WHO projects that diabetes will be the 7th leading cause of death by 2030 (Mathers and Loncar, 2006).

The prevalence of diabetes for all age-groups worldwide was estimated to be 8.3% of global population, total number of diabetic patients will have reached 592 million or nearly 10.1% of global population by the year 2035. Furthermore, it was estimated that 171 million people with DM were undiagnosed (IDF, 2014).

In Palestine, a study which was conducted by (Abu-Remilehet al., 2013) which showed that the prevalence of DM among adults aged 25 years or more was 9.7% in 2000, increasing to 15.3% by 2010. The prevalence in men increased from 9.1% to 16.9% and in women from

10.2% to 13.6%. The forecasts for prevalence of DM are 20.8% for 2020 and 23.4% for 2030.

According to UNRWA report which estimated the prevalence of diagnosed patients who aged 40 years or old with DM in the five fields during 2014 was 10.5% (UNRWA, 2014). The total number of diabetic patients including both types in GS was 13,096, while those patients with diabetes and hypertension was 24, 392 in 2014.

In Arab countries, due to sedentary life styles, economic growth acceleration ,and increasing high calories of food consumption, the prevalence of DM has increased tremendously (Badran and Laher, 2012). The IDF (2014) reported that the prevalence of DM in Saudi Arabia was 23.9%, Kuwait was 23.1% and Qatar was 22.9%; while the IDF (2011) reported that in the United Arab Emirates (UAE) it was19.2%, in Lebanon was 20.1%, in Jordan was 12.3%, in Tunisia was 9.6%, in Egypt was 10% and in Yemen was 9.8%.

2.2.4 Complications of Diabetes Mellitus

Diabetes is one of the foremost causes of death in many countries and a leading cause of blindness, renal failure, and non-traumatic amputation (Aziz, 2010).

On the other hand, (WHO, 2014) concluded that DM complications are divided into microvascular (Those caused due to damage to small blood vessels) and macrovascular (Caused due to damage to larger blood vessels). Microvascular complications include damage to eyes (retinopathy) that may lead to blindness. Non-proliferative diabetic retinopathy (NPDR) prevalence in DM Type 2 is estimated to be around 21% (Yau et al., 2012). Visual impairment's prediction along has been ranked as the most feared consequence of DM Type 2 in this group of patients (Luckieetal., 2007).

It is important to emphasize that severe visual impairment occurs 3 times more frequently in DM Type2 patients compared to the general population(Hayward,etal.,2002).To kidneys (nephropathy) leading to renal failure and to nerves (neuropathy) leading to impotence and diabetic foot disorders (which include severe infections leading to amputation). The brain is also affected in DM Type 2 either by accelerated vascular disease or due to metabolic

derangements but the consequences of these changes are more difficult to appreciate. Multiple studies have suggested early cognitive impairment in DM TypeII patients without evidence of vascular disease which could be related to blood brain barrier dysfunction which is better understood in DM Type 1 (Horani etal., 2003). This cognitive impairment could have huge impact on the life quality of DM Type 2patients and perhaps on their emotional status. Macrovascular complications include cardiovascular diseases such as heart attacks, strokes and insufficiency in blood flow to legs. There is evidence from large randomized-controlled trials that good metabolic control in both type 1 and 2 diabetes can delay the onset and progression of these complications.

2.3 Depression

2.3.1 Definition of Depression

Depression is a common mental disorder, characterized by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness, or poor concentration. Depression can be long-lasting or recurrent, substantially impairing an individual's ability to function at work or school, or his ability to cope with daily life. At its most severe, depression can lead to suicide. (WHO, 2012).

Depression (major depressive disorder or clinical depression) is a common but serious mood disorder. It leads to severe symptoms, affecting one's feelings, thinking and handling of daily activities, such as sleeping, eating, or work. To be diagnosed with depression, the symptoms must be appear present for at least two weeks (NIMH, 2015).

On other hand, (Calles, 2007) defines depression as a permanent feeling of sadness or irritable mood as well as "anhedonia", a loss of ability to feel pleasure, doing daily activities that used to please the patient before. This also includes impaired concentration and poor attention, appetite change, disturbance of sleep patterns and markedly decreased feeling self-worth.

According to (APA, 2013) depression (major depressive disorder) is a serious medical illness that has negative effects on the way an individual feel, thinks or react.

Depression a major problem facing both developing and developed countries. It affects

people of all social, gender, economic, age, religious and geographic levels or backgrounds.

2.3.2 Prevalence of depression

Depression is one global public health problem, which affects many people in all communities over the world. (WHO, 2012) reported that 350 million people suffer from depression around the world. A World Mental Health Survey conducted in 17 countries found that on average about 1 out of every 20 people have had an episode of depression at some point in their lives. In addition, (WHO, 2014) has ranked depression as the 4th most leading cause of disability worldwide; it projects that by 2020, it will be the second leading cause.

The burden of depression is 50% higher among females than males; In fact, depression is the leading cause of disease burden for women in high-income, low- and middle-income countries (WHO, 2008).

Research in developing countries suggests that maternal depression may be a risk factor for poor growth in young children (Rahman et al., 2008).

Prevalence of depressive disorders varies throughout the world. According to (Health Communities, 2015) reported that the lowest rates were found in Asian and South East Asian countries. Percentages represent the lifetime chance that a person will experience a depressive episode that lasts for a year or more. For example, Taiwan reports less than 2 % while Korea reports 3 %. Western countries typically report higher rates, such as Canada 7 %, New Zealand 11 %, and France 16%.The United States has rate of about 6%.

Globally major depression is the fourth highest burden of disease among all medical diseases (Thompson, 2007).

The prevalence of depression among patients with chronic diseases had been estimated to be 30%-54 %(Giannakopoulos et al., 2010).

Prevalence of all types of depression among patients who attending primary healthcare in Saudi Arabia was 15.3%-22%, while according to their different subtypes, major depression

was 4.8%-8.6%, dysthymia between 2.1%-3.7% and minor depression was 8.4%-9.7% (Pomerantz, 2005).

According to DSM V, twelfth-month prevalence of major depression in the United States was approximately 7% with marked differences by age group such that the prevalence in 18 to 29 year old individuals was three fold higher than the prevalence individuals' age 60 years or older. Female experience 1.5-3 fold higher rate than male in early adolescence.

2.3.3 Medical Risk Factors for Depression

There are many risk factors associated with increasing the risk of depression which can affect person any time with its different types. (Haggerty, 2015) described risk factors of depression as the following:

Family History:

Positive family history of depression increase the risk. Other mental illnesses, such as alcoholism in family members, can also increase the risk for depression.

Early Childhood psychological **trauma**:

Such as loss of a parent before adolescence, child neglect, physical, emotional or sexual abuse, and parental divorce are all linked to increased risk for adult depression.

Stress:

Negative life events which cause more stress, such as divorce, loss of a loved one or loss of employment are associated with increased risk of depression.

Residence:

Depression seems to be higher in urban cities than in rural areas. According to a study done by (Haggerty, 2006), depression was found twice as common among city residents as those who lived in rural settings.

Marital Status:

Depression is the highest among those who are divorced or separated. It is the lowest among single and married persons. People living alone have higher rates of depression than those living with others.

Work Status:

Research showed that people who were unemployed for six months or more for the last five years, had a rate of depression three times that of the general population.

Physical Illness:

Certain physical illnesses are associated with depression such as thyroid disorder, hormonal imbalances, chronic viral infections, cancer or heart diseases.

Gender:

It is estimated that one out of every four women and one out of every 10 men suffer from one type of depression during their lifetime. While women suffer from depression more often and attempt suicide more frequently, men are more successful when it comes to attempting suicide.

Age:

Most people experience their first episode of depression between the age of 20 and 40. In fact, the average age of onset for depression is the mid-20s. Alarmingly, recent research shows that the average age of onset is decreasing with each new coming generation. Children, adolescents and elderly persons often experience "vibrant "symptoms of depression and are more vulnerable to being exposed to stressful events that predispose them to depression.

Tobacco:

Increased tobacco use has been noted in depressed people. Individuals with underlying or current depressive symptoms are likely to experience mood disturbances when they attempt to quit. The results of this study show that there was no effect of smoking on the incidence of depression (Haggerty, 2006).

2.3.4 Types of Depression and symptoms

According to American Psychiatric Association (2013) Depression was classified to

- **Major depression**

(Also known as Major Depressive Disorder, Chronic Major Depression or Unipolar Depression)

Major Depression is manifested by a combination of symptoms that interfere with the ability to work, study, sleep, eat and enjoy what once were pleasurable activities. Major Depressive episode may occur only once; but more commonly, several episodes may occur in one's lifetime. Chronic Major Depression may require a person to continue treatment and monitor lifestyle habits on an ongoing basis. This disorder is characterized by the presence of the majority of these symptoms:

Symptoms of major depression include:

- Persistent sad, anxious, or feelings of "emptiness" most of the day, nearly every day, as indicated by subjective report or observation of others (e.g., A depressed often appears tearful). In children and adolescents, this may be characterized and defined as an irritable mood.
- Feelings of hopelessness and pessimism
- Feelings of guilt, worthlessness and/or helplessness
- Loss of interest or pleasure in hobbies and activities that were once enjoyed, including sex
- Decreased energy, fatigue, feeling "slowed down"
- Difficulty with concentration, memorization and making decisions
- Trouble sleeping, early-morning awakening, or oversleeping
- Loss of appetite and/or weight loss/gain
- Sucidial thoughts or attempts of suicide

- Restlessness, irritability, and/or angry outbursts
- Other persistent physical symptoms, such as headaches, digestive disorders, and chronic pain, which do not respond to routine treatment

- **Dysthymia:**

Dysthymia is characterized by an overwhelming yet chronic state of depression, exhibited by a depressed mood for the most of the days, for more days than not, for at least 2 years. (In children and adolescents, mood can be irritable and duration must be at least 1 year.) The person who suffers from this disorder must not have gone for more than 2 months without experiencing two or more of the following symptoms:

Symptoms of dysthymia

- Loss of appetite and/or weight changes
- Trouble sleeping, early-morning awakening or oversleeping
- Decreased energy or/and fatigue
- Low self-esteem
- Poor concentration or difficulty making decisions
- Feelings of hopelessness

- **Bipolar disorder**

Another type of depressive illness is bipolar disorder (in the past described as manic-depressive illness). Bipolar disorder is characterized by cycling mood changes: severe highs (mania) and lows (depression), often with periods of normal mood in between. Sometimes the mood switches are dramatic and rapid, but usually they are gradual. When in the depressed cycle, an individual can have any or all of the symptoms of depression. When in the manic cycle, the individual may be overactive, over-talkative, and have a great deal of energy.

Bipolar disorder is characterized by more than one depressive episode. There are four basic types of bipolar disorder.

✓ **Bipolar I disorder**

The primary symptom presentation is manic, or rapid (daily) cycling episodes of mania and depression that last at least for seven days. Manic episodes may be so severe that the individual may require hospitalization. Depressive episodes typically last at least for two weeks.

✓ **Bipolar II disorder**

The primary symptom presentation is recurrent depression accompanied by hypomanic episodes (a milder state of mania in which the symptoms are not severe enough to cause market impairment in social or occupational functioning or need for hospitalization, but are sufficient to be observable by others).

✓ **Bipolar Disorder Not Otherwise Specified (NOS)**

Symptoms of the disorder exist, but do not meet diagnostic criteria for either Bipolar I or II. However, these symptoms vary from one individual to another.

✓ **Cyclothymic Disorder**

A chronic state of cycling between hypomanic and depressive episodes that do not reach the diagnostic standard for bipolar disorder but have been present for at least two years.

- **Persistent Depressive Disorder**

A depression that lasts for over 2 years, involving symptoms that fluctuate in severity. The key difference is that the symptoms must be present at least two years

- **Seasonal Affective Disorder (SAD)**

A depression starting in the winter months, usually stemming from low exposure to natural sunlight and often reducing in the summer months. This disorder may be effectively treated with light therapy (Full Spectrum Lighting), but about 50% do not respond to treatment and benefit from a combination of therapy and medication.

- **Psychotic Depression**

A severe depression where the person has some form of psychosis along with other symptoms. This psychosis can include having disturbing false beliefs or a break with reality (delusions), or even hearing voices and seeing upsetting things that others cannot hear or see (hallucinations).

- **Postpartum Depression**

This depression occurs right after giving birth. It is much more than the "baby blues" that many women experience after giving birth, when hormonal and physical changes and the new responsibility of caring for a newborn can be overwhelming. It seriously interferes with the woman's daily activities. It is estimated that 10 to 15% of women experience postpartum depression after giving birth.

- **Substance induced mood disorder (abuse or dependence)**

Substance-Induced Mood Disorder is a common depressive illness of patients in substance abuse treatment. It is defined in DSM-V-TR as "a prominent and persistent disturbance of mood that is judged to be due to the direct physiological effects of a substance (i.e., a drug of abuse, a medication, or somatic treatment for depression or toxin exposure). The mood can manifest as manic (expansive, grandiose, irritable), depressed, or a mixture of mania and depression.

2.4 Diabetes Mellitus and Depression

The high prevalence of comorbid disorders, the persistence of depressive affect and diabetes distress over time highlight the need for both committed mental health care and diabetes distress screening at each patient contact(not only periodically), especially for younger adults, women and those with complications/comorbidities (Fisheretal, 2008).

While some might debate that cognitive impairment in early DM Type2 is poorly understood and any association with depression could prove to be difficult, it has been found that diabetes complications are highly associated with major depressive disorder. Different diabetic complications have been associated with higher depression risk which include diabetic retinopathy, nephropathy, neuropathy and sexual dysfunction (De Grootetal., 2001). Also, such patients might feel helpless and hopeless when the disease is not controlled; this feeling can be associated with negative future anticipation behavior (MacLeodetal., 2016).

Diabetes' long-term complications have previously reported that it has an effect on quality of life, while macrovascular complications have a larger effect than microvascular ones (Diabetic care, 2016). Similarly, Quah suggested that quality of life can be negatively impacted when patients have multiple co-morbidities and diabetic complications (Quah Etal., 2011). Quah also suggested that a good relationship with the treating doctor and patient's satisfaction with the health system were key factors in lowering the risk of bad quality of life which emphasizes the importance of studying depression as a separate complication of DM Type 2.

Finally, it is worthy to mention that ethnicity and culture-related factors could also play a role in the risk of depression among DM Type 2 patients (Ali Etal., 2006). In addition, there were previous studies that were conducted in Palestine and other studies around the world that measured the same variables of our study mentioned below.

Only one study had systemically studied the prevalence of depression among DM Type 2 patients in Palestine by (Sweilehet al, 2014) which reported a prevalence of 40%. This study had also reported an association between depression among this group of patients and female gender, low educational level, unemployment and having co-morbidities. One possible limitation of this study is the absence of a control group which makes one ask the question of whether these associations are specific to DM Type II or they are also found in controls. The latter case could indicate that DM Type II patients are at an increased risk of depression, not directly because of these risk factors, but perhaps because of anticipation of complications, anxiety, uncertainty about the future, and early cognitive impairment. Another possibility would be the prevalence of being unemployed or a higher body mass index usually found in DM Type II patients, which could also explain the higher prevalence of depression among these patients.

If the relationship is linear and positive in direction.19.7% of diabetic patients have depression according to the eight-item Patient Health Questionnaire depression scale (PHQ-8). The results of multivariate analysis showed that females were 1.91 times more likely to have depression than males with ($p = 0.001$), and low- educated people were 3.09 times more likely to have depression compared to educated people ($p \leq 0.002$). In addition, patients treated with insulin were 3.31 times more risks to develop depression ($p = 0.001$). Furthermore, not following the recommended diet plans, lacking blood glucose self-monitoring and increased barriers to medications adherence were also significantly associated with the occurrence of depression among patients with DM (Sweilehet al, 2014).

According to (El Mahalli, 2015) who studied Prevalence and Predictors of Depression among Type 2 DM outpatients in Eastern Province in Saudi Arabia, a cross- sectional was conducted in the outpatient clinics of DM in a governmental hospital in Eastern Province, Saudi Arabia in 2013. Patients with type II DM, (260 participants) were selected using systematic random sampling technique. One interview questionnaire was designed to collect demographic and health factors. Two self- administered instruments were used to assess perceived social support and depression. Assessment of the relationship between depression

and its predictors was done using univariate analysis. Multivariable analysis was used to evaluate the combined effect of several factors associated with depression among type II DM patients after adjusting for confounding variables. Almost fifty percent of diabetics were depressed (49.6%). Patients with poor DM control (OR 3.221 *P.000*) and unmarried (OR 3.206, *P .025*) were more risky for developing depression and, difference was significant.

Another study was conducted in Iraq aimed to determine the prevalence of comorbid depression among sample of patients with type 2 diabetes mellitus. A cross sectional case control study was conducted on patients with type II DM being monitored at the endocrinology unit of the Al-Faiha Hospital in Basrah which show that Diabetics patient's depression score 44.5±11 while that of the control was 34.4±6. Both the diabetics and control score more than 16, which was the lower threshold for diagnosis of depression according to the CES-D. If these figures applied, than almost all of our population will have depression according to CES-D (Mansour and Jabir, 2007).

In Sharjah, United Arab Emirates, a cross sectional study was conducted for patients who one diagnosed with diabetes attending diabetes mini-clinics at the primary health care centers or hospitals of Sharjah. Patients were interviewed using structured questionnaires to gather data on socio-demographics, lifestyle factors, diabetes complications, and medication usage. The K6 was administered as a screening tool for mental health concerns. The results showed that 347 participants completed the interview. The majority of the participants were females (65.4%) and the mean age was 53.2 (SD = 14.6). Approximately 12.5% of the patients obtained a score of 19 or above (cut-off score) on the K6, indicating possible mental health concerns. Twenty-four percent had diabetes complications, mainly in the form of retinopathy, peripheral vascular disease and peripheral neuropathy. A significant relationship was found between scores on the K6, these complications of diabetes and the use of oral hypoglycemic and lipid lowering therapies. Final conclusion indicated a strong correlation between mental health status and diabetic complications (Suleiman et al., 2010).

A study was carried out in Bahrain found that 33.3% of diabetic patients scored 16 or more on Beck Depression Inventory (BDI) scale. It had been found that there was a significant association between higher BDI score (≥16) and gender, obesity (body mass index (BMI) ≥ 30kg/m2), the presence of coronary artery disease, using insulin in DM treatment and developing nephropathy as DM complication. However, no significant association was

found between BDI score (≥ 16) and glycemic control, duration of DM disease, the other socio-demographic variables and the other diabetic complications (Nasser et al., 2009).

In china, a study was carried out in the Department of Endocrinology at the First Affiliated Hospital of the General Hospital of the People's Liberation Army (PLA). A systematic random sample of 412 type II DM patients aged over 18 years was selected. A structured questionnaire was used for collecting the information about socio-demographic data, lifestyle factors and clinical characteristics. Depression and social support were evaluated through using the Chinese version of Beck Depression Inventory (BDI) and Social Support Rating Scale (SSRS), respectively. Weights and heights were measured.HbA1c was abstracted from each patient directly after the interview. The result of this study was 34.46% of patients had depression according to the BDI scores (BDI scores ≥14), the prevalence of co-morbid depression in this study population was 5.7 % (142/2500). Of which, 39.4% had major depression (BDI ≥ 21), and 86 had moderate depression (BDI ≥ 14&BDI < 21). Logistic regression analysis indicated that a high HbA1c level, a high BMI, low quality health insurance, and being single, were 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).

Another study was conducted in India with type II diabetic patients who were attending tertiary care hospital in north India. Those patients were evaluated for depression by administering the nine-item PHQ-9 (Hindi version). Binary logistic regression model was used to examine association between predictor variables and risk of depression. Results were expressed as odds ratio and 95 per cent confidence interval. Cronbach alpha was calculated to assess internal consistency of PHQ-9**.** The results of this study showed that 23% of patients met the criteria for major depression, 18% for moderate depression and the remaining 59% had no clinically significant depression (Ravalet al., 2010).

A study was carried out in Pakistan in 2011 found that depression was significantly associated with female gender (adjusted OR = 1.88; 95% CI =1.07-3.31), family history of DM (OR = 2.64; 95%CI = 1.26-5.55), and poor glycemic control (OR = 5.57; 95%CI = 2.88-10.76). In addition, depression was significantly associated with low compliance to self-care activities such as dietary restrictions (OR = 0.45; 95%CI = 0.26-0.79), taking dose as advised (OR = 0.32; 95% CI = 0.14-0.73) and foot care (OR= 0.38; 95%CI = 0.18-0.83) (Zuberi, Syed, and Bhatti, 2011).

In urban Nepal a cross sectional study was conducted by Niraulaet al.(2013). Among 385 persons living with type II diabetes attending tertiary centers in Kathmandu, Nepal. Patients with at the least three months of diagnosed diabetes and no prior depression diagnosis or family history of depression were recruited randomly using serial selection from outpatient medicine and endocrine departments. Blood pressure, anthropometrics (height, weight, waist and hip circumference) and glycated hemoglobin HbA1c were measured at the time of interview. Depression was measured using the validated Nepali version of the Beck Depression Inventory (BDI-Ia). The proportion of respondents with depression was 40.3%. Using multivariable analyses, a 1-unit (%) increase in HbA1c was associated with a 2-point increase in BDI score. Erectile dysfunction was associated with a5-point increase in BDI-Ia. A 10mmHg increase in blood pressure (both systolic and diastolic) was associated with a 1.4-point increase in BDI-Ia. Other associated variables included waist-hip-ratio (9-point BDI-Ia increase), at least one diabetic complication (1-point BDI-Ia increase), treatment non-adherence (1-point BDI- Ia increase). Higher monthly income was associated with increased depression severity (3-point BDI-Ia increase per 100,000 rupees, equivalent US$1000).

A study carried out in the Netherlands found that about 33% of the patients with type 1 DM, and 37-43% of patients with Type II DM were reported to have a depressive affect based on the World Health Organisation-5 Wellbeing Index (WHO-5). On the other hand, using the Center for Epidemiologic Studies-Depression scale (CESD); the prevalence of depressive affect was 25% and 30% in patients with Type 1 DM, and 35% and 38% in patients with Type II DM, respectively. In addition, depending on the Composite International Diagnostic Interview (CIDI), 8% of patients with Type1DM (no gender difference) and 2% of males and 21% of females with Type II DM suffered from a depressive disorder. Furthermore, depressive effect was associated with poor glycemic control and proliferative retinopathy in patients with Type 1 DM, while non-Dutch descent, obesity and neuropathy were correlated with depressive effect in patients with Type II DM (Pouwer et al., 2010).

A study was carried out in Brazil by Papelbaum et al., (2011) found that the prevalence of depression among the study sample was 18.6%. In addition, diabetic patients who were complaining from depression had significant higher levels of HbA1c (8.6 ± 2.0) when compared to those who did not show a mood disorder (7.5 ± 1.8) (Papelbaum et al., 2011).

A study was carried out in Greece in 2008 found that (33.4%) of the participants reported elevated depressive symptoms. Diabetic females reported having more symptoms of depression than diabetic males (48.4% vs. 12.7%, $p < 0.001$). Among the female patients, depressive symptoms were associated with HbA1c ($p = 0.04$), and duration of diabetes ($p = 0.004$). On the other hand, among male patients, no significant relations between depressive symptoms and testing variables such as HbA1c and duration of disease were found (Sotiropoulos et al., 2008).

A study conducted in the U.S by (Gendelman et al., 2009) who applied Beck Depression Inventory II (BDI II) to 458 patients with type I DM (47% male, aged 44+,- 9 years, type 1 diabetes duration 29 +,- 9 years) and 546 participants without diabetes (no diabetic group) (51% male, aged 47 +,- 9 years). The use of antidepressant medication was self-reported. Depression was defined as a BDI-II score >14 and/or use of antidepressant medication. Occurrence of diabetes complications (retinopathy, blindness, neuropathy, diabetes-related amputation, and kidney or pancreas transplantation) was self-reported. The result found that the mean BDI-II score, adjusted for age and gender, was significantly higher in patients with type 1 DM than in non-diabetic persons (least-squares mean ± standard error(SE): 7.4 ± 0.3 vs. 5.0 ± 0.3; $p < 0.0001$). In addition, Type 1 diabetic patients were using more antidepressant medications than non-diabetic participants (20.7 vs. 12.1%, $p = 0.0003$). Higher type 1 diabetic patients compared to non-diabetic participants were classified to have depression using BDI-II cut score (17.5 vs. 5.7%, $p < 0.0001$) or by either BDI-II cut score or antidepressant use (32.1 vs. 16.0%, $p < 0.0001$). In addition, patients who developed diabetes complications ($n = 209$) had higher mean BDI-II scores than those without complications (10.7 ± 9.3 vs. 6.4 ± 6.3, $p < 0.0001$).

A study carried out among South-Asian (SA) and White-European (WE) found that the prevalence of depression for the total sample with Type 2 DM and impaired glucose regulation (IGR) was 21.3% (, 20.6% in SA and21.6% in WE, $p = 0.75$) and 26.0% (28.9% in SA and 25.3% in WE, $p = 0.65$) respectively. In addition, for patients with normal glucose tolerance, the prevalence of depression was 25.1% (26.4% in SA and 24.9% in WE, $p = 0.86$). After age adjustment, the prevalence of depression was higher among females compared to males. In addition, the adjusted OR for age, gender, and race, showed no significant increase in the prevalence of depression in patients with Type 2 DM (OR = 0.95, 95%CI 0.62 to 1.45) or IGR (OR = 1.17, 95% CI 0.96 to1.42) (Aujla et al ., 2009).

Also, a study carried out by Roy and Affouf, (2007) in the US reported that patients with high BDI scores at the baseline and after 6-year follow-up had significantly higher baseline HbA1c values (p = 0.01), and were more likely to show progression of diabetic retinopathy (OR = 2.44; 95% CI = 1.01-5.88; p =0.049) and progression to proliferative diabetic retinopathy (OR = 3.19; 95% CI = 1.30-7.87; p = 0.01) than patients with low BDI scores at both baseline and 6-year follow-up. This was independent of baseline medical risk factors for diabetic retinopathy.

A study was carried out in the United States (US) found that the score of Diabetes Distress Scale [DDS] was significantly associated with glycated hemoglobin HbA1c and physical activity, whereas the score of PHQ8 was not. However, both DDS and PHQ8 scores were significantly and independently associated with patients' diet and medication adherence (Fisher et al., 2009).

A meta-analysis study found that the risk for depression was not increased in patients with impaired glucose metabolism (IGM) versus patients with normal glucose metabolism (NGM) (OR = 0.96, 95% CI =0.85-1.08). In addition, the risk of depression did not differ between individuals with undiagnosed diabetes and individuals with either IGM (OR 1.16, 95% CI 0.88-1.54) or NGM (OR 0.94, 95% CI 0.71-1.25). Individuals with IGM or undiagnosed diabetes had a significant lower risk of depression than individuals with previously diagnosed type 2 DM (OR= 0.59, 95% CI = 0.48-0.73, and OR = 0.57, 95% CI = 0.45-0.74, respectively) (Nouwen et al., 2011).

Finally, the previous studies showed that prevalence of depression among diabetic patients vary from 30% to 50% in above mentioned different studies. Furthermore, previous studies resulted that some of demographic factors such as gender which indicated that the prevalence of depression was higher among female Sweileh (2014) andZuberi (2011). In addition, El Mahalli (2015) and Zhang (2015) indicted to that the prevalence of depression was higher in singles. Also, the results indicated that the prevalence of depression was higher in high body mass index and obese patients as mentioned by Zhang (2015) and Raval (2010).

In relation to health factors variables, previous studies resulted that the prevalence of depression was higher among uncontrolled diabetic patients as showed by El Mahalli (2015), Zhang (2015) and Zuberi (2011). In other hand, Nasser (2009) mentioned that there no significant association was between depression glycemic control. Furthermore, Sweileh (2014), Nasser (2009) and Raval (2010) indicated that patients who treated with insulin were

more depressed, while Sulaiman (2010) showed that the prevalence of depression was higher in patients who treated with oral OHA. Moreover, Raval (2010) and Nasser (2009) mentioned that there were no relation between depression and the duration of the disease.

Regarding personal care-related factors among diabetics, Zuberi (2011) concluded that the prevalence of depression was higher among those were not compliant with management plan of disease such as life style modification and their commitment to medications, while Sweileh (2014) showed that there was no significant association between depression and patients compliance to treatment and regular glucose level monitoring.

In this study researcher wanted to determine if there was relation between variables of study and depression as outcome.

Chapter three

3 Methodology

This chapter provided comprehensive details of all aspects of the research methodology. It explained the study design and the method, the tool of data collection and analysis. In addition, the study population, the population sample as well as the sample frame. Furthermore, this chapter included the instrument which was used during data collection. Finally, the ethical issues were considered, besides the limitation of the study as well.

3.1 Study Design

The design of this study was a descriptive, analytic, cross-sectional design. It was used to determine the prevalence and determinants of depression among diabetic patients at UNRWA health centers in Gaza governorates. The descriptive study described the investigated phenomena as they naturally happened (Greenwood & Levin, 2006). Analytical research creates new knowledge about concepts and identifies relationships between variables (Burns and Grove, 2001). Cross-sectional studies were sometimes carried out to investigate associations between risk factors and the outcome of interest, by the fact that they were carried out at one time point and give no indication of the sequence of events whether exposure occurred before, after or during the onset of the disease outcome. In addition, this study depended on quantitative method (interviewed questionnaire with diabetic patients mainly with type II).This design was chosen because it was the best design to answer the research question. It was less expensive and enabled the researcher to meet the study objective in a short time.

3.2 Study population

The population of the study was diabetic patients who were registered and had been diagnosed with Diabetes type II; in accordance with the clinical instructions of the health department at UNRWA. They attended health centers in Gaza Strip and the total number was 12414 patients in 2015.

3.3 Study setting

For more representativeness and accuracy, the study was conducted at the UNRWA Health Centers distributed across the GS. Stratification of GS into five areas was done:

1- North Gaza area.
2- East and West Gaza area.
3- Middle area.
4- Khanyounis area.
5- Rafah area.

The following six clinics were selected randomly from each area to represent study purpose;

1- North Gaza (Jabalia clinic).
2- West Gaza (Al Rimal clinic).
3- East Gaza (Gaza Town clinic).
4- Middle governorate (Nuseirat clinic).
5- Khanyounis governorate (Khanyounis clinic).
6- Rafah governorate (Rafah clinic).

3.4 Study period

The study took 11 months in execution; it started in February, 2016 and was completed by December 2016.

3.5 Eligibility criteria

3.5.1 Inclusion criteria

- Type II diabetic patients who registered in selected clinics.
- Age was 40 years old and above.
- Had been registered as diabetic for more than one year ago.
- Diabetes was the first NCDs diagnosed with client.

3.5.2 Exclusion criteria

- Diabetic patients' visitors from other selected clinics.
- Inactive medical files for six months.
- Age less than 40 years.
-Recently diagnosed patients (less than one year).
-Patients had other NCDs before DM diagnosis.

3.6 Sampling process and calculation

The researcher used a stratified proportional sampling method followed by a random sample method to have six UNRWA healthcare centers which were targeted within the research. Stratification was done according to GS governorates: North governorate, East Gaza, West Gaza, Middle governorate, Khanyounis governorate, and Rafah governorate). Those six healthcare centers were selected randomly which represented each governorate in GS. (Jabalia, Al Rimal, Gaza town, Nusierat, Khanyounis and Rafah clinic). The selected clinics were considered the largest and nearly similar in workloads among other UNRWA health centers in GS. So estimated number of patients varied according to percentage of diabetic patients in each clinic from total number of diabetic patients who were registered in all healthcare centers of UNRWA.

The next sample was Type II Diabetic patients to fill in the questioner. The researcher used the EpiInfo 7 software to calculate the sample size of Type II Diabetic patients using the following parameters:

- Target population 12414.

- Hypothesized percentage of dependent variable in the population 50%.

- Confidence level 95%.

- Confidence interval 5%.

The recommended sample by the software equals 373 patients. Overall updated diabetic patients ' medical records were recognized and a random sample technique was used for sample driven.

Table (3.1): Distribution of UNRWA H/C and study participants

Name of the health center	Participants	Percentage
Jabalia H/C	114	30.6%
Rimal H/C	74	19.7%
Gaza town H/C	42	11.1%
Nuseirat H/C	37	10%
Khanyounis H/C	51	13.6%
Rafah H/C	55	15%
Total	373	100%

Annex (4) shows the diabetic patients sample size calculation.

3.7 Ethical and administrative considerations

In order to lunch this study, the proposal was submitted to Al Quds University-School of public health research committee for discussion and academic approval. An administrative approval was obtained from the chief of UNRWA health program Annex (3). Additionally the Modified International Code of Ethics Principles (1975), known as the Declaration of Helsinki, which was adopted by the World Medical Assembly were followed and an official letter of approval to conduct the research was obtained from the Helsinki Committee Annex(2). In accordance with the Principles of the Helsinki Ethical Declaration, every participant in the study received a complete explanation of the research purposes, program, and confidentiality.

Every participant in the study knew that participation in the research was optional. Verbal consent was obtained from participants in the study. The researcher assumed that other ethical rights were protected through respect for people and respect for truth.

3.8 Study instruments

The researcher used two tools in order to collect data from diabetic patients and their files.

The first tool was General Health Questionnaire (GHQ-12) .

General Health Questionnaire (GHQ-12)

The General Health Questionnaire (GHQ) was developed in England as a self-administered screening instrument to identify psychological distress for use in general population surveys, or among general medical outpatients. It was designed to cover four identifiable elements of distress: depression, anxiety, social impairment and hypochondria. The questionnaire was originally created as a 60-item instrument. Shortened versions (30, 28, 20 and 12 items) were developments from the original. The 12-item version of GHQ is the most widely-used screening instrument for common mental disorders (Werneke et al., 2000; Aalto-Setala et al., 2002). The GHQ questions asked whether the respondent had recently experienced a particular symptom (like abnormal feelings or thoughts) or type of behavior (McDowell & Newell, 1996). The four-point response scale of the questionnaire might be scored in two ways. Firstly, it can be treated as a multiple-response scale or "Likert score" (0, 1, 2, 3). The alternative was to treat it as a bimodal response scale (0, 0, 1, 1). The GHQ-12 summary score ranging from 0 to 12 with cut-off point 4 for "cases" indicating a level of psychological distress of potential clinical significance was used (Goldberg& Williams, 1988). The GHQ manual notes was not appropriate for use with children but that it had been used with adolescents (Goldberg& Williams, 1988). The scale had been used in a number of countries and languages for different age groups. In 1988 Goldberg and Williams reported that this instrument had been translated into about 38 languages, and so far over 50 validity studies had been published. Previous studies described substantial factor variance on scales between the centers being evaluated. Factor analyses on GHQ-12 had yielded two- and three- factor solutions according to different settings, including translations into different languages (Goldberg & Williams, 1988; Werneke et al., 2000).

This tool was used to determine prevalence of depression among type II diabetic patients. Annex (5) show GHQ-12 questionnaire.

The gradient (1-5) had been used to measure the responses of the respondents to the questionnaire by paragraphs (Table3.2):

Table (3.2) Key used to measure the responses of the respondents to the questionnaire by paragraphs

Level	**Always**	**→→→→**			**Never**
Scale	5	4	3	2	1

The researcher had chosen the gradient (1-5) to respond, and the closer the answer of 5 indicated high approval on what was stated in paragraph concerned.

There were five possible responses to each statement ranging from

- Always (5)
- Often (4)
- Sometimes (3)
- Rare (2)
- Never (1)

The second tool was a questionnaire that was used in the beginning of the interview**.** This questionnaire was already tested and conducted by The Palestinian National Institute of Public Health (PNIPH) under a project titled" Prevalence and factors were associated with Depression among Type 2 Diabetes Mellitus patients in Gaza Province, Gaza-Strip" at MOH clinics in Gaza city in 2015. The researcher found the questionnaires' aspects were fruitful and useful to conduct it to this study. The questionnaire was composed of five aspects in order to explain determinants of depression among diabetic patients. The first aspect was demographic and socioeconomic position variables; age; gender; marital status; geographical area; education level; household size; main source of household income, income per month, and employment status. The second was about Health factors, which included the duration of diabetes; diabetes control (HbA1c) which was retrieved from medicals records; type of treatment and drug availability. The third part was a personal care-related questions such as questions lifestyle, monitoring of blood glucose level, taking medications on time and following advice and tips to control disease. The fourth section was about health care related to health education questions such as attention of healthcare providers and their goal from visiting health centers. The fifth was related to patients' beliefs about DM and their ability to control disease such as their thinking about the cause of disease, the effect of the disease on their life and coping with disease.

Annex (5) shows the interviewed questioner.

3.9 Pilot study

A pilot study was conducted on Jabalia clinic because the researcher's work was there by applying 5% of the sample size (20 interviewees) to explore the appropriateness of the study instruments and let the researcher train for data collection, the clarity of meanings, scales; time was taken to fill in the questionnaire and for expecting response rate. No modifications were conducted. This selected sample for pilot study was excluded from the study. In addition, the researcher identified the consumed time for collecting data. The piloting showed that the tools covered all the study objectives.

3.10 Data collection

After the pilot study, the researcher conducted the data collection by himself using the above-mentioned two tools. The researcher asked the questions of questionnaires to each patient and filled in their answers. Interviewed questionnaire was used to participants according to the inclusion and exclusion criteria. The researcher started from the health centers in North and Gaza centers. Then to the middle and south area. Time allocation for each questionnaire ranged between 20-25 minutes. Privacy was maintained during gathering the completed questionnaires. Data collection lasted for nearly 45 days.

3.11 Scientific rigor

3.11.1 Validity of instruments

According to PNIPH and Setala et al (2002), the two used tools of the questionnaire were already tested and valid. The questionnaire was nicely formatted in order to ensure face validity, including appealing layout, logical sequences of questions and clarity of instructions. Also, a pilot study was conducted before the actual data collection to examine participants' response to the questionnaire and how they read it.

3.11.2 Reliability of the instrument

The following steps were done to assure instruments reliability:

- Assurance standardization of questionnaire filling.

- ➢ Then, the data entry was analyzed on the same day of data collection as to allow possible interventions to check the data quality or to re-fill the questionnaire when required.
- ➢ Re-entry of 5% of the data after finishing data entry to assure correct entry procedure and decrease entry errors.

Cronbach alpha

The researcher used Cronbache alpha coefficient to find the reliability for each dimension and the total score of the scale. The results were shown in the following table:

Table (3.3) Cronbach alpha coefficient for Questioner

Dimension	alpha coefficient
GHQ-12	0.811
Health factors	0.721
Personal care	0.700
Health care	0.722
Patients ' belief about disease	0.801

3.12 Data entry and analysis

Data were carefully checked and verified to drop out any incomplete questions. The researcher used Statistical Package of Social Science (SPSS) program version 21.0 for data entry and analysis. Data analysis was carried out through reviewing and coding of the questionnaires, data cleaning was done through checking out a random number of the questionnaires and through exploring descriptive statistic frequencies for all variables (percentage, mean, and standard deviation for all variables). Relative weight was used to know the amount of the percentage of each of the area. Cross tabulation for main findings of the relation between dependent variable and independent variables. Moreover advanced statistical tests such as T test to compare means of numeric variables, in addition Chi square test was used to examine the statistical relationship between the categorized variable. Also, it was done to state significant difference between two different variables. P-value equal or less than 0.05 was considered statistically significant, with confidence interval (CI) of 95%.

3.13 Limitations of the Study

- The study included only healthcare centers of UNRWA, other healthcare providers such as MOH clinics and Non-Governmental Organization (NGO' S) were not included in the study.
- The study focused on type II diabetic patients only; other NCDs' patients were not included in the study.
- The study focused only on determinants of depression among diabetic patients, other psychological problems such as anxiety, Post-Traumatic Stress Syndrome (PTSD) and other mental illnesses were not included in the study.
- Frequent cut offs of the electricity affected the timely planned data entry, analysis and report writing.
- Limited resources and lack of local literatures about the study of concern.

Chapter four

4 Results and Discussion

This chapter contains a brief analysis of the data, by answering questions about the study and reviewing the most prominent results of the questionnaire, which was cocluded through paragraphs of analysis, in addition to the stand on the variables of the study, thus a statistical treatment of the data collected from a questionnaire study was done by the use of SPSS program as to get the results of the study that will be presented and analyzed in this chapter.

4.1 Descriptive statistics

4.1.1 Results of demographic data

The total number of diabetic patients who participated in the study was 360in the North, East and West of Gaza, Middle, Khanyounis and Rafah areas in Gaza governorates. This illustrated that96.5% of the questionnaires were perfectly completed by the respondents.

The results shown in table 4.1, indicated that the distribution of type II diabetic patients through healthcare centers were as follows: 30.6% from Jabalia healthcare center, 19.7% from west of Gaza (Al Rimal healthcare center), 11.1% from east of Gaza (Gaza Town health care center), 10% from Nuseirat healthcare center. 13.6% from Khanyounis healthcare center and 15 %from Rafah healthcare center. This reflected the size of the refugee population in the catchment area. The data emphasizes that 53.6%of the participants were females and 46.4% of them were males. This could be attributed to the nature of the primary health services provided by UNRWA, where most of the patients are mothers and children. In addition, most of visitors to PHC were female. This result was consistent with Sulaiman (2010) and Zuberi (2011) in which the majority of the respondents of the study were females (61.1%, 55.2% respectively). The results also showed that the majority of participants were currently married (a percentage of 86.7%), and this result was higher than what was reported in PCBS (2015). Also, 64.5% of participants in the labor force in Gaza Strip were currently married. This finding was consistent with Sweileh (2014) who, in his study, on the marital status, reported that 82.7% of participants were married. Also, It was clear that 60.6% were unemployed, while 23.3 % were employed, 11.7% retired and 4.4% of them were working

part-time. This reflected the high unemployment rate in Gaza Strip. Also, this result was demonstrated by Abu-Hadeed (2014) who reported that 21.1% of the participants had a current job.

As for the results about levels of education, the table showed that 44.2% were secondary/ diploma, 33.1% were primary/lower secondary, 16.9% with university degree holders and 5.8% were illiterate. This result was compatible with Sulaiman (2010) who reported that 40% of the participants had some forms of secondary education. This could be attributed to the high level of awareness of population towards the importance of education. On the other hand, this finding was inconsistent with Sweileh (2014) who demonstrated that the largest portion, around 72.5% of participants reported being either illiterate or had a limited school education. Furthermore, it was clear that 34.4% were coming from households with 7-10 family members, 30% were of 4-6 members, 20.8% had families of more than nine members, 14.7% were from families of 1-3 members. This reflected that the average family size of population was high and fertility rates are still high.

In relation to family income, results showed that 50.6% reported that their income comes from the breadwinner of the family, 33.3% got aid relief NGOs, while 8.9% depended on the work of their sons, and 7.2% received their income from other sources. This result reflected the economic status of patients and high unemployment rate among the participants. Also, it reflected the highest of dependency ratio. The results on the average monthly income indicated that 33.9% had income of 500-1000 NIS, 29.4% less than 500 NIS, 19.4% were of 1001 to 2000 NIS, 9.2% were of 2001-3000 NIS and 8.1% were more than 3000 NIS. This reflected the average monthly income was very low in relation to bear the basic needs of life.

Table 4.1: Sociodemographic characteristics of the study sample

	Items	Frequency	Percent
Health Center	Jabalia	110	30.6
	West of Gaza	71	19.7
	East of Gaza	40	11.1
	Nuseirat	36	10.0
	Khan Younes	49	13.6
	Rafah	54	15.0
Gender	Male	167	46.4
	Female	193	53.6
Social status	Single	6	1.7
	Married	312	86.7
	Widowed	35	9.7
	Divorced	7	1.9
Occupation	Employed	84	23.3
	Retired	42	11.7
	Unemployed	218	60.6
	part-time	16	4.4
Family Members	1-3	53	14.7
	4-6	108	30.0
	7-9	124	34.4
	More than 9	75	20.8
Educational Level	Unlettered	21	5.8
	Elementary-preparatory	119	33.1
	secondary / Diploma	159	44.2
	University or more degree	61	16.9
Source of Family Income	The work of household	182	50.6
	Relief	120	33.3
	Sons	32	8.9
	Other	26	7.2
The average monthly income	Less than 500 NIS	106	29.4
	501-100 NIS	122	33.9
	1001-2000 NIS	70	19.4
	2001-3000 NIS	33	9.2
	More than 3000 NIS	29	8.1

4.1.2 Health factors

As shown in table (4.3), 69.2% of the patients had no depression, while 30.8% had depression through using the GHQ-12 instrument. These results were consistent with Sweileh (2014) who reported 40% rate of depression among the participants of his study, Pouwer (2010) reported 38% and Niraulet (2013) reported a rate of depression 40.3%. While, El Mahlli mentioned in his study that prevalence was 49.6%. In relation to mode of treatment, results showed that 68.6% of the patients used Oral Hypoglycemic Agents (OHA), while 31.4% of them were on insulin. This was parallel to the study conducted by Zuberi (2011) who demonstrated that 93.7% of the patients were on oral hypoglycemic agents, while 30.4% of them were on insulin. On other hand, Abu-Hadeed (2014) reported that 50% of the participants were on insulin as a monotherapy or in combination with other medications for diabetes management. This could be attributed to the viewpoints of patient regarding their rejection to use insulin in spite of their high glucose level. In relation to the control status of the patients by percentage of HbA1c of the current year, results showed that 38.9% of the patients had 7-9 %, which means that those patients were classified as "fairly uncontrolled", while 35.9% of the patients have less than 7%; and they were classified as "controlled". Furthermore, 25.3% of the patients had percentage greater than 9%; those were "poorly uncontrolled". This reflected the awareness of patients to the disease and their efforts to control it. This result was inconsistent with Abu-Hadeed (2014) who indicated that 82.3% of the participants were in the uncontrolled level, placing individuals at a greater risk for developing diabetic complications. Moreover, Zuberi (2011) mentioned that 71.6% of the participants had poor glycemic control. For the patients who were treated with insulin, results showed that 95.6% received injections by themselves, while 4.4% were injected by others. This reflected that the patients were self-dependent in their management plan. It was clear that 92.5% of the patients did not suffer from lack of treatment during the last three months, while 7.5% suffered from lack of treatment. This could attributed to the sustainability in the provision of the essential drug lists by health department of UNRWA. In addition, table (4.2) showed that neither 85.8% of the patients nor their relatives were members in the health field, while 14.2% of them were working in the health field. According to family history of DM 2, results showed that there was no family history of DM in about 56.1% of the patients compared to 43.9% who showed positive family history. This finding was consistent with the study of Sulaiman (2010), which reported that 73.6% of the participants having at least one family member inflicted with diabetes. This was also consistent with Zuberi (2011) who reported that the majority (81.1% of patients) had a family history of diabetes. Moreover,

results showed that 74.4% of the patients did not suffer from diabetic complications, while 25.6% complained about diabetic complications. This highlights the level of care among patients in order to limit the complications of the disease. This result was inconsistent with Zuberi (2011) who mentioned that 81.8% of the participants had a diabetes-related complication. The study showed that 19.4% were smokers, 72.2% were non-smokers and 8.4% were ex-smokers. This was parallel to Sweileh (2014) who mentioned that 75.9% of the participants were non-smokers at the time of the study. Also, results showed that 65.6% did not suffer from chronic diseases that had emerged after DM 2, while 34.4% had suffered from different kinds of diseases. Furthermore, 83.3 % of the patients had no history of chronic diseases before DM 2, but 6.7 % had suffered from chronic diseases before DM 2.

4.1.3 Personal care

Through results of table 4.3 showed that those who did not have glucometer to check their blood sugar represent 74.2%. This could be attributed to the easy access to the PHC, to the cost of glucometer and its sticks to be used frequently. Also, 88.6% were organized and regular in taking medicine. In addition, 85.8% of patients described medication schedules, dosage and method accurately. Furthermore, 91.1% followed up with medication schedules by themselves. As for sports or walking, 44.7% of the patients got engaged in sports or walking, while 27.8% of them practiced sports or walking regularly. The previous results could be attributed to the awareness of patients and regular counseling by healthcare providers. Also, the table showed that 43.3% of the patients sometimes follow healthy diet, while 27.2% of them were aware of the need to follow a healthy diet. This finding was consistent with Sulaiman (2010) who reported that 49.1% of the respondents were classified as physically inactive. Moreover, 60.3% of them tried with their maximum effort to control disease such as regular nail cutting and using the right type of clothes.

Table 4.2: Health factors characteristics of the study sample

Paragraph	Items	Frequency	Percent
Is the patient suffering from depression	No	249	69.2
	Yes	111	30.8
Type of treatment	Injection	113	31.4
	Pills	247	68.6
Hb1A1c	Less than 7%	129	35.9
	7%-9%	140	38.9
	More than 9%	91	25.3
Who does give you an injection	Myself	344	95.6
	other person	16	4.4
do you suffer from a lack of treatment for the past three months	No	333	92.5
	Yes	27	7.5
Are you personally or a member of the family works in the health field	No	309	85.8
	Yes	51	14.2
is a family member who suffer from diabetes disease	No	202	56.1
	Yes	158	43.9
Are closed relatives with diabetes suffered from complications	No	268	74.4
	Yes	92	25.6
Are you smoker	No	260	72.2
	Quarry	30	8.3
	Yes	70	19.4
Do you suffer from other chronic illnesses appeared after diabetes	No	236	65.6
	Yes	124	34.4
Do you suffer from other chronic diseases appeared before the disease	No	300	83.3
	Yes	60	16.7

Table 4.3: Personal care characteristics of the study sample

Paragraph	Items	Frequency	Percent
Do you have glucometer at home to monitor glucose level?	Yes	93	25.8
	No	267	74.2
Do you take the medicine regularly?	Yes	319	88.6
	No	41	11.4
What are the times of your medicine and dosage and the way?	describe accurately	309	85.8
	not sure	45	12.5
	don't know	6	1.7
Who is the person that gives you the medicine?	on my own	328	91.1
	a family member	32	8.9
Do you practice sports or walk regularly?	Yes	100	27.8
	Sometimes	161	44.7
	No	99	27.5
Do you follow a special diabetes healthy diet?	Yes	98	27.2
	Sometimes	156	43.3
	No	106	29.4
Do you do something to control the disease?	Yes	217	60.3
	No	143	39.7

4.1.4 Health care

Table 4.4: Healthcare characteristics of the study sample

	Items	Frequency	Percent
Health education	Yes	234	65.0
	No	126	35.0
Source of information about disease	Healthcare providers	227	63.1
	Reading	77	21.4
	Patients	41	11.4
	Other	15	4.2
Attention by healthcare providers	Yes	326	90.6
	No	8	2.2
	Sometimes	26	7.2
Annual visit to healthcare center	Necessary	307	85.3
	Medication only	52	14.4
	Useless	1	.3

It illustrated by table 4.4 that 65% had received health education about DM. Furthermore, 63.1% had received information about the disease from healthcare providers, while 21.4% from reading and 11.4 % from other patients' .This reflected the regular activities which were done by staff members including lectures and counseling sessions to the patients in order to be more educated and aware about the disease. The results showed that 90.6% of the patients had felt the attention of healthcare providers. Moreover, 85.3% of the patients answered that annual visits to healthcare center were necessary while 14.4% of them received their medication only from the health centers.

4.1.5 Patients' beliefs about the disease

Table 4.5 showed that 51.4% of the patients believed that the cause of disease was shock or sadness, while 34.7% of them believed that diabetes was an inherited disease and 8.3% said it was a coincidence. This reflected the psychosocial conditions of the patients who met frequent daily stressors due to blockade, electricity, fuel crisis and poverty.

It was clear that 55.3% believed that it was impossible to have full recovery from the

disease, while 24.4% believed it's possible to recover from the disease. Also, 79.2% of patients had abilities to control disease to prevent its complications. It was clear that 90.6% believed that healthy diet helped them to control the disease.

Furthermore, 88.3% believed that sports and exercises helped them to control disease. It was illustrated that 63.1% of the patients did not care about saying that they were diseased, while 25.6 % preferred to tell their family only. Also, it was clear that 46.9% of the patients said that the disease had affected their daily activities, while 34.4% said that there was no impact. In addition, 87.8% of the patients had the ability to cope with the disease. This illustrated the persistence of the patients to improve their health conditions and their quality of life.

Table 4.5: Patients' beliefs characteristics of the study sample

Paragraph	Items	Frequency	Percent
Causes of the disease	Inherited	125	34.7
	Coincidence	30	8.3
	Shock or sadness	185	51.4
	Others	20	5.6
Cure of the disease	Yes	88	24.4
	No	199	55.3
	Unknown	73	20.3
Control of disease	Yes	285	79.2
	No	75	20.8
Healthy diets and control of disease	Yes	326	90.6
	No	34	9.4
Sports, exercise and control of disease	Yes	318	88.3
	No	42	11.7
Can you say you are suffering from diabetes	Me and who care for me only	41	11.4
	Me and my family	92	25.6
	No care	227	63.1
Effect of disease on daily activities	Yes	169	46.9
	No	124	34.4
	Sometimes	67	18.6
Coping with disease	Yes	87.8	87.8
	No	12.2	12.2

4.2 Depressed patients' response toward GHQ-12 items

Table (4.6): Depressed patients response toward GHQ-12 Items

Variable	Never	Rare	Sometimes	Often	Always	Mean	Mean percentage
1- Unable to concentrate							
No.	15	14	50	17	15	3.02	60.34
%	13.51	12.61	45.05	15.32	13.51		
2- Do you suffer from sleep problems or frequent waking or increase in sleep							
No.	12	6	37	40	16	3.34	66.85
%	10.81	5.41	33.33	36.04	14.41		
3- Playing a useless part							
No.	20	12	45	23	11	2.74	54.80
%	18.02	10.81	40.54	20.72	9.91		
4- Unable of making decisions							
No.	11	17	52	18	13	3.12	62.31
%	9.91	15.32	46.85	16.22	11.71		
5- Did you always feel that you are under pressure and tension							
No.	6	5	48	31	21	3.64	72.87
%	5.41	4.50	43.24	27.93	18.92		
6- Inability to overcome difficulties							
No.	11	15	52	18	15	3.19	63.85
%	9.91	13.51	46.85	16.22	13.51		
7- Unable to enjoy day-to-day activities							
No.	10	9	42	40	10	3.3.43	68.57
%	9.01	8.11	37.84	36.04	9.01		
8- Unable to face problems							
No.	12	10	51	28	10	3.22	64.31
%	10.81	9.01	45.95	25.23	9.01		
9- Feeling unhappy and depressed							
No.	3	15	44	37	12	3.30	66.62
%	2.70	13.51	39.64	33.33	10.81		
10- Do you feel that you are losing confidence							
No.	14	8	29	8	52	2.64	52.89
%	12.61	7.21	26.13	7.21	46.85		
11- Thinking of self as worthless							
No.	20	14	42	24	11	2.88	57.69
%	18.02	12.61	37.84	21.62	9.91		
12- Feeling reasonably unhappy							
No.	7	11	41	37	15	3.39	67.84
%	6.31	9.91	36.94	33.33	13.51		
Mean: 3.23				**SD: 0.61**			

As shown in table 4.6, it was clear that the overall mean of the participants on theGHQ-12 items was 3.23(SD: 0.61). Furthermore, item number five "Did you always feel that you were under pressure and tension" occupied the highest response among them with percentage of positive mean response 72.87% and mean (3.64 degree) which was higher than the degree of neutrality 3. The researcher attributed this result to the real facts of the life of Gazans, including ten year of blockade leading to health, food, electricity and fuel crises. Furthermore, recurrent assaults, high unemployment rates, increasing poverty, economic crises, poverty, complications of NCD's which affected the quality of life. While the 10th item "Do you feel that you are losing confidence" was the last, percentage of average mean of response was 52.89% and mean (2.64 degree) which was lower than the degree of neutrality 3.This was attributed to that our people lived most of their lives fighting to endure hardships. Also, they considered loss of confidence to be a big defect in their lives; moreover they denied that disease needed management.

4.3 Is there significant relation between depression in diabetic patients and socio demographic variables?

As illustrated in table (4.7), there were statistically significant differences in levels of depression according to social status, where significant level was (0.028). Furthermore, the prevalence of depression was the highest among those who're unmarried (80%), followed by married (31%), then widowed (24.2%) and divorced (16.7%). This could be attributed to that single participants' anticipation of complications, anxiety, and uncertainty about the future, and early cognitive impairment which may affect their quality of life and general health conditions. Also, they had a sense of fear to build a family and pass it to their children. Moreover, the culture of beliefs towards diabetic patients were all negative. Married patients had a sense of fear about the future of their families due to complications of DM which may affect their works and quality of life. This result was consistent with the study of (El Mahalli) 2015, which indicated that there were statistically significant differences that unmarried patients are more risky for developing depression (OR 3.206, *P .025*). Moreover, Zhang (2015) reported that the prevalence of depression was higher among singles with significant level (0.024).

Table 4.7 Chi square results for Depression and Sociodemographic variables

Items		Depression		Pearson Chi-Square	P-value
		No	Yes		
Social status	Single	20.0%	80.0%	9.084	0.028
	Married	69.0%	31.0%		
	Widowed	75.8%	24.2%		
	Divorced	83.3%	16.7%		
Occupation	Employed	81.2%	18.8%	13.076	0.004
	Retired	78.1%	21.9%		
	Unemployed	63.4%	36.6%		
	Part time	73.3%	26.7%		
Educational level	Illiterate	50.0%	50.0%	13.186	0.003
	Elementary-preparatory	64.3%	35.7%		
	secondary / Diploma	73.5%	26.5%		
	University or more degree	76.0%	24.0%		
Source of Family Income	The work of household	74.0%	26.0%	8.402	0.038
	Relief	63.2%	36.8%		
	Sons	73.3%	26.7%		
	Other	60.0%	40.0%		
The average monthly income	<500NIS	62.2%	37.8%	9.091	0.05
	5001-1000 NIS	71.7%	28.3%		
	1001-2000 NIS	63.5%	36.5%		
	2001-3000 NIS	84.0%	16.0%		
	>3000NIS	84.6%	15.4%		

Regarding occupation/employment, the prevalence of depression was the highest among unemployed participants (36.6%), followed by who worked on a part time basis (26.7%), retired (21.9%) and the lowest among those who were employed (18.8%). Researcher attributed that DM management plans were expensive and costly, including healthy diets, life style, complications of treatment and specialist consultation.

In addition, the difficult economic situations made it hard for patients to adapt to different challenges, such as large-scale unemployment, siege and poverty. Significant level was (0.004).This result was consistent with Sweileh (2014) who mentioned that there was correlation between depression and patient's economic level, especially those who were unemployed. In addition, El Mahlli (2015) illustrated that 52% of unemployed patients were depressed. In relation to educational level, the results showed that there were statically significant differences among groups in the level of depression in relation to their educational/academic level (0.003) whereas the prevalence of depression was the highest among illiterates (50%), followed by those of elementary- preparatory education (35.7%), then secondary – diploma (26.5%) and university degree holders (24%). This means that participants with high educational degree had low prevalence of depression. This was attributed to more knowledge, consultation, self-care and compliance with management plan. This result was consistent with Sweileh (2014) who reported that low-educated people were 3.09 times more likely to have depression compared to educated people ($p \leq 0.002$).Also, El Masri (2013) mentioned that mental health problems were associated positively with lower education ($p=0$).

Regarding family income, the results showed that the prevalence of depression was (36.8%) among who dependent on relief services, while it was (26.7%) among those were who dependent on their sons, and (26%) among who was dependent on the work of family's breadwinner.

Results were statically significant with significant level (0.003). In relation to average monthly income, the results showed that when income was increased, the prevalence of depression decreased. Whereas, among patients whose income was less than 500 NIS, the prevalence of depression was (37.8%), while those whose income was more than 3000 NIS, it was (15.4%). This result was statistically significant with significant level (0.05). These findings were consistent with El Mahlli (2015) who found that 52.8% of the participants who had less than average monthly income were depressed. On the other hand, these results were inconsistent with Niraula (2013) who indicated that higher monthly income was associated with increased depression severity (3-point BDI-Ia increase per 100,000 rupees, equivalent US$1000).

In this domain other variables such as gender and family members' composition, they were not statically significant in which significant levels were greater than (0.05). In relation to

gender, the result was inconsistent with Sweileh (2014) who reported that females were1.91 likely to have depression than males with (p =0.001).Also Nasser (2009) who ,depended on Beck Depression Inventory (BDI) scale in determining depression, reported that there was a significant association between higher BDI score (≥16) and gender. Also, Zuberi, Syedand Bhatti (2011) indicated that depression was significantly associated with female gender (adjusted OR = 1.88; 95% CI =1.07-3.31). A possible explanation was that women played many gender specific roles that exposedthem to increased work demands and responsibilities. Furthermore, the social role attributed to women (passivity, dependence and emotional expression), allowed them to be more emotional and extroversive in nature, when compared to men. In addition, women were under the effect of physiological changes such as hormonal factors, pregnancy and delivery which might have an effect on their psychosocial life.

4.4 What are health factors in diabetic participants that could be predictors for depression?

Table 4.8 Chi square results for Depression and health factors-related variables

Items		Depression		Pearson Chi-Square	P- value
		No	Yes		
HbA1c	Less than 7%	69.3%	30.7%	9.543	0.008
	7-9%	76.0%	24.0%		
	More than 9%	60.5%	39.5%		
Working in health field	No	66.7%	33.3%	6.392	0.011
	Yes	84.4%	15.6%		
Smoking	No	71.1%	28.9%	9.846	0.007
	Quarry	82.4%	17.6%		
	Yes	57.6%	42.4%		
suffering from other chronic diseases appeared before DM	No	72.3%	27.7%	14.653	0.000
	Yes	53.7%	46.3%		

Table 4.8 results showed that there were statically significant differences between the prevalence of depression and controlled status of DM with significant level (0.008), whereas the prevalence of depression was (39.5%) among patients who had HbA1c more than 9%

(un controlled DM), among those who had HbA1c 7-9% (fair controlled), prevalence of depression was (24%), while among patients whose HbA1c was less than 7% (controlled), the prevalence of depression was (30.7%). These results were consistent with El Mahalli (2015) who reported that Patients with poor DM control (OR 3.221 *P.000*) were at more at risk to develop depression. Also, this was in line with a study conducted by Zhang (2015) which indicated that a high HbA1c level was significantly associated with the development of depression. Furthermore, Niraula (2015) reported that 1-unit (%) increase in HbA1c was associated with a 2-point increase in BDI score which was used in determining depression. Moreover, Papelbaum (2011) diabetic patients who were complaining from depression had significant higher levels of HbA1c (8.6 ± 2.0) when compared to patients who did not show a mood disorder (7.5 ± 1.8). This could be explained that when DM was controlled, the patient feels better and safer from complications. However, when DM was uncontrolled, the patient was under stress and worried about complications of the disease. On the contrary, Nasser (2009) indicated that no significant association was found between BDI score (≥ 16) and glycemic control.

Regarding working in health fields by patients themselves or their relatives, the results showed that the prevalence of depression was higher among those who were not working in the health field (33.3%) than patients or their relatives working in the health field (15.6%). This result was statically significant with significant level (0,011). This result could be explained that patients or their relatives who were involved in the health field had more scientific knowledge about the disease progression and complications. Furthermore, they encouraged them to do their maximum efforts to face and deal with the disease.

As for smoking, there were statically significant differences in levels of depression and smoking with significant level (0.007). The results showed that the prevalence of depression among smoker was (42.4%), among non-smoker was (28.9%), and while among ex-smoker was (17.6%). This result was inconsistent with Haggerty (2006) who showed that there was no effect of smoking on the incidence of depression.

In relation to patients who suffered from chronic NCDs before onset of DM, the results indicated that there was statically significant difference in prevalence of depression with significant level (0.000), whereas the prevalence of depression among them was (46.3%). This result was consistent with Niraula (2013) who reported that 10mmHg increase in blood

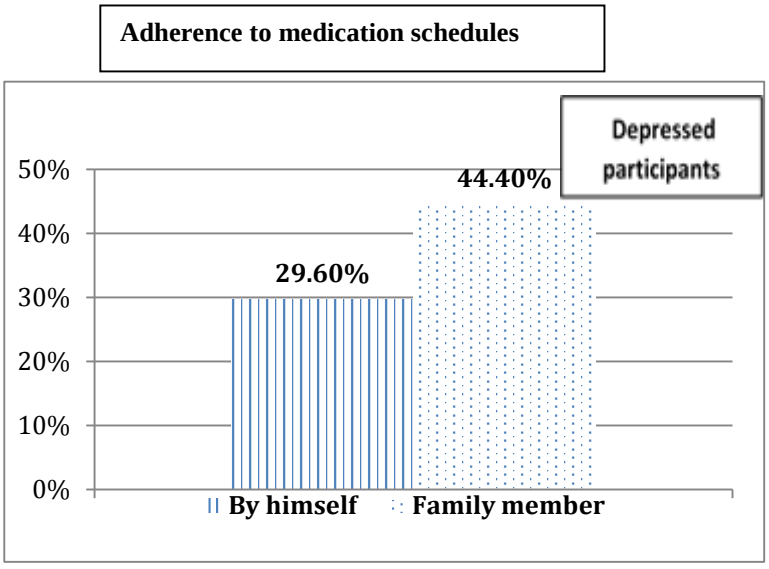
pressure (both systolic and diastolic) was associated with a 1.4-point increase in BDI-Ia which was used in determining of depression. Also, this went in hand with a study conducted by El Masri (2013) who mentioned that Mental health problems were associated positively with chronic physical illness (p=0·015).

On the other hand, other variables such as lack of treatment, complication among relatives and suffering from other chronic diseased beyond DM were not statically significant (p >0.005). Furthermore, regarding family history of DM, the results were consistent with Zhang (2015) who indicated that family history of diabetes was likely a protective factor, while inconsistent with Zuberi and Bhatti (2011) who showed that depression was significantly associated with family history of DM (OR = 2.64; 95%CI = 1.26-5.55). In relation to type of treatment, the results were inconsistent with Sulaiman (2010) who mentioned that there was a significant relation between depression and the use of oral hypoglycemic and lipid lowering therapies. The results were consistent with Raval (2010) who indicated that the likelihood of depression was not significant with insulin use, while Niraula (2013) indicated that there was significant relation with insulin use. Also, Sweileh (2014) reported that patients who were treated with insulin were 3.31 times more at risk to develop depression (p =0.001).

4.5 What is the range of commitment of diabetic participants who have depression to management plan?

Depression level and adherence to medication schedules

Figure (4.1) Follow medication schedules



Regarding adherence to medication schedules, histogram figure (4.1) showed that prevalence of depression was higher among the participants whose family members were up with them (44.4%) than those who were taking medicine by themselves (29.6%). This variable was only statically significant (p=0.040) in this domain. This result meant that the participants who took it under external locus of control, were more depressed than who took it under internal locus of control. This finding could be attributed to the point of view of participants that taking medicine on time was useful so they were aware to receive it on time and they were aware about the proper management plan. In relation to self-monitoring of their blood glucose level at home by glucometer, the results were consistent with Sweileh(2014) who indicated that lacking blood glucose self-monitoring was not significantly associated with the occurrence of depression among patients with DM. Regarding compliance to treatment and life style modification factors such as exercise (walking) and diet, the result were consistent with Sweileh (2014) who reported that following the recommended diet plans and increased barriers to medications adherence were not significantly associated with the occurrence of depression among patients with DM. However, the results were inconsistent with Zuberi, S.yed, and Bhatti (2011) who indicated that depression was significantly associated with low compliance to self-care activities such as dietary restrictions (OR = 0.45; 95%CI = 0.26-0.79), taking dose as advised (OR = 0.32; 95% CI = 0.14-0.73). Furthermore, it was inconsistent with Fisher (2009) who mentioned that depression was significantly and independently associated with patients' diet and medication adherence.

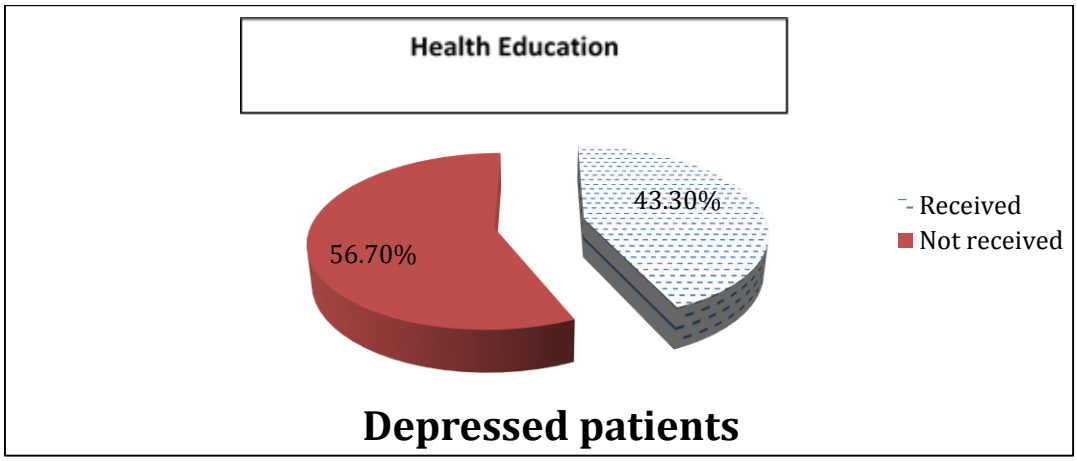
Annex (6) Chi square results for depression and the range of commitment of diabetic participants to management plan.

4.6 Are healthcare services, including mental health at UNRWA health centers helpful to diabetic patients

As mentioned in figure (4.2), the prevalence of depression among the participants who did not receive health education and counseling was (56.7%) compared to those who received (43.3%). The result was statically significant with (p=0.015). This could be attributed to that health education and counseling sessions fostered patients to face disease progression. Furthermore, it could create positive and suitable environment in dealing with disease by enhancing patients and healthcare providers' relationship. In addition, health education can help participants understand their health status better and increase their awareness through actions, which, in case followed, would improve their health status.

In these domains, other variables such as the source of information about the disease, getting attention by healthcare providers and the goal of visiting health centers were not statically significant with depression(p>0.005).

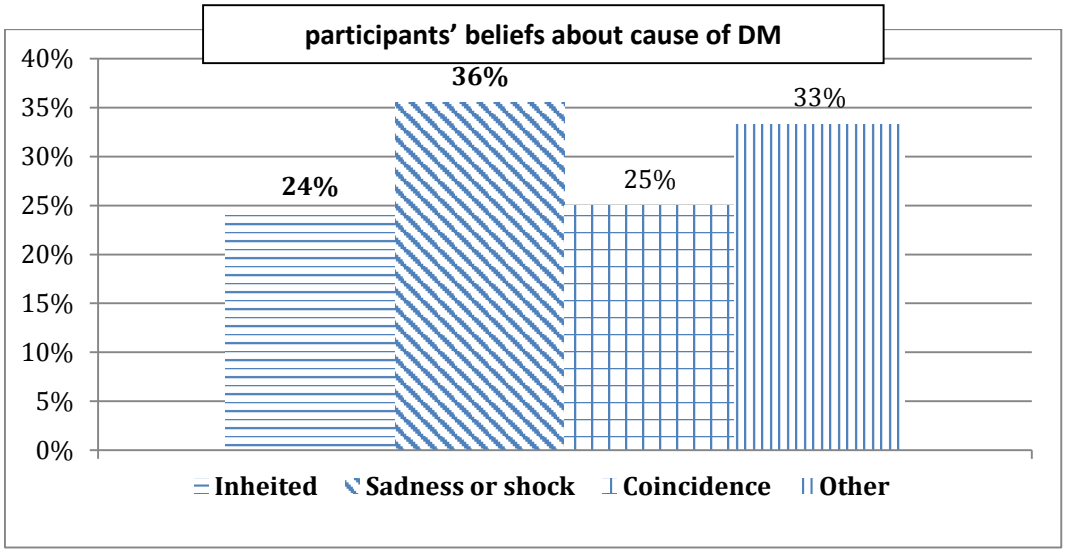
Figure (4.2) the relation between depression and receiving health education



Annex (7) Chi square results for depression and provision of healthcare services including mental health by health centers.

4.7 Is there a significant relation/s between depression and diabetic participants' beliefs related variables about DM?

Figure (4.3) participants' beliefs about the cause of DM



The histogram in figure (4.3) illustrated the opinions of participants regarding the causes of DM and its relation to depression. It showed that there was statically significant difference with a level of significance equal (0.025). The prevalence of depression among participants who considered the cause of DM shock or sadness, represented (36%), while regarding inherited factor, the prevalence of depression was (24%). Furthermore, the prevalence of depression among participants who considered the cause of DM due to coincidence was (25%). Also, the prevalence of depression was (33%) among who those reflected the cause of DM to other causes. As shown, shock or sadness occupied the highest percentage while inherited factor was the lowest. This could be attributed to difficult general conditions such as poverty, blockade, unemployment and economic crisis. Moreover, this result might be seen as an alarm to encourage healthcare providers to enhance health counselling and education as to raise awareness

Annex (8) Chi square results for depression and diabetic participants' beliefs-related variables about DM.

4.8 Depression and coping with disease (DM)

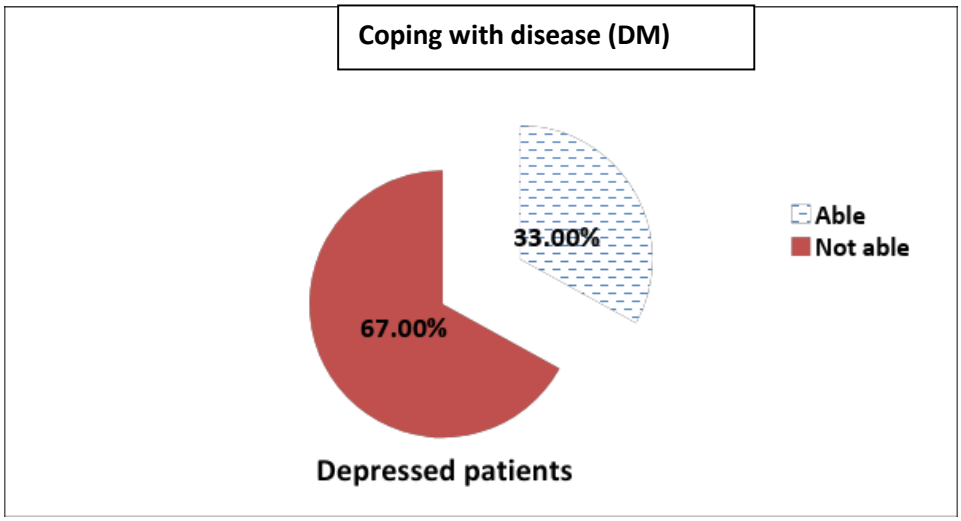
In terms of coping with the disease, the results showed that there was statistically significant variation among participants when it comes to the prevalence of depression. Significant level was (0.000). The prevalence of depression was higher (67%) among those who were not able to accommodate with DM than others who were able to (33%). This could be attributed to the fact that participants who were able to cope with the disease were more health-educated about the cause, progressive and keen to follow up with the appropriate management plan of dealing with the disease. Also, they persisted to improve their health status and their quality of life.

Other variables in this domain such as patients ' beliefs about the effect of following life style modification (diet and physical activity) on control of DM and prevent complication, possibility of patients to fully recover, effect of DM on their daily activities and disclosure about the disease were not statically significant with significant level ($p>0.005$). This was inconsistent with El Mahalli (2015) who indicated that undiagnosed depression among diabetic patients made them less likely to comply with recommended self-care and showed

less compliance for special diet or physical activity. This could be related to that general practitioners were unable to detect psychiatric problems, even in patients who had many risk indicators.

Furthermore, MacLeod (2016) demonstrated that patients might feel helpless and hopeless when their diabetic control was not good, and this feeling can be also associated with negative future anticipation behavior.

Figure (4.4) Coping with disease (DM)



Finally healthcare providers should pay attention to integrate and expand mental health programs in their health centers which may be fruitful in improving health services mainly to NCDs' patients.

In summary, mental illnesses like depression has negative implications on patients, mainly those with chronic diseases (DM) which affected their general health conditions and quality of life.

Chapter five

5 Conclusion and Recommendation

5.1 Conclusion

This study was carried out to explore the prevalence and determinants of depression among diabetic patients at UNRWA healthcare centers in Gaza governorate. These study findings may contribute to promoting, integrating and expanding mental health services at primary healthcare centers as to reduce the burden of mental illnesses through early detection, early treatment and appropriate intervention which might have fruitful effect on the health conditions of patients, mainly those with chronic NCDs.

The total number of the study sample was 373 participants; 360 completed the questionnaire. The data emphasized that 53.6% of the participants were females and 46.4% were males. By depending on GHQ-12 as tool for detecting depressed patients, the study results showed that the prevalence of depression among type 2 diabetics was 30.8%. Regarding sociodemographic characteristics in relation to depression, results showed that the prevalence of depression was the highest among singles (80%). Also, prevalence of depression was highest among unemployed (36.6%). Furthermore, results indicated that patients with high educational degree had low prevalence of depression, whereas prevalence of depression was the highest among illiterate participants (50%). In relation to source of family income, the results showed that prevalence of the depression was highest (36.8%) among who dependent on relief services. Moreover, the results showed that when income was increased, the prevalence of depression was decreased. Whereas, among participants whose income was less than 500 NIS, the prevalence of depression among them reached (37.8%). In relation to health factors related variables and depression, the results indicated that there were statically significant differences between the prevalence of depression and controlled status of DM, whereas participants with poor DM control were more risky for developing depression, as it showed the prevalence of depression was (39.5%) among patients who had HbA1c more than 9% (uncontrolled DM).In addition, results showed that the prevalence of depression was higher among the participants whose relatives were not working in the health field (33.3%). Also, smoker participants were more depressed (42.4%).

In relation to participants who suffered from chronic NCDs before onset of DM, the results indicated that (46.3%) of them were depressed.

According to results regarding personal care variables in relation to depression results showed that the prevalence of depression was higher among who followed medications schedules by their family members (44.4%) than who were self-medicated (29.6%).

In the domain of the relation between healthcare variables and depression results indicated that the prevalence of depression among participants who did not receive health education and counseling was (56.7%) compared to those who received health education about the disease and its management (43.3%).

Regarding Depression and participants' beliefs related variables domain. The results illustrated that the opinions of participants regarding the causes of DM and its relation to depression, which showed that patients who considered the cause of DM due to shock or sadness had the highest prevalence of depression was (36%). As shown, shock or sadness occupied the highest percentage while inherited factor was the lowest (24 %).

Furthermore, in the term of coping with disease results show that the prevalence of depression was higher (67%) among participants who were not able to accommodate with DM than others who were able to do it(33%).

Finally, the study could conclude that chronic diseases such as DM serve as a risk factor for experiencing mental illnesses such as depression which might lead to poor controlled status. This can predispose for development of complications which could affect participants' quality of life. Furthermore, this had resulted in both greater workload for health center staff and adds financial challenge for healthcare providers. So, integration of mental health programs at primary healthcare centers will play a vital and fruitful role in early detection and proper intervention of psychological problems and mental illnesses in order to improve health status of participants and enhance their abilities to cope with their illnesses.

5.2 Recommendations

Based on the study analysis, findings and conclusions, the researcher proposes the following recommendations:

5.2.1 Recommendations for decisions' makers of main healthcare providers:

1- Integration and expansion of mental health programs at primary healthcare centers, considering it to be the major focus of health services by healthcare providers sectors.

2- All health providers should have periodic training programs on psychological disorders as a part of their continuous education, as to make it easier to detect and treat their mental illnesses.

3- It is recommended that introduction of psychological aspect among diabetic health care plan to reduce number of the depressed or early detection of misrecognized patients to improve life quality.

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4- Establishment of an association for NCDs to ensure introduction of comprehensive and holistic healthcare package for them. Moreover, introduction of financial and morally support to them.

5.2.2 Recommendations for healthcare staff members

1- Screening and early detection of mental health problems, in general, and depression in particular should be implemented by PHC physicians during their daily routine activity.

2- Application of appointment system at PHC to ensure regular flow of patients , increasing consultation time and comprehensive healthcare package included psychological aspects

3- Health promotion and education to patients and their social network aiming at helping them to follow healthy life style. Furthermore, counseling about the importance of psychosocial support services.

5.2.3 Recommendations for further research

1. Conducting in-depth study to identify the real underlying factors of such comorbidities of chronic diseases and mental health problems.
2. Conducting similar study including other psychological problems such as anxiety and other disorders among patients with chronic diseases at PHC in both UNRWA and MOH.
3. Evaluating mental health and psychosocial support services to patients in relation to national protocols and up to date guidelines.
4. Additional research about the benefits of treating psychological problems and its effect on their comorbid chronic conditions.
5. Quantitative and qualitative researches about mental health management for diabetic patients such as the effect of mental management programs in improving the psychosocial status of patients.

Chapter six

6 References and Annexes

6.1 References

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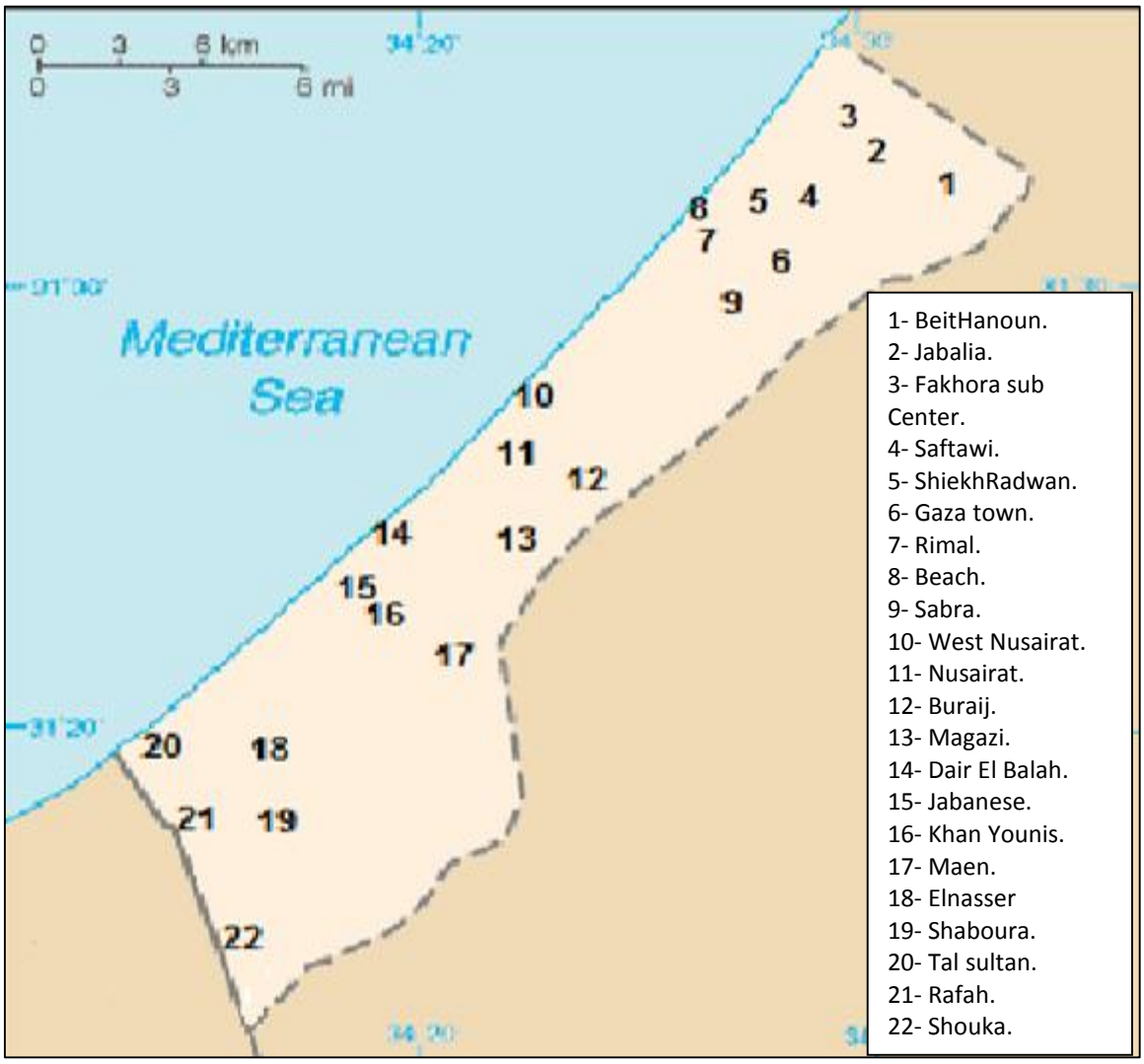
6.2 Annexes

Annex (1): Distribution of the UNRWA healthcare centers across the (GS).



Source (UNRWA, 2015)

Annex (2): An official letter of approval from the Helsinki Committee in the Gaza Strip

المجلس الفلسطيني للبحث الصحي
Palestinian Health Research Council

تعزيز النظام الصحي الفلسطيني من خلال مأسسة استخدام المعلومات البحثية في صنع القرار

Developing the Palestinian health system through institutionalizing the use of information in decision making

Helsinki Committee
For Ethical Approval

Date: 01/08/2016 **Number:** PHRC/HC/148/16

Name: MOHAMMED S. MOUSA **الاسم:** محمد سعيد موسى

We would like to inform you that the committee had discussed the proposal of your study about:

نفيدكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:

Prevalence and Determinants of Depression among Diabetics at UNRWA Healthcare Centers in Gaza Strip

The committee has decided to approve the above mentioned research. Approval number PHRC/HC/148/16 in its meeting on 01/08/2016

و قد قررت الموافقة على البحث المذكور عاليه بالرقم و التاريخ المذكوران عاليه

Signature

Member **Member**

Chairman

Genral Conditions:-
1. Valid for 2 years from the date of approval.
2. It is necessary to notify the committee of any change in the approved study protocol.
3. The committee appreciates receiving a copy of your final research when completed.

Specific Conditions:-

E-Mail:pal.phrc@gmail.com
Gaza - Palestine غزة - فلسطين
شارع النصر - مفترق العيون

Annex (3) Approval letter from Chief of Health Department of UNRWA

Al-Quds University
Jerusalem
School of Public Health

جامعة القدس
القدس
كلية الصحة العامة

التاريخ: 2016/8/21

Approved

حضرة الدكتورة/غادة أبو نحلة المحترمة
مدير برامج الصحة– وكالة الغوث

تحية طيبة وبعد،،،

الموضوع: مساعدة الطالب محمد موسى –وكالة الغوث

تهديكم أطيب التمنيات ونتمنى لكم دوام التقدم والإزدهار. ونرجو تكرم سيادتكم بالعلم بأن الطالب المذكور أعلاه يقوم بإجراء بحث بعنوان:

"Prevalence and Determinants of Depression among Diabetics at UNRWA Health Care Centers in the Gaza Strip"

كمتطلب للحصول على درجة الماجستير في الصحة العامة–مسار إدارة صحية، وعليه نرجو التكرم بالموافقة والايعاز لمن يلزم للسماح للطالب بجمع البيانات الخاصة ببحثه، حيث تشمل عينة مرضى السكر النوع الثاني والمراجعين في مراكز الرعاية الأولية التابعة لإدارتكم الموقرة.

علماً بأن المعلومات ستكون متوفرة لدى الباحث والجامعة فقط وستطلعكم على النتائج في حينها .

و اقبلوا فائق التحية و الاحترام،،،

College of Public Health

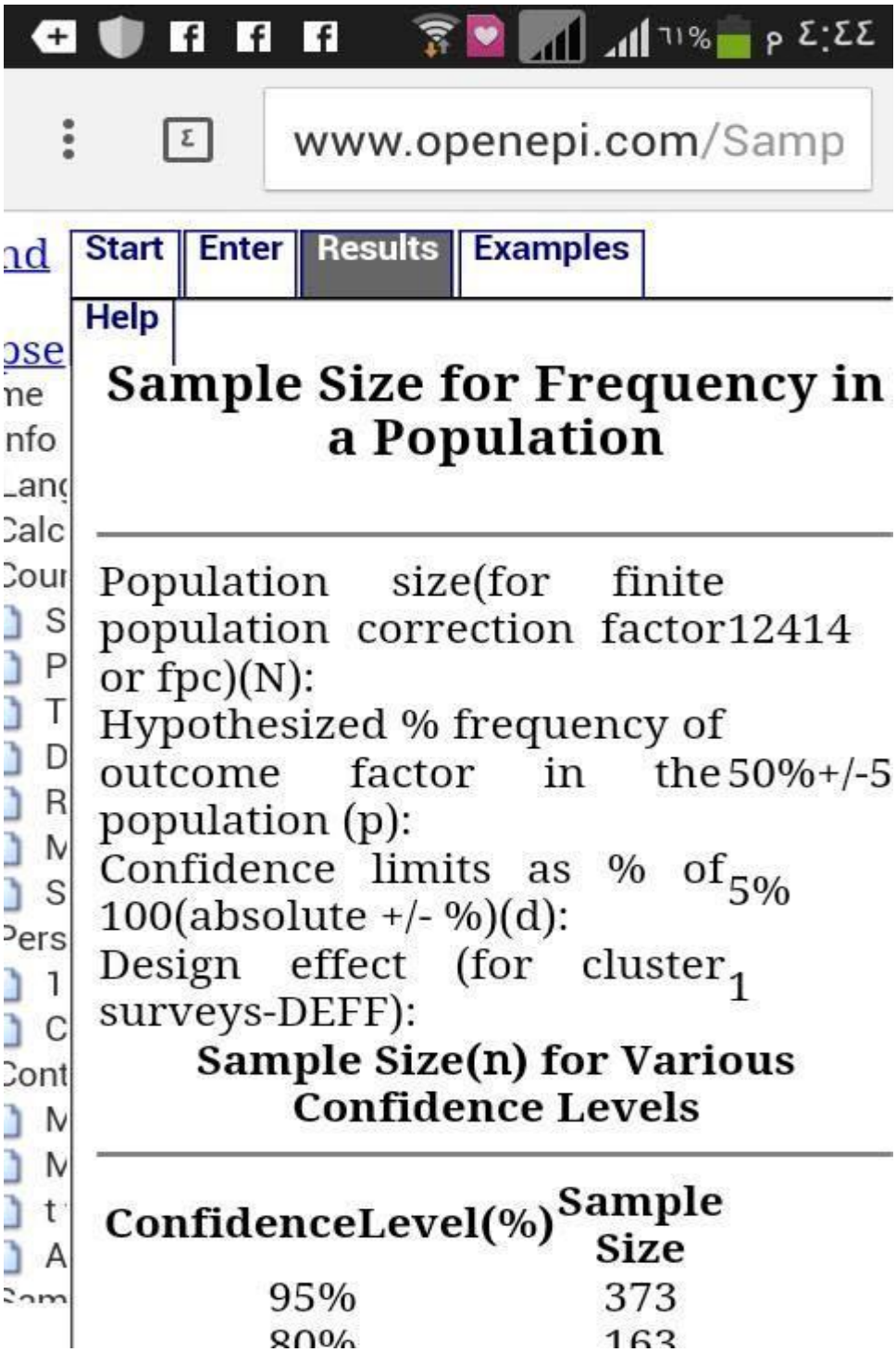
د. بسام أبو حمد
منسق عام برامج الصحة العامة
فرع غزة

نسخة:
- الملف

Jerusalem Branch/Telefax 02-2799234
Gaza Branch/Telefax 08-2644220 -2644210
P.O. box 51000 Jerusalem

فرع القدس / تلفاكس 02-2799234
فرع غزة / تلفاكس 08-264420-2644210
ص.ب. 51000 القدس

Annex (4): Sample size that represents the Diabetic Patients in Healthcare Centers of UNRWA



www.openepi.com/Samp

Start | Enter | Results | Examples | Help

Sample Size for Frequency in a Population

Population size(for finite population correction factor or fpc)(N):	12414
Hypothesized % frequency of outcome factor in the population (p):	50%+/-5
Confidence limits as % of 100(absolute +/- %)(d):	5%
Design effect (for cluster surveys-DEFF):	1

Sample Size(n) for Various Confidence Levels

ConfidenceLevel(%)	Sample Size
95%	373
80%	163

Annex (5): Interviewed Questionnaire of Diabetic Patients. (English)

General Health Questioner 12 GHQ12

1- BINARY SCALE : Cut off point ≥ 4

	Items	0	1
1	Unable to concentrate		
2	Loss of sleep over worry		
3	Playing a useless part		
4	Unable of making decisions		
5	Felt constantly under strain		
6	Couldn't overcome difficulties		
7	Unable to enjoy day-to-day activities		
8	Unable to face problems		
9	Feeling unhappy and depressed		
10	Losing confidence		
11	Thinking of self as worthless		
12	Feeling reasonably unhappy		
	TOTAL		

2- Likert Scale:

		NEVER	RARE	SOMETIMES	OFTEN	ALWAYS
1	Unable to concentrate					
2	Loss of sleep over worry					
3	Playing a useless part					
4	Unable of making decisions					
5	Felt constantly under strain					
6	Couldn't overcome difficulties					
7	Unable to enjoy day-to-day activities					
8	Unable to face problems					
9	Feeling unhappy and depressed					
10	Losing confidence					
11	Thinking of self as worthless					
12	Feeling reasonably happy					
	TOTAL					

Questionnaire to measure:

The prevalence and determinants of disease depression for diabetics

Gaza strip - Palestine

Form No …….Date: …/… / 2016

Health Center……. File No …….

Sociodemographic Characteristics

1. Date of Birth / / 19
2. Gender Male□ Female□
3. Social status: Single□ Married□ Widower□ Separated□ Engaged
4. Occupation: Working □ Retired □ None□ Part-time□
5. Educational Level: Unlettered □ Elementary-preparatory □Secondary / Diploma□ university degree or more □
6. Address: …….
7. Family Members No…….
8. Source of family income: The work of the head of household □Relief □Sons □Other □
9. The average monthly income……..

Health factors

10. Is the patient suffering from depression? Yes □ No□.
11. If yes average of GHQ 12□.
12. Date of developing diabetes …….
13. HbA1c level ……
14. Type of treatment: Injection □Pills □
15. If you use the injections, who does give you an injection Myself □Other person □
16. Do you suffer from a lack of treatment for the past three months? Yes □ No□.
17. The reason: Lack of the health center □ Financial □
18. Do you suffer from a lack of treatment for the past three month: Yes□No □
19. The reason? Lack of the health center□ Financial □
20. Are you personally or a member of the family works in the health field? Yes□No □

21. Is a family member who suffer from diabetes disease? Yes□No □ List
22. Is an individual close diabetics suffered from complications? Yes□No □ List
23. Are you smoker? Yes □ no □
24. Do you suffer from other chronic illnesses appeared after the disease? Yes □No □
25. Do you suffer from other chronic diseases appeared before the disease? Yes □No □

Personal care

26. Do you have a special device in the home to monitor glucose level? Yes□No □
27. Do you take the medicine regularly? Yes□No □
28. What are the dates of your medicine and dosage and the way? □Describe accurately □Not sure□Don't know
29. Who is the person that gives you the medicine?On my own□A family member
30. Do you practice sports or walk?□Regularly□Sometime□No□
31. Do you follow a special diabetes healthy diet?□Yes □Sometimes □No
32. Do you do something to control the disease? Yes□No □

Health care

33. Did you receive any health education about diabetes? Yes□No □
34. Where do receive information about the disease?□Health service providers□reading □Previous patients □Other?
35. Do you feel the attention by the service providers? Yes□No □
36. What is the goal of going to the health center? ؟□Necessary □For a walk□ To take the medicine □It is not important □

Patients' beliefs about the disease

37. What do you think the cause of the disease?Inheriting□Coincidence□Shock or sadness□ other?
38. Is it possible for a diabetic to fully recover? Yes□No □Don't know□
39. Do you think you are able to control disease and prevent its dangers? Yes□No □Don't know□
40. Do you think there is a special diet helps control the disease? Yes□No □

41. Do you think that a doing exercise can help to control the disease? Yes□No □

42. Can you say you are suffering from diabetes? Yes□No □

43. How the disease could affects to your lifestyle? Yes□No □ some time□

44. Do you think that you are able to adapt with the disease? Yes□No □

Any additives……..

……..

Annex (5) The study quantitative instrument- Arabic

جامعة القدس-أبو ديس

كلية الصحة العامة

أخي الكريم / أختي الكريمة

أنا الباحث / محمد سعيد موسى أقوم بإجراء دراسة بعنوان

"مدى انتشار والمحددات لمرض الاكتئاب لدى مرضى السكر في محافظات قطاع غزة"

وذلك استكمالا لمتطلبات الحصول على درجة الماجستير في جامعة القدس / كلية الصحة العامة / سياسات وادارة صحية. وعليه فقد تم اعداد هذا الاستبيان بهدف جمع البيانات ، اذ يضم هذا الاستبيان جزئيين رئيسيين : الجزء الاول عبارة عن مقياس لتشخيص حالات الاكتئاب ، والجزء الثاني يتضمن خمسة اقسام. القسم الاول الخصائص الاجتماعية، القسم الثاني العوامل الصحية، القسم الثالث الرعاية الشخصية، القسم الرابع الرعاية الصحية، القسم الخامس معتقدات المرضى حول المرض .

راجين منكم الاجابة على بنود هذا الاستبيان بدقة عالية وموضوعية وصدق حيث ان الوقت اللازم لتعبئة هذا الاستبيان لا يتعدى نصف ساعة من وقتكم مع العلم ان كافة المعلومات ستعامل بسرية تامة دون الاشارة الى شخصكم الكريم وسيتم استخدامها فقط لأغراض البحث العلمي وذلك لهدف تحسين وتطوير الخدمات الصحية المقدمة لشانكم الكريم.

اننا نرحب بمشاركتك في هذا الاستبيان لذا نرجو من حضرتك الاجابة على جميع الاسئلة قدر الامكان وفي حالة وجود غموض في القصد أو المعنى يرجى الاستفسار.

شاكرين لكم حسن تعاونكم

الطالب : محمد سعيد موسى

جامعة القدس

0597855111

اختبار لقياس الاكتئاب

1- الجدول الثنائي في حال كانت النتيجة أكبر أو تساوى 4 (المريض يعاني من اكتئاب)

م	البند	0	1
1	عدم المقدرة على التركيز(مشاهدة التلفاز-قراءة صحيفة)		
2	هل تعانى من مشاكل في النوم او الاستيقاظ المتكرر او زيادة في النوم		
3	تشعر بأن الأعمال التي تقوم بها غير مجدية		
4	عدم المقدرة على اتخاذ القرارات		
5	هل تشعر دائما انك تحت الضغط والتوتر		
6	عدم المقدرة على التغلب على الصعوبات		
7	عدم الاستمتاع بالأنشطة اليومية		
8	عدم المقدرة على مواجهة الصعوبات والمشاكل		
9	هل لديك شعور بالكآبة أو البؤس أو اليأس		
10	هل تشعر بفقدان الثقة بنفسك		
11	ينتابك شعور سيء عن نفسك او تشعر انك فاشل او انك خذلت نفسك(تأنيب ضمير)		
12	هل تشعر بأنك غير سعيد بشكل غير معقول		
	المجموع		

2- مقياس ليكرت

م	البند	أبدا	نادرا	أحيانا	غالبا	دائما
1	عدم المقدرة على التركيز(مشاهدة التلفاز-قراءة صحيفة)					
2	هل تعانى من مشاكل في النوم او الاستيقاظ المتكرر او زيادة في النوم					
3	تشعر بأن الأعمال التي تقوم بها غير مجدية					
4	عدم المقدرة على اتخاذ القرارات					
5	هل تشعر دائما انك تحت الضغط والتوتر					
6	عدم المقدرة على التغلب على الصعوبات					
7	عدم الاستمتاع بالأنشطة اليومية					
8	عدم المقدرة على مواجهة الصعوبات والمشاكل					
9	هل لديك شعور بالكآبة أو البؤس أو اليأس					
10	هل تشعر بفقدان الثقة بنفسك					
11	ينتابك شعور سيء عن نفسك او تشعر انك فاشل او انك خذلت نفسك (تأنيب ضمير)					
12	هل تشعر بأنك غير سعيد بشكل غير معقول					

استبانة لقياس: مدى انتشار والمحددات لمرض الاكتئاب لدى مرضى السكر
في قطاع غزة–فلسطين

رقم الاستمارة ..... : التاريخ 2016 / / :

المركز الصحي ..... : رقم الملف .....

1 . الخصائص الاجتماعية :

1. تاريخ الميلاد19 / / :
2. الجنس□: ذكر □ أنثى
3. الحالة الاجتماعية□: أعزب □ متزوج □ أرمل □مطلق □خاطب
4. العمل□: أعمل □ متقاعد □ لا أعمل □ جزئي
5. مستوى التعليم□: أمي □ ابتدائي-إعدادي □ ثانوي/دبلوم □ جامعي أو أكثر .
6. مكان السكن : .....
7. عدد أفراد الأسرة : .....
8. مصدر دخل العائلة:□ عمل رب الأسرة □ معونات □ الأبناء □ أخرى: حدد.....
9. متوسط الدخل الشهري بالشيكل: ..... شيكل

2. العوامل الصحية :

10. هل يعاني المريض من اكتئاب (حسب الملف): □ نعم □ لا
11. اذا كان نعم ! مقياسGHQ-12 (حسب الملف) .....
12. تاريخ الاصابة بمرض السكر .....
13. مخزون مستوى السكر في الدم. .....
14. نوع العلاج :□ حقن □ حبوب
15. اذا كنت تتعالج بالحقن /من يقوم بحقنك :□ بنفسي □ شخص أخر
16. هل عانيت من نقص في العلاج خلال الثلاث شهور الماضية :□ لا □ نعم السبب: نقص بالمركز □ مادي□
17. هل أنت شخصياً أو احد إفراد العائلة يعمل في المجال الصحي: □ نعم □ لا
18. هل احد الافراد الأسرة الذين يعانون من المرض السكر :لانعم حدد_____
19. هل احد الافراد المقربين المصابين بالسكر عانى من مضاعفات؟ □ لا □ نعم □ حدد
20. هل انت مدخن □ نعم □ لا □ مقلع
21. هل تعاني من أمراض مزمنة أخرى ظهرت بعد الاصابة بالمرض □ لا □نعم حدد_____

22. هل تعاني من أمراض مزمنة أخرى ظهرت قبل الاصابة بالمرض □ لا □نعم

حدد_____

3. الرعاية الشخصية

23. هل لديك جهاز خاص في المنزل لمتابعة مستوى السكر؟ □نعم □لا
24. هل تنتظم بتناول دواءك؟ □نعم □لا
25. ما هي مواعيد دواءك والجرعة و الطريقة؟ □يصف بدقة □غير متأكد □ لا يعرف
26. من يقوم بمتابعة مواعيد الدواء ؟□ ذاتي □احد افراد العائلة
27. هل تمارس الرياضة او المشي؟ □نعم بشكل منتظم □احيانا □لا
28. هل تتبع نظام غذائي صحي خاص بمرض السكر؟ □ نعم□ احيانا □لا
29. هل تقوم بإجراءات خاصة للسيطرة علي المرض ؟(نوع ملابس – مقص اظافر) □ نعم □لا

4.الرعاية الصحية:

30. هل تلقيت أي تثقيف صحي حول مرضى السكر؟ □ نعم □ لا
31. من أين تتلقي معلوماتك عن المرض؟ □ مقدمي الخدمة الصحية □ الاطلاع والقراءة □ مرضى سابقين□أخرى: حدد
32. هل تشعر بالاهتمام من قبل مقدمي الخدمة؟ □ نعم □ لا □ أحيانا
33. ماذا تعني لك زيارتك للمركز الصحي؟□ضرورية□ للنزهة□ لأخذ الدواء□لا جدوى منها

5. معتقدات المرضى حول المرض :

34. في اعتقادك ما هو سبب حدوث المرض لديك □وراثة □صدفة □ صدمة او حزن □أخرى: حدد .
35. هل يمكن لمريض السكر أن يشفى تماما □ نعم□ لا □ لا أعلم
36. تعتقد انك قادر علي السيطرة علي المرض ومنع مضاعفته □ نعم □ لا
37. هل تعتقد ان اتباع نظام غذائي خاص بساعد بالسيطرة علي المرض □نعم □ لا
38. هل تعتقد ان اتباع نظام رياضي خاص بساعد بالسيطرة علي المرض □نعم □ لا
39. لمن يمكن ان تفصح بانك مريض سكر □انا ومن يراعيني □انا واسرتي □لا يهم
40. هل اثر المرض علي نمط حياتك اليومي □ نعم □لا □احيانا
41. تعتقد انك قادر علي التكيف المرض في حياتك اليومية □ نعم □ لا

Annex (6) Chi square results for depression and the range of commitment of diabetic patients' plan

Items		Depression		Pearson Chi-Square	P- value
		No	Yes		
Do you have glucometer at home	Yes	**76.9%**	**23.1%**	**4.004**	**0.045**
	No	**66.7%**	**33.3%**		
Do you take the medicine regularly	Yes	**68.3%**	**31.7%**	**1.712**	**0.191**
	No	**76.5%**	**23.5%**		
What are the dates of your medicine and dosage	describe accurately	**68.0%**	**32.0%**	**4.827**	**0.089**
	not sure	**77.8%**	**22.2%**		
	don't know	**75.0%**	**25.0%**		
Follow medicine schedules	My self	**70.4%**	**29.6%**	**4.238**	**0.040**
	Family member	**55.6%**	**44.4%**		
Do you practice sports or walk	Yes	**68.1%**	**31.9%**	**2.348**	**0.309**
	Sometimes	**74.8%**	**25.2%**		
	No	**61.2%**	**38.8%**		
Do you follow a special diabetes healthy diet	Yes	**66.7%**	**33.3%**	**2.710**	**0.258**
	Sometimes	**73.8%**	**26.2%**		
	No	**65.4%**	**34.6%**		
Do you do something to control the disease	Yes	**72.2%**	**27.8%**	**1.311**	**0.252**
	No	**64.5%**	**35.5%**		

Annex (7) Chi square results for depression and provision of healthcare services by health centers

Items		Depression		Pearson Chi-Square	P- value
		No	Yes		
Health education	Yes	**72.3%**	**27.7%**	**5.898**	**0.015**
	No	**63.8%**	**36.2%**		
Where do receive information about the disease	Healthcare providers	**68.0%**	**32.0%**	**7.318**	**0.062**
	Reading	**68.0%**	**32.0%**		
	Previous patients	**85.7%**	**14.3%**		
	Other	**50.0%**	**50.0%**		
Do you feel the attention by the providers	Yes	**70.2%**	**29.8%**	**4.114**	**0.128**
	No	**42.9%**	**57.1%**		
	Sometimes	**63.6%**	**36.4%**		
What is the goal of going to the health center	Necessary	**69.3%**	**30.7%**	**0.448**	**0.799**
	to take the medicine	**67.4%**	**32.6%**		
	Useless	**100.0%**	**0.0**		

Annex (8) Chi square results for depression and diabetic participants' beliefs related variables about DM

Items		Depression		Pearson Chi-Square	P- value
		No	Yes		
What do you think the cause of the disease	Inheriting	**75.7%**	**24.3%**	**9.356**	**0.025**
	Coincidence	**75.0%**	**25.0%**		
	Shock or sadness	**64.5%**	**35.5%**		
	Other	**66.7%**	**33.3%**		
Is it possible for a diabetic to fully recover	Yes	**71.3%**	**28.8%**	**0.196**	**0.907**
	No	**69.3%**	**30.7%**		
	Not know	**66.1%**	**33.9%**		
Do you think you are able to control disease and prevent its dangers	Yes	**70.7%**	**29.3%**	**2.726**	**0.099**
	No	**62.9%**	**37.1%**		
Do you think there is a special diet helps control the disease	Yes	**70.0%**	**30.0%**	**1.883**	**0.170**
	No	**61.3%**	**38.7%**		
Do you think that doing exercise can help to control the disease	Yes	**68.6%**	**31.4%**	**0.481**	**0.488**
	No	**74.3%**	**25.7%**		
Can you say you are suffering from diabetes	Who care me only	**54.3%**	**45.7%**	**2.770**	**0.250**
	My family	**72.2%**	**27.8%**		
	No care	**70.6%**	**29.4%**		
How could the disease affects to your daily activity	Yes	**64.2%**	**35.8%**	**5.471**	**0.065**
	No	**75.9%**	**24.1%**		
	Sometimes	**69.1%**	**30.9%**		
Coping with the disease	Yes	**72.7%**	**27.3%**	**18.768**	**0.000**
	No	**45.0%**	**55.0%**		

ملخص الدراسة

مدى انتشار ومحددات الاكتئاب لمرضى السكري- قطاع غزة

اعدد: محمد سعيد موسى

اشراف: د. أحمد الحواجري

تبلغ نسبة المرضى المصابين بمرض السكري على مستوى العالم حوالي 9% في هذه الأيام وحسب منظمة الصحة العالمية يتوقع أن 642 مليون شخص سيعاني من مرض السكري في العام 2025.

الاكتئاب عامل مؤثر في حدة وخطورة المرض، ومن المتوقع أن يصيب 350 مليون شخص، وعلاوة على ذلك الاكتئاب يعمل كحاجز مهم في علاج السكري الفعال.

في فلسطين عوامل جمة منها عدم الاستقرار السياسي ومستوى المعيشة المتدني وارتفاع نسبتي الفقر والبطالة والتعرض اليومي لضغوطات الحياة النفسية أدت الى ازياد نسبة المصابين بالاكتئاب.

هذه الدراسة تكشف مدى انتشار ومحددات الاكتئاب لدى مرضى السكري المسجلين في مراكز عيادات وكالة الغوث في قطاع غزة.

منهج هذه الدراسة هو منهج وصفي وتحليلي نفذها لباحث. وتعتمد أيضاً هذه الدراسة على منهج كمي (مقابلة استبيانيه خاصة بمرضى السكري النوع الثاني) حيث ان 360 مشارك اتم الاستبيان بكفاءة وبنسبه استجابة تقدر بحوالي 96.5%.

استبيان الصحة العامة (12) كان معيار عالمي استخدم لتحديد مدى انتشار الاكتئاب في مرضى السكري النوع الثاني، واستخدم أيضا استبيان آخر لاستعراض محددات الاكتئاب خلال نفس المرضى.

الاستبيان سيشمل متغيرات عده منها العوامل الديموغرافية والاجتماعية والصحية ومعتقدات المريض عن المرض

النتائج أظهرت أن نسبة مدى الانتشار الكلي للاكتئاب لدى مرضى السكري كانت 30.8%، وبالتحليل الاستنتاجي كانت نسبه الاكتئاب أعلى لدى المرضى الغير متزوجين حيث وصلت نسبه الاكتئاب الى 80%. بينما كانت النسبة الأقل في المرضى المطلقين حيث وصلت 16.7%. علاوة على ذلك أظهرت النتائج ان المرضى العاطلين عن العمل أكثر عرضة للاكتئاب، وأن المرضى ذوي المستوى التعليمي العالي أقل عرضة للاكتئاب ،ولوحظ أيضاً وجود علاقة قويه بين نسبة انتشار الاكتئاب ومتوسط الدخل الشهري، حيث أن نسبة الاكتئاب كانت أقل في المرضى ذوي متوسط الدخل العالي .

كما أظهرت النتائج وجود علاقة بين السيطرة الجيدة و عدمها من خلال الهيموجلوبين السكري في الدم والاكتئاب، حيث كانت نسبة الاكتئاب أعلى عند المرضى ذو الهيموجلوبين السكري المرتفع وصلت 39.5% .بالإضافة الى ذلك تبين وجود علاقة ايجابية بين الاكتئاب والتدخين، حيث كانت النسبة أعلى في المرضى المدخنين، لكن كانت النسبة أقل لدى المرضى الذين يعملون بالمجال الصحي بأنفسهما وأحد أقاربهم.

بالنسبة للتثقيف الصحي أظهرت النتائج أن نسبة الاكتئاب أعلى لدى المرضى الذين لم يتلقوا أي تثقيف صحي عن المرض، مقارنةً بالذين حظوا بجلسات تثقيف صحي. لكن المرضى الذين يتلقون علاجاتهم حسب المواعيد، بأنفسهم كانت نسبه الاكتئاب اقل من المرضى الذين يتلقون علاجاتهم بواسطة أحد افراد العائلة.

معظم المرضى الذين يعانون من الاكتئاب أعزوا سبب حدوث مرض السكري لأسباب الحزن والصدمات ، ولكن كانت نسبة الاكتئاب أقل عند المرضى الذين أرجحوا ن سبب مرض السكري يعود لعوامل وراثية. ولقد كانت نسبة الاكتئاب أعلى عند المرضى الغير قادرين على التكيف مع المرض من المرضى الذين لديهم القدرة على التكيف مع داء السكري.

الدراسة أظهرت أيضاً أنه لا وجود لعلاقة بين مدى انتشار الاكتئاب وجنس المريض ونوع العلاجات ونمط الحياة والالتزام بالعلاجات.

هذه الدراسة توصي بإدراج وتمكين برنامج الصحة النفسية في مراكز الرعاية الأولية، كمكون اساسي للخدمات الصحية عن طريق مقدمي الخدمة الصحية في فلسطين.