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Depression among Epileptic Patients in Governmental Community Mental Health Centers in Gaza Strip

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حديث شريف

حدثنا مسدد حدثنا يحيى عن عمران أبي بكر قال: حدثني عطاء ابن أبي رباح قال : " قال لي ابن عباس رضي الله عنهما ألا أريك امرأة من أهل الجنة فقلت بلى، قال هذه المرأة السوداء، أتت الرسول صلى الله عليه وسلم فقالت إني أصرع وإني أتكشف، فادع الله تعالى لي، قال إن شئت صبرت ولك الجنة، وإن شئت دعوت الله تعالى أن يعافيك، فقالت: أصبر، فقالت: إني أتكشف، فادع الله أن لا أتكشف، فدعا لها ".

رواه البخاري

Abstract

Background: Depression is the most common co-morbid psychiatric disorder in patients with epilepsy. Its prevalence has been reach up to 60%. It significantly affects the quality of life and increase suicidal rate among patients with epilepsy. There are several factors that cause depression in epilepsy such as biological factors, psychosocial factors include (stigma, discrimination, joblessness, and lifestyle change) and sometimes may be a side effects of antiepileptic drugs.

Objectives: To understand the occurrence of depression among epileptic patients from its prevalence and relationship with other variables. .

Study design: Descriptive, analytic, cross sectional study.

Setting: The study was carried out in Governmental Community Mental Health Centers in Gaza strip.

Method: One hundred fifty of epileptic patients from Governmental Community Mental Health Centers in Gaza strip were included in the study sample by using systematic random sampling. The respondents were 138 with response rate of (92%), 81 of them were male (58.7%), and 57 were female (41.3%). Patients with physical or mental disorder were excluded from the study. Patients anonymously filled out a questionnaire, included data about sociodemographic characteristics and epilepsy related variables. Standardized translated version of Beck depression inventory was used to evaluate depression. Statistical significance was calculated by using SPSS computer software program.

Results: Prevalence of depression among participants was 63%, divided between 38.4% had mild depression, 24.6% had moderate depression, without severe depression. There are significant differences between depression rate and each of the following variables (gender, level of education, income, controllability of the disease and working status). Other variables were not found to be significant differences with depression include (age, marital status, residential area, type of medication, duration of illness and age of onset).

Conclusion: There is a high prevalence of depression among epileptic patients in Community Mental Health Centers in Gaza strip. Female patients, uncontrolled epilepsy, unemployment, lower level of education and lower income groups more prone to have depression.

Key words: Epilepsy, Depression, Community mental health centers, Gaza strip.

ملخص الدراسة

خلفية الدراسة: يعتبر الاكتئاب من أكثر الاضطرابات النفسية شيوعا بين مرضى الصرع، حيث يصل معدل انتشاره بين المرضى إلى حوالي ٦٠% ، كما انه يؤثر بشكل واضح على جودة الحياة و يعمل على زيادة معدل الانتحار بين المرضى الذين يعانون من الصرع. ومن أهم العوامل التي تؤدى إلى الإصابة بالاكتئاب العوامل البيولوجية، العوامل النفسية والاجتماعية مثل (الوصمة، التمييز، فقدان العمل، تغير أنماط الحياة) وأحيانا قد يكون نتيجة التأثيرات العلاجية للأدوية المضادة للصرع.

أهداف الدراسة : هدفت هذه الدراسة إلى فهم ظاهرة الاكتئاب بين مرضى الصرع من حيث مدى انتشارها وعلاقتها بالمتغيرات الأخرى.

تصميم الدراسة: دراسة وصفية تحليلية.

مكان الدراسة: أجريت هذه الدراسة في مراكز الصحة النفسية المجتمعية الحكومية في قطاع غزة.

طريقة الدراسة: ضمت هذه الدراسة مائة وخمسين مريض من مرضى الصرع الذين يترددون على مراكز الصحة النفسية المجتمعية الحكومية في قطاع غزة باستخدام الطريقة العشوائية المنتظمة. بلغ عدد المرضى الذين شاركوا في الدراسة ١٣٨ مريض بمعدل ٩٢%، كان عدد الذكور بينهم ٨١ بنسبة (٥٨.٧%) و عدد الإناث ٥٧ بنسبة (٤١.٣%)، تم استثناء المرضى الذين يعانون من أمراض جسمانية أو اضطرابات نفسية. حيث تم تعبئة الاستبيانات للمرضى بشكل سرى والتي تضمنت معلومات شخصية وديمغرافية وأيضا أسئلة متعلقة بالمرض. استخدم مقياس بيك المترجم للتقييم الاكتئاب بين المرضى. وتم إدخال البيانات و حساب الدلالات الإحصائية باستخدام الحزمة الإحصائية للعلوم الاجتماعي(SPSS).

نتائج الدراسة : أظهرت الدراسة أن معدل انتشار الاكتئاب بين مرضى الصرع حوالي 63% مقسمة على النحو التالي:٣٨.٤ % يعانون من أعراض اكتئاب بسيطة،٢٤.٦ % يعانون من أعراض اكتئاب متوسطة، لا توجد أعراض اكتئاب شديدة. وقد بينت الدراسة وجود فروق ذات دلالة إحصائية بين معدل الاكتئاب وكل من المتغيرات التالية: (متغير الجنس ، السيطرة على المرض، حالة العمل، مستوى التعليم، معدل الدخل) . كما بينت الدراسة أيضا عدم وجود فروق ذات دلاله إحصائية بين معدل الاكتئاب وكل من المتغيرات التالية: (العمر، الحالة الاجتماعية، العنوان، فترة المرض، العمر عند بداية الإصابة وأنواع العلاجات المضادة للصرع التي يتناولها المريض) .

الخلاصة : توصلت الدراسة إلى وجود معدل انتشار مرتفع للاكتئاب بين مرضى الصرع في مراكز الصحة النفسية المجتمعية الحكومية في قطاع غزة، كما أوضحت الدراسة أن كل من :(الإناث ، المرضى الذين يعانون من عدم السيطرة على المرض ، العاطلين عن العمل ، المرضى الذين لديهم مستوى التعليم متدني والمرضى الذين لديهم مستوى الدخل متدني) هم أكثر عرضة للإصابة بالاكتئاب.

الكلمات الدالة: الصرع، الاكتئاب، مراكز الصحة النفسية المجتمعية، قطاع غزة.

Dedication

I dedicate this work to

my parents,

my wife,

my children,

and my brothers and sisters,

who has shown unconditional love and support from the beginning to

the end.

Acknowledgment

This thesis would not have come to fruition without the help of many individuals.

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Also, I am thankful and would remain grateful to **Dr. Jamil Altahrawi PhD** in psychology my second supervisor for his guidance in this thesis works and for the support he has been since the beginning of my thesis.

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Last but not least, my thanks are extended to all those not mentioned in person and who assisted or contributed in any way during this research. I wish all of them along prosperous life.

Table of content

Chapter three: Methodology

Chapter four: Results

Chapter five: Discussion, Conclusion & Recommendation

Annexes

Table of tables

List of figures:

List of abbreviations:

AEDs	Anti-Epileptic Drugs
AIDS	Acquired Immune Deficiency Syndrome
ANOVA	Analysis of Variance
APA	American Psychiatric Association
B.C	Before Christ
BDI	Beck Depression Inventory
BPRS	Brief Psychiatric Rating Scale
CBT	Cognitive Behavioral Therapy
CES-D	Center for Epidemiology Studies-Depression Scale
CIDI-SF	Composite International Diagnostic Interview-Short Form
DD	Dysthymic Disordered
DSM-IV	Diagnostic and Statistical Manual of Mental Disorder Forth Edition
DST	Dexamethasone Suppression Test
EEG	Electroencephalography
GABA	Gamma-Amino Butyric Acid
GAD	Generalized Anxiety Disorder
HADS	Hospital Anxiety and Depression Scale
HAM-A	Hamilton Anxiety Scale
HAM-D	Hamilton Depression Scale
HIV	Human Immunodeficiency Virus
HRSD	Hamilton Rating Scale for Depression
HRQOL	Health-Related Quality of Life
IBE	International Bureau for Epilepsy
ICD-10	International Classification of Diseases Ten Edition

ICES	International Classification of Epileptic Seizures
ICPE	International Consortium of Psychiatric Epidemiology
ILAE	International League Against Epilepsy
IPT	Interpersonal Theory
IPT	Interpersonal Therapy
LRE	Localization Related Epilepsy
MD	Major Depression
MMSE	Mini-Mental State Examination
MOH	Ministry Of Health
MRI	Magnetic Resonance Imaging
OCD	Obsessive Compulsive Disorder
PTSD	Post Traumatic Stress Disorder
PWE	Patient with Epilepsy
QOLIE	Quality of Life in Epilepsy
RBD	Recurrent Brief Depression
SAD	Seasonal Affective Disorder
SDS	Sheehan Disability Scale
SPSS	Statistical Package for Social Science
SSRIs	Selective Serotonin Reuptake Inhibitors
SUDEP	Sudden Unexpected Death in Epilepsy
TGDS	Thai Geriatric Depressive Scale
TLE	Temporal Lobe Epilepsy
U.K	United Kingdom
UNRWA	United Nations Relief and Works Agency
USA	United State of America

Chapter 1

Introduction

1.1Background

Epilepsy is a chronic brain disorder characterized by spontaneous, recurrent seizures. It is not a disease but a manifestation of many different conditions that result in chronic seizures. A simple seizure in itself does not indicate epilepsy, however when seizure recur frequently epilepsy may be diagnosed. The main characteristic of seizure is a sudden event that affects behavior, thinking or body movements that the patient cannot control (Spiegel et al., 1996:35).

It is a neurological condition that knows no geographic, social, or racial boundaries, occurring in men and women and affecting people of all ages, though more frequently affecting young people in the first two decades of life and people over the age of 60 (Sander, 2003:212). It has been estimated that worldwide there are at least 50 million people who have epilepsy (Leonardi & Ustun, 2002:24), the prevalence has been estimated to between three and eight per 1, 000 (Forsgren et al., 2005:248) and the incidence in developed countries is around 50/100,000/year (Sander, 2003:213).

Epilepsy is a chronic condition with numerous social, physical functions and psychological consequences (Lee et al., 2005:160). People with epilepsy may be more likely than other people to experience emotional, psychological, behavioral disorder and sever social isolation. Depression is highly prevalent in this population and is the most frequent co-morbid psychiatric disorder in patients with epilepsy (Kanner, 2003:391). Overall, the rate of depression in patients with epilepsy is significantly higher than that of the general population; it is also higher than rates of depression in patients with other chronic diseases such as diabetes or asthma (Ettinger et al., 2004:1011). The lifetime prevalence of depression in patients with epilepsy is estimated to be between 6% and 30%, and up to 50% in patients followed in tertiary care centers (Kanner, 2003:389). In patients with medically intractable, or only partially controlled epilepsy, rates of depression range from 20% to 55%, while in patients with controlled epilepsy, rates range from 3% to 9% ((Jacoby et al., 1996:152). Depression has also been found to be the most important factor associated with reduced quality of life in epileptic patient and cause sever diagnostic, therapeutic and social problem (Kanner, 2006:143).

Various causative factors have been proposed for the development of depression in epilepsy, but the etiology is most likely to be multifactorial. Depression and epilepsy share common pathogenic mechanisms, which explain the bidirectional relationship between these two disorders. These pathogenic mechanisms include abnormal function of common neurotransmitters in the CNS, particularly serotonin, noradrenaline, and dopamine (Kanner, 2005:98). Also there are many factors which have been suggested to play a role. The most common include: psychosocial factors and side effects of anti-epileptic drugs (AEDs); psychosocial factors experienced as a direct result of having epilepsy such as perceived stigma, fear of seizures, discrimination, joblessness, lack of social support, and lifestyle changes imposed by increased seizure severity/frequency (giving up driving privileges, changing jobs, etc.), have all been theorized to contribute to depression (Torta & Keller, 1999:25). Furthermore, many of the drugs used to treat epilepsy are known to have negative effects on mood. Phenobarbital has been reported to cause depressive disorder, while primidone, tigabine, vigabatrin, felbamate, and topiramate can frequently cause symptoms of depression (Barry, 2003:576).

Here in Gaza strip the situation is difficult, beside the high degree of poverty, unemployment, social troubles, loss of security, continuous incursion, and siege which is continuous for more than five years and lead to deficiency of drugs and special needs. All this stressors will play a significance role in developing mental disorder among general population in Gaza strip and among people who have chronic illness particularly. In addition to, the number of new patients opening new file for management and treatment epilepsy disease increase. Also from the point of view of the researcher there is not previous study conducted in Gaza strip about depression among epileptic patients.

So, this study comes to study depression among patients with chronic disease namely epileptic patients in community mental health centers in Gaza strip.

1.2 Significance of the study

Patients with chronic disease states are more likely to suffer from a depressive disorder than individuals without these disease states (Patten et al.,

2005:197). Depression is the most frequent comorbid psychiatric disorder in epilepsy and its prevalence has been estimated to range between 20% and 55% in uncontrolled patients and 3% to 9% in controlled patients (Jacoby et al., 1996:152). Also various studies have identified higher prevalence rate of depression among patients with partial epilepsy of temporal and frontal lobe origin and in patients followed up in tertiary centers (Altshuler, 1991:48).

Depressive symptoms are usually undetected, and because of that inadequately treated, which complicates and bring other consequences, such as failure in therapy, poor quality of life, suicidal behavior and social handicaps with higher morbidity and mortality (Kaplan & Sadock, 2003:358).

Locally there is no epidemiological data base about depression in epilepsy and we as community mental health professionals working at governmental mental health centers at Gaza strip notify during providing care for patients with epilepsy that, epileptic patients are more liable to mental disorder in general and depression particularly and some of them treated for mental disorders and depression .

So, this study aim to shed the light upon an important category of patients with chronic disease, namely epileptic patients which are more liable to mental disorders(depression) than other people and give evidence data base about this problem and helping in planning and setting solutions for management this problem.

1.3 Objectives of the study

1.3.1General objective

This study aims to understand the occurrence of depression among patients with epilepsy in community mental health centers in Gaza strip.

1.3.2 Specific objectives

1- To assess the prevalence of depression among epileptic patients.

2- To know the level of depression among epileptic patients.

3-To assess depression rate in patient with epilepsy in relation to socio - demographic characteristics (age, gender, address, income & level of education).

4-To study depression rate in patients with epilepsy in relation to controllability of disease, duration of disease, age of onset and type of medication.

5- To suggest recommendation to policy makers and professionals for adoption of creative ways to control or minimize this phenomena.

1.4 Research questions

1- What is the prevalence of depression among epileptic patients?

2- What is the level of depression among epileptic patients?

3 - Is there differences between depression rate and sociodemographic characteristics of epileptic patients?

4- Is there differences between depression rate and controllability of the disease, age of onset, duration of the disease and type of medication?

1.5 Demographic context

Gaza strip is a small area of Palestine, it is about 362 square kilometers, with length about 45 kilometers, and width ranging between 6-12 kilometers, it lies between Egypt, Mediterranean Sea and occupied Palestine. Most of the populations are refugees; they are distributed at five cities, eight refugee camps and about eight villages. It is divided into five governorates; the North, Gaza, Middle, Khanyounis, and Rafah governorate (UNRWA, 2006).

The refugees constitute about two thirds of the total populations at Gaza strip, about half of them live at camps, while the rest live at cities and villages of Gaza strip. Gaza strip is one of the most crowded area of the world, the population density is 3808 inhabitants/km, the number of people living in absolute poverty increase, poverty is manifest with unemployment, siege, imparkation, where the work chances are minimal. Beside poverty the people suffer from poor housing, poor sanitation and absence of security (UNRWA, 2006).

1.6 Governmental community mental health centers

The Ministry of Health (MOH) is the main statutory health provider in Gaza Strip responsible for supervision, regulation, licensure and control of the whole health services. The community mental health centers are the major component of

mental health care system which provides mental health services to all populations in different area.

In 1995 Ministry of Health run six community mental health centers distributed through Gaza governorates; one of them based on rafah governorate, one in khanyounis, one in mid zone, two in Gaza city and the last one in north Gaza. These centers was established according to WHO planning program to cover mental health services and community mental health needs as psycho pharmacotherapy, counseling and psycho education therapeutic session.

In addition, community mental health centers include neurological clinics that provide treatment and care for neurological patients particularly epilepsy and parkinson.

1.7 General review of study chapters

This study consists of five chapters and organizes as follows:

Chapter1: Includes study proposal which includes the introduction, research questions, objectives, significance of the study and demographic contest.

Chapter 2: Focuses on the conceptual framework of the study and literature review which include; depression, epilepsy, depression in epilepsy and the previous studies concern with the study.

Chapter 3: Present a detailed description of the research methodology of this study that includes; sample and sampling, design, population, data collection, data analysis and ethical consideration.

Chapter 4: This chapter will include the results of the study.

Chapter 5: This chapter will include discussion of the results, conclusion and recommendation.

Chapter two

Conceptual framework &

Literature review

Conceptual framework and literature review

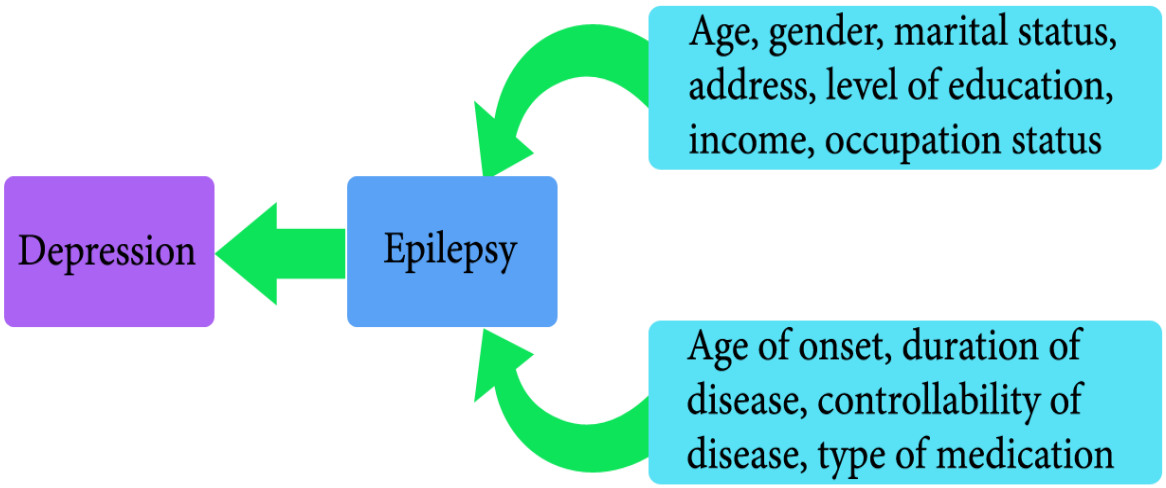
This chapter will outline the conceptual framework of the study and reviews the literatures that include epilepsy, depression, the relationship between epilepsy and depression and lastly the previous studies concern with the study.

2.1 Conceptual framework

Conceptual framework of the study is self developed. This framework consists mainly from independent variable (epilepsy), dependent variable (depression) and the variables which affect on the independent variable and may lead to depression which include sociodemographic characteristics variables and disease related variables.

This simple framework is used by the researcher to support, guide and direct the research process.

Figure "1" Conceptual framework



(Self developed, 2012)

2.1.1 Definitions

2.1.1.1 Operational definition of depression

Depression is the degree or the level the client has in beck scale, which used to measure depression, and consists of 21 items, which categorized to mild, moderate or sever depression.

2.1.1.2 Theoretical definition of depression

Depression is known to be an extreme, persistent and recurrent condition that interferes significantly with the ability of the individual to function within his or her environment, and one's vulnerability to depression is determined by the interplay of multiple genes and the environment (Solomon et al., 2000:231).

2.1.1.3 Operational definition of epilepsy

Patient who has epilepsy, aged between 18 and 65, male and female, his diagnosis confirmed by neurologist, has file in governmental community mental health centers and did not has history of physical and mental disorders.

2.1.1.4 Theoretical definition of epilepsy

Epilepsy can be defined as a disorder of the central nervous system, characterized by sudden recurrent seizures resulting from the temporary discharges of electrical energy in the brain cells activity. The seizure begins in the area of the brain that contains abnormal nerve cells, which releases more easily than do normal cells. Once these abnormal cells begin releasing, other normal cells around them begin to release as well, resulting in the entire area of the brain releasing at once. This result in altered level of consciousness, involuntary movements, changes in sensory phenomenon. Once a seizure is over, the patient returns to normal functioning (Bddeley & Ellis, 2002:7).

2.2 Literature review

In this contest the researcher will review the literatures that include; epilepsy, depression, depression in epilepsy and lastly the previous studies which concern the topic of our study.

2.2.1 Epilepsy

2.2.1.1 Historical background.

Epilepsy is a disease known from ancient times, derived from the Greek word "epilepsia" meaning to "take hold of" or "seize". For centuries, epilepsy was regarded as a sacred disease that originated from demons or evil. Most people believed that when a person had a seizure, he/she was trying to get rid of demons. They believed it was contagious and often regarded people with epilepsy as insane (Engel& Pedley, 1997:8).

The first person who moved away from the mythology associated with epilepsy was the Greek physician Hippocrates. He defined epilepsy as a neurological condition caused by a disturbance in the brain (Kinnier Wilson &Reynolds, 1990:191).

The two major Middle Eastern practitioners who dealt with epilepsy in medieval times were Ibn Sina (980–1037) and Al-Razi (circa 865–925), and they considered epilepsy a medical illness. Their writings had a profound influence in Europe, and as late as the 1700s this material was still fundamental for medical students in universities around the world. Ibn Sina, the “Prince of Doctors”, was scientific and rational in his treatment of epilepsy and left an abundance of pertinent details. He was the first person to coin the term “epilepsy”, using a passive Latin verb. In his Canon of Medicine, Ibn Sina speaks of epilepsy in exhaustive detail, describes its various forms and symptoms and its apparent causes, and offers a long list of pharmacological products for its treatment. His prescriptions are a repertory of herbal and pharmacological recipes and of dietary rules based on the principle that it is necessary to create personalized treatments, adapted to each individual, consisting of medicinal and dietetic therapy and incorporating hygienic norms (Vanzan & Paladin, 1992:1061).

The view that has dominated thinking about epilepsy in many parts of the world is that epilepsy is caused by supernatural forces. This view remains, even now, deeply rooted in society with negative social consequences. It was not until the 17th and 18th centuries that the Hippocratic concept of epilepsy as a brain

disorder began to take root. During these two centuries epilepsy was one of several key areas of debate in the gradual identification and separation of "nervous disorders" from "mental disorders", which led to the beginnings of modern neurology in the 19th century (Temkin, 1994:14).

2.2.1.2 Definition of epilepsy

Epilepsy is a relatively common neurological disorder resulting from abnormal and excessive discharges of electrical activity of cerebral neurons. Epileptic seizures can manifest as such symptoms as altered consciousness, involuntary movements, abnormal sensory phenomena, increased autonomic activity or transient disturbances of behavior depending on the localization of the epileptic disorder. In addition to symptoms of the seizures, the pathologic electrical discharges detectable in the electroencephalography (EEG) during the seizures and in the interictal period can also reveal the site of origin of the dysfunction. Although epileptic seizures can be symptoms of a causative brain disease, in the majority of cases of epilepsy the cause is unknown and the diagnosis is solely based on description of seizures and findings in EEG (Engel & Pedley, 1997:6).

In 2005, the International League Against Epilepsy (ILAE) and the International Bureau for Epilepsy (IBE) defined epilepsy as: a disorder of the brain characterized by an enduring predisposition to generate epileptic seizures and by neurobiological, cognitive, psychological, and social consequences of that condition.

Epileptic seizures are characterized by transient abnormal excessive or synchronous neuronal activity in the brain associated with specific signs of behavioral changes (Fisher et al., 2005:471).

Also Kapp (1991) defined epilepsy as an altered chemical state of the brain causing bursts of excessive electrical activity. The sudden bursts of this electrochemical activity scramble the brain's messages upsetting the brain's normal control. These may be characterized by distorted consciousness, motor activity, sensory phenomena, or inappropriate behavior.

2.2.1.3 Incidence of epilepsy

The incidence of epilepsy in developed countries is usually quoted as being between 40and 70 per100, 000 persons per year, and it is usually higher in young children and in older people (Duncan et al., 2006:1089). In developed countries, poorer people also seem to have a higher incidence, the reasons for which are unclear. The incidence in resource-poor countries is usually much higher than in developed countries, often above 120/100,000/year. Poor sanitation, inadequate health delivery systems, and higher risk of brain infections and infestations may contribute to this (Heaney et al., 2002:1015), although methodological issues may also contribute.

2.2.1.4 Prevalence of epilepsy

The great majority of studies of the prevalence of epilepsy have reported rates between 4 and 10 per1000 (Forsgren et al., 2005:247). Some studies from resource-poor countries have given higher prevalence rates; these studies usually are small-scale studies from isolated geographic areas where unique genetic or environmental factors may apply or else are compounded by methodological problems (Sander, 2003:44). Most large-scale studies in resource-poor countries report prevalence rates for active epilepsy of between 6 and10 per 1000; many of these studies also report higher rates in rural areas. Life time prevalence rates are much higher than rates for active epilepsy; this is even the case in resource-poor countries, where there is a huge treatment gap and indeed, a number of new antiepileptic drugs may not be available (Forsgren et al, 2005:252). This suggests that most people developing epilepsy will either cease to have seizures or die prematurely, probably the former. Epilepsy is however, associated with an increased mortality rate (Sander & Bell, 2004:61), although the impact of mortality on prevalence in resource-poor countries is not known.

In Gaza strip there is lack of information about the prevalence of epilepsy among general population, also there is no studies conducted about the prevalence of epilepsy and no documented number about their pravelance.

2.2.1.5 Pathophysiology of epilepsy

A variety of different electrical or chemical stimuli can easily give rise to a seizure in any normal brain. The epileptic seizure always reflects abnormal hyper synchronous electrical activity of neurons caused by an imbalance between excitation and inhibition in the brain. Neurons are interconnected in a complex network in which each individual neuron is linked through synapses with hundreds of others. A small electrical current is discharged by neurons to release neurotransmitters of synaptic levels to permit communication with each other. More than hundred neurotransmitters or neuromodulators have been shown to play a role in neuronal excitation. However, the major excitatory neurotransmitter in the brain is L-glutamate and the major inhibitory neurotransmitter in the brain is gamma-amino butyric acid (GABA). An abnormal function of either of these could result in a seizure. An excited neuron will activate the next neuron whereas an inhibitory neuron will not. A normal neuron discharges repetitively at a low baseline frequency, and it is the integrated electrical activity generated by the neurons of the superficial layers of the cortex that is recorded in a normal electroencephalogram. If neurons are damaged, injured or suffer electrical or metabolic insult, a change in the discharge pattern may develop. In the case of epilepsy, regular low-frequency discharges are replaced by bursts of high-frequency discharges usually followed by periods of inactivity. An epileptic seizure is triggered when a whole population of neurons discharges synchronously in an abnormal way. This abnormal discharge may remain localized or it may spread to adjacent areas, recruiting more neurons as it spreads (Porth, 2002:218-219).

2.2.1.6 Causes of epilepsy

Epilepsy can affect anyone at any age without apparent cause, and can cease just as suddenly. In adult's trauma, brain tumors and vascular diseases of the brain are the most common causes of epilepsy, while in children metabolic defects, congenital malformations, infections, genetic diseases and perinatal injuries are among the common etiologies (Okumura et al., 2000:569). However, the etiology of epilepsy remains unresolved in a large number of patients (Beghi, 2004:56). Genetic factors can also predispose to epilepsy. In a majority of the cases epilepsy is caused by interactions of many genes and environment, and in a minority of

cases of epilepsy can be attributed to a single gene disorder (Gutierrez-Delicado & Serratosa, 2004:151).

The etiology of epilepsy is commonly divided into three main categories, idiopathic, cryptogenic and symptomatic (Commission on Epidemiology and Prognosis and International League Against Epilepsy, 1993:592). When the cause of epilepsy can be identified, we refer to this type of epilepsy as symptomatic epilepsy (Commission on Epidemiology and Prognosis and International League Against Epilepsy, 1993:593), in symptomatic epilepsy; the seizures can be the result of intrinsic factors associated with physical illness such as:

• High fever
• Fatigue
• Head injuries
• Encephalitis
• Meningitis
• Metabolic disturbances
• Blood vessel abnormalities
• Cerebral bleeding
• Biochemical imbalances tumors of all kinds
• Lack of oxygen during birth
• A brain tumor
• Associated conditions such as cerebral palsy and autism
• Stroke
• Lead poisoning
• Infection of the brain.

Extrinsic factors play a role and some possible triggers are:

• Drugs
• Alcohol
• Illnesses such as HIV and AIDS
• Nutrition shortage/malnutrition
• Flashing lights, TV patterns and loud sounds.
• Tiredness, stress and excitement

In Idiopathic epilepsy, the seizure occurs without any reasons, but genetics is assumed to be the cause. It may be hereditary as sometimes more than one

member of a family has epilepsy. Patients are treated chronically with antiseizure drugs or vagal nerve stimulation. Most cases of epilepsy are idiopathic (Commission on Epidemiology and Prognosis and International League Against Epilepsy, 1993:594).

Cryptogenic epilepsy is used to describe seizures that are "probably symptomatic" but their etiologies cannot be identified through available medical investigation (Commission on Epidemiology and Prognosis and International League Against Epilepsy, 1993:594).

2.2.1.7 Risk factors of epilepsy

Epilepsy is a symptom complex, and many different conditions are known to be risk factors. These vary with age and geographic location. Congenital, developmental, and genetic conditions are associated with developing epilepsy when young.

Epilepsy associated with head trauma, central nervous system infections, and tumors may occur at any age, although tumors are more likely in the elderly (Duncan et al., 2006:1093). Cerebrovascular disease is, however, the most common risk factor in the elderly (Granger et al., 2002:1090).

Parasitic conditions such as falciparum malaria and neurocysticercosis are associated with epilepsy in endemic areas and are probably the most common preventable cause of epilepsy worldwide (Medina et al., 2005). Recently, two other parasites, Toxocaracanis and Onchocerca volvulus, have been suggested as important risk factors; this needs confirmation (Nicoletti et al., 2002:1257).

A family history of epilepsy seems to increase the influence of other risk factors. The susceptibility to epilepsy may be partly genetically determined, and this may interact with brain maturation and environmental factors. These interactions may be responsible for the shortcomings of our understanding of the dynamics of epilepsy in the population ((Duncan et al., 2006:1095).For instance,

the relative risk of developing epilepsy with different conditions in different populations is not known.

2.2.1.8 Diagnosis of epilepsy

Epileptic seizures can manifest under stressful conditions (i.e. sleep deprivation, alcohol or drug abuse, infections, hypoglycemia and metabolic changes) even in persons without epilepsy. Diagnosis of epilepsy is usually made after two or more unprovoked seizures. Medical history with information of possible predisposing factors to seizures and a detailed description of the clinical features of the seizures as well as clinical examination with special respect paid to cardiovascular and neurological findings are essential diagnostic tools when assessing possible epilepsy. An EEG recording is important in providing confirmatory information for the diagnosis and to help define the possible focal or generalized epilepsy syndrome. Magnetic resonance imaging (MRI) is important in helping to detect the underlying structural pathologic conditions of the brain. However, in some cases diagnosis can also be made based on medical history and history of unprovoked seizures even though EEG and MRI are normal (Moshe & Pedley, 1997:802).

2.2.1.9 Classification of epileptic seizures

It is important to correctly classify seizures to determine appropriate treatment. The most commonly and widely accepted classification system of seizure types and epileptic syndromes that is currently used is the International Classification of Epileptic Seizures (ICES). This classification system, proposed by the Commission on Classification and Terminology of the International League Against Epilepsy (ILAE) in 1981.Seizures in this classification system is divided into three categories namely partial seizures, generalized seizures and unclassified seizures.

- **Partial**

Unlike generalized seizures, partial seizures begin in a specific area of one cerebral hemisphere and do not spread bilaterally (Holmes, 1997:32). Partial seizures, which are associated with lesions of the temporal lobe are subdivided into simple partial

seizures (in which consciousness retained), complex partial seizures (in which consciousness is impaired or lost) (Kotagal et al., 1987:1178) and partial seizure with secondary generalization. Both simple and complex partial seizures are often accompanied by somatosensory auras, including complex visual or auditory hallucinations (Janszky et al., 2004:248).

A. Simple partial

These seizures are caused by a group of hyperactive neurons exhibiting abnormal activity, which are confined to a single locus in the brain. The electrical discharge does not spread, and the patient does not lose consciousness. The patient often exhibits abnormal activity of a single limb or muscle group that is controlled by the region of the brain experiencing the disturbance. The patient may also show sensory distortion. Simple partial seizures may occur at any age (Holmes, 1997:30).

B. Complex partial

These seizures exhibit complex sensory hallucination, mental distortion, and loss of consciousness. Motor dysfunction may involve chewing movement, diarrhea, and /or urination. Consciousness is altered. Simple partial seizure activity may spread and become complex and then spread to a secondarily generalized convulsion. These seizures can last approximately 30 seconds to 3 minutes (Holmes, 1997:31).

C. Partial seizure with secondary generalization

This seizure is when the electrical activity in the brain continues to spread as a result of the partial seizure. This type of seizure involves the whole body (Holmes, 1997:32).

- **Generalized Seizures**

According to (allwood & Gagiano, 2000:214-217) generalized seizures are subdivided into the following clinical types of complex seizures.

A. Absence seizures

Absence seizures are also referred to as a petit mal attack. Absence seizures are characterized by short brief interruptions in consciousness. An absence seizure may be seen as a stare, small movement of the eye, or fluttering the eyelids and the attack start and end abruptly, lasting approximately 2-20 seconds. The patient is not aware of the seizure activity during this time and there is no recall of the events.

B. Myoclonic seizures

Myoclonic seizures are characterized by quick, sudden muscular movements. These fast jerks can range from mild to sever and have different forms. These types of seizures are like being jerked by an electrical shock and occur at any age but usually begin around puberty or early adulthood. Myoclonic seizures are very brief, shock like muscular contractions that may occur alone or in cluster.

C. Atonic seizures

Atonic seizure is also called drop attacks. They are characterized by a quick loss of muscle tone. The muscles or body go limb. The patient suddenly drops and falls on the ground. This type of seizures can cause physical injury.

D. Generalized tonic- clonic seizures (Grand Mal)

These are the most universally recognized seizures. They often begin with sudden cry; if standing, the person will fall to the ground, losing consciousness, the body becomes quite stiff (clonic) shortly followed by jerking of the muscles (clonic). Breathing is shadow or temporarily suspended causing the lips and complexion to look gray /bluish. Saliva (sometimes also blood if they have bitten their tongue) may come out of the mouth, and there may be loss of bladder control. The seizures usually last approximately 2 minutes. It is followed by a period of confusion, agitation or sleep. Headache and soreness are common afterwards.

E. Tonic seizures

When a person experiences this phase, his/her trunk stiffens, the wrists contract, breathing stops, air is exhaled from the lungs, and eyes are half open,

while the eyelids and jaws are stiff. Groaning or grunting sounds may be made or an 'epileptic scream' may occur while air is exhaled from the lungs.

F. Clonic seizures

A person experiencing this phase begins with violent, rapid spasms which end in irregular jerks. These can be accompanied by loss of sphincter control. Respiration is resumed slowly and foam may appear at the mouth. The patient sometimes tends to bite his/her tongue or the inside of his/her mouth during a seizure and consequently the foam may be bloody.

- **Unclassified seizures**

An unclassified seizure is the seizure, which cannot be classified because there is lack of enough information to indicate what type of seizure it is (O Donohoe, 1994:9).

2.2.1.10 Prognosis of epilepsy

The etiology and the type of the epileptic syndrome are the main factors contributing to the prognosis (Sillanpää et al., 1999:535). More than 70% of patients on optimum treatment achieve long-term remission, usually within5years of diagnosis; the prospect of remission decreases as time elapses (Sander, 2003:211). Predictors of a good outcome include age at onset, number of early seizures (Brodie & Kwan, 2002:6). The terminal remission rate is suggested to be higher in patients with idiopathic or cryptogenic epilepsy (Oka et al., 1989:264). In patients with newly diagnosed LRE, 62% achieved a seizure-free period lasting at least 12 months. The follow-up period varied from two to 20 years (Mohanraj & Brodie, 2005:321). The risk for seizure recurrence after initiation of AED treatment increases if more than three seizures have occurred before the initiation of the treatment. An underlying neurological disorder or EEG with epileptiform abnormality also increases the risk for seizure recurrence. About 20-30% of PWE will suffer from seizures despite AED treatment (Kim et al., 2003:320).

2.2.1.11 Mortality of epilepsy

The overall mortality in patients with epilepsy (PWE) is two to three times higher than in the general population (O'Donoghue & Sander, 1997:17). Comorbidity, especially brain diseases, accidents during seizures, status epilepticus, and suicides increase the overall mortality (Hauser et al., 1993:466). Age and gender as well as the etiology of epilepsy have an influence on the mortality rate. Age is considered to be a factor that affects the mortality rate in PWE, but the findings have not been congruent. However, it has been suggested that mortality rates are higher in younger PWE (Harvey et al., 1993:601). The epilepsy type is also a factor that affects the mortality risk. In children with idiopathic epilepsy the all-cause mortality rate is lower than in children with LRE (Berg et al., 2004:1148).

Sudden unexpected death in epilepsy (SUDEP) is relatively common in PWE, and overall sudden unexpected death (SUD) is more common in epilepsy patients than in the general population. The incidence varies from 1/100 in severe refractory epilepsy to 1/1000 in well controlled epilepsy (O'Donoghue & Sander 1997:15). The incidence of SUD is over 20 times higher in PWE than in the general population (Ficker et al., 1998:1271). SUDEP is defined as sudden, unexpected, witnessed or non-witnessed, non-traumatic and non-drowning death with or without evidence of seizure and excluding status epilepticus, and autopsy not revealing the cause of death (Sperling et al., 1999:48). The risk factors for SUDEP include young age (20-40 years), alcohol abuse, psychiatric comorbidity, related medication, non-compliance and male gender, but healthy compliant patients may also die suddenly to SUDEP (Walczak et al., 2001:219).

2.2.1.12 Treatment of Epilepsy

The treatment of epilepsy relies more on control by antiepileptic drug therapy, because there is no cure for epilepsy. The aim of antiepileptic drug therapy is to gain the best quality of life by maximum control of seizures with minimal side effects (Thiele et al., 1999:682).However, it must be generally accepted that epilepsy is a long term condition, which will affect patients for the rest of their schooling career (Wylie, 1993:794).

It has been estimated that approximately 70% of patients with epilepsy acquire total control of their seizures with treatment (Allwood & Gagiano, 2000:221).While 30% of patients with epilepsy do not benefit from treatment. This means that the drugs do not have any effect on the seizures (Thiele et al., 1999:681).Treatment of seizures in the vast majority of patients takes the form of medication called anticonvulsant or antiepileptic drugs (Allwood &Gagiano, 2000:221). In a very few cases surgery may be an option. If the attempt to control seizures has failed, a special diet may be described. The explanation of three different forms of treatment of epilepsy follows.

2.2.1.12.1 Antiepileptic drugs

Antiepileptic drugs are traditionally used in the treatment of epilepsy. There are two families of AEDs: classic and newer. Classic AEDs include Phenobarbital, phenytoin, primidone, ethnosuximide, carbamazepine, benzodiazepines, and valproate (Herranz et al,. 1988:801). Newer AEDs, which include oxcarbazepine, gabapentin, lamotrigine, and sabril, reportedly have less toxicity than classic AEDs with respect to the central nervous system (Harden, 1997:118). These medications are available to control seizures, although the mechanisms of their actions are still unknown (Karch, 2002:314). It is important to know that the type of antiepileptic drugs prescribed will depend on the type of epilepsy and the individual's responses to a particular drug. Correct diagnosis is an essential prerequisite to prescription of drugs. It is equally important that a patient's response to drugs is closely monitored (Allwood & Gagiano, 2000:222). Side effects may be experienced when taking antiepileptic drugs, but if they are promptly recognized and treatment is modified accordingly, the side effects can be minimized (Michael, 1995:106).

Antiepileptic drugs must be taken as prescribed to maintain a steady state of medications in the blood stream. If the blood level of medication is too low, seizures may not be controlled. However, if the blood level is unnecessarily high, medication may have a toxic effect producing significant side effects (Laidlaw et al., 1993:544).

Treatment is usually started with a single medication. The starting dose and the rate at which the dosage is increased depend on the occurrence of side effects. The medication levels in the blood are monitored because the rate of drug absorption varies among patients. Changing to another medication may be necessary if seizure control is not achieved or if toxicity makes it impossible to increase the dosage. The medication may need to be adjusted because of concurrent illness, weight changes, or increases in stress. Sudden withdrawal of these medications can cause seizures to occur with greater frequency or can precipitate the development of status epilepticus (Kwan & Brodie, 2001:1257)). After five years of adequate AED treatment about 70% of patients achieve remission (Cockerell et al. 1997:42). Discontinuation of medication should be considered after 3-5 years of seizure freedom and if considered appropriate should be done slowly in order to minimize the risk of relapse (Keränen & Kälviäinen, 1997:1751).

2.2.1.12.2 Surgery

Surgery for epilepsy refers to removal of the part of the brain in which seizures originates ((Johnson & Parkinson, 2002:16). Several complications can arise from surgery and thus it is usually reserved for the most severe cases where drug therapy has been documented as ineffective (Depaepe et al., 2002:18). As surgery involves removing part of the brain in which a seizure originates, it has wide complications. Surgery may result in personality changes and intelligence alterations. Vision may also be affected and there may be impaired language skills and memory problems. Surgery for epilepsy can be quite effective and the success rate is high. Although this may sound encouraging, the surgery itself can result in the onset of depression. In cases in which seizures were successfully reduced by at least 90%, the most commonly reported postoperative emotion was depression (Spiegel et al., 1996:33).

Vagus Nerve Stimulation

Another relatively new treatment, which can be classified under surgical therapy, is vagus nerve stimulation. In this treatment an electrical pacemaker is implanted into the body in order to stimulate the vagus nerve at different frequencies, which result in an increased desynchronization in EEG. It can be

applied in severe intractable epilepsy cases and may be a possible alternative to callosotomy. However, it is contraindicated for patients with obstructive lung or heart diseases (Schachter & Saper, 1998:678).

2.2.1.12.3 Ketogenic diet

Ketogenic diet is a high fat, adequate protein, low carbohydrate diet designed to minimize epilepsy. It has been used for many years as the alternative treatment for patients with difficulty to control seizures. The diet has been reported to control seizures in more than 70% of patients who had seizures, which were difficult to control. .The diet forces the body to enter ketosis, a state in which the brain uses ketones rather than glucose for energy. In this state seizure frequency and severity have been clinically shown to decrease, but the exact mechanism remains unknown (Johnson & Parkinson, 2002:17).

However, it is stated that ketogenic diet may have unpleasant side effects which include weight loss, diarrhea which can lead to dehydration, abdominal pain, vitamin deficiencies and lethargy (Thiele et al., 1999:694). These factors should be taken into consideration before subjecting a patient to ketogenic diet.

2.2.1.13 Social and psychological impact of epilepsy

Epilepsy has many non-medical impacts on the people with epilepsy. The impacts of epilepsy rest not only on the individual patient, but also on the family and indirectly on the community. The burden of epilepsy may be due to the physical hazards of epilepsy resulting from the unpredictability of seizures; the social exclusion as a result of negative attitudes of others toward people with epilepsy; and the stigma, as children with epilepsy may be banned from school, adults may be barred from marriage, and employment is often denied, even when seizures would not render the work unsuitable or unsafe. Furthermore, epilepsy is a disorder associated with significant psychological consequences, with increased levels of anxiety, depression, and poor self-esteem compared with people without this condition (Baker, 2002:28). Here we discuss some of the aspects of the psychosocial impacts of epilepsy.

2.2.1.13.1 Impact on the family

Diagnosis of epilepsy in their child leads to stress in parents, resulting in a higher divorce rate. Focus by parents on the child with epilepsy can result in poor relationships between the child with epilepsy and siblings and psychological difficulties among siblings. Such focus can also affect family cohesion and relations between the family and their community. It can result in the people with epilepsy growing up to make a poor parent themselves (Devinsky, 2001:180).

2.2.1.13.2 Impact on education

A higher prevalence is found in people with epilepsy of learning disabilities and memory problems, often caused by co-morbidities such as brain damage. Attention deficits occur during seizures, especially during absence seizures in school-children. Antiepileptic drug side-effects of drowsiness and short attention span can affect educational achievement, and are commonly exacerbated by polytherapy (Devinsky, 2001:212).

2.2.1.13.3 Impact on social relationship

Social isolation and poor social adaptation can result from perceived stigma or over-dependency caused by parental overprotection. The people with epilepsy also often fears embarrassment by a seizure, causing reluctance to engage in social interaction, with concomitantly low self- esteem and academic under-achievement. These can result in a shrunken support network, fewer friends, a lower likelihood of marriage and greater likelihood of anti-social behavior (Buchanan, 2002:115).

2.2.1.13.4 Impact on employment

Unemployment is higher among people with epilepsy, by up to 50% in developed countries if seizures are not fully controlled and up to 100% in developing countries. This can be caused by employer prejudice resulting from stigma and a lack of information, a belief that machinery should be avoided by the people with epilepsy, inability to drive, or poorer academic achievement. Disclosure to an employer is therefore a difficult decision. Unemployment commonly results in lower self-esteem, lessened well-being and a lower quality of life (Bisho & Hermann, 2000:117).

2.2.1.13.5 Impact on sexual relationship

Satisfactory relations with the other sex require self-esteem. Low self-esteem in a people with epilepsy can result in failure to establish good sexual relationships. Brain damage and/or antiepileptic drugs may also result in anhedonia. Head injury may result in reduced libido and erectile dysfunction. Inadequate sexual functioning may result in depression, marital distress or self-aversion (Cole & Cole, 1999:249).

2.2.1.13.6 Impact on quality of life

Quality of life is "the degree to which a person's cognitive, emotional, social and spiritual experience of life is positive". Quality of life for a people with epilepsy can be reduced by higher physical morbidity rates, seizure-related accidents, antiepileptic drug side effects, more social withdrawal, increased social isolation, poorer sexual relationships, and lower marriage rates. Quality of life for the people with epilepsy may also be reduced by higher psychological morbidity rates, anxiety and depression, lower self-esteem, increased helplessness, defensive aggressiveness, poorer educational achievement and higher unemployment or under-employment (Jacoby& Baker, 2000:4).

2.2.1.13.7 Impact on women

Epilepsy causes unique problems for women. Seizure frequency and severity can be exacerbated by menstrual hormonal changes. Women with epilepsy often experience anxieties concerning children. Doubts about seizures being triggered by labour, their ability to care for their child, the possibility of inheritance of epilepsy and birth defects are compounded by fears about antiepileptic drug side effects and the mother's ability to be a good role model during child- rearing (Gumnit, 1997:177).

2.2.1.13.8 Impact on the self

A person's body is an integral part of their self- percept, or identity. Finding that, the brain does not function as others' brains do forces a change in body percept and therefore self-percept. The adolescent's question "Who am I?" recurs, which can be traumatic for an adult. Lower self-esteem can result from perception

of the self as less competent than others and self-categorisation as an "epileptic" and consequent perception of stigma (Wright, 1993:57). Diagnosis can result in many psychological difficulties. Grief at the realization of being disabled goes through stages of shock, anxiety, bargaining and denial, mourning and depression, internalized anger, externalized anger, acknowledgement and finally acceptance and adjustment (Buchanan, 2002:107). Other emotional states which may recur include anxiety arising from the unpredictability of seizures and feelings of lack of control and helplessness. Guilt can result in affective disorder. Anxiety combined with guilt can grow to become depression. Lowered energy and vitality may result from disrupted sleep patterns, while defensiveness can lead to a need to conceal, anger and bitterness (Mendez, 1996:25).

Epilepsy is a "hidden" or "invisible" disability, as no symptoms are apparent except during a seizure. It often has no apparent cause, which results in a fear of the unknown. Consequently it is easier to deny, resulting in poor compliance with treatment and a refusal to alter life-style. Being "hidden" makes it more difficult for others wishing to interact, and concealment makes it difficult to find other people with epilepsy for support. Being "hidden" may lead to accusations of hypochondria and misbehavior as well as erroneous self-perception (Falvo, 2005:14).

2.2.1.13.9 Stigma

People with disabilities are among the most vulnerable in any society. This vulnerability is even greater among those with hidden disabilities such as epilepsy and other neurological conditions and intellectual disabilities. Although the vulnerability of people living with epilepsy may be partly attributed to the disorder itself, ''all chronic Medical conditions have an impact on daily life, but the Impact of epilepsy is greater"; the particular stigma associated with epilepsy brings as susceptibility of its own. Stigmatization leads to discrimination, and people with epilepsy have been the target of prejudicial behavior in many spheres of life, over many centuries and in many cultures (Pahl & Bore, 2005:72).

2.2.2 Depression disorder

2.2.2.1 Background

The condition that today we label depression has been described by a number of ancient writers under the classification of "melancholia". The first clinical description of melancholia was made by Hippocrates in the fourth century B.C. He also referred to swings similar to mania and depression (Chapman & Perry, 2008:22).

Even if known under different names throughout human history, the first to describe depression in the medical literature was the German psychiatrist Emil Kraepelin who in the early 20th century distinguished what he called “involutional melancholia” from the previously described manic-depressive psychosis (Hirshbein, 2006:195). Since then, much has changed in research and nosology, leading up to what we today call major depressive disorder (MDD).

However, the term “melancholia” has been used since much earlier, and at least since the 17th century, for what we today probably would call depression.

Depression is consider as one of the most prevalent diseases globally and an important cause of disability, and is responsible for as many as one of every five visits to primary care doctors; it occurs everywhere and affects members of all ethnic groups. The rates of depression are increasing, and the disorder is nearly twice as common among the poor as among the wealthy (Kleinman, 2004:952).

As early as 1975, Seligman described major depression as the “common cold” of psychiatry. Thirty years later, the situation has become even worse. Depression is currently affecting about 121 million people worldwide and the incidence of depressive symptoms increases in all groups of age (WHO, 2001:215).

2.2.2.2 Definition of depression

Depression has been defined generally as an affective condition, sometimes pathological, involving emotion of helplessness and hopelessness which can sometimes be overpowering and which is often accompanied by a general lowering of psychophysical activity (Rampund & Moore, 2000).

In the field of psychiatry, depression defined as recurrent disorder, consisting of discrete episodes of abnormal low mood, associated with functional impairment. The core symptoms of depression include depressed mood and/or loss

of interest (anhedonia).Vegetative symptoms include alteration in sleep (insomnia or hypersomnia), appetite (increase or decrease), and low energy. Cognitive symptoms include excessive guilt, hopelessness, helplessness, and suicidal ideation. Depression may also be associated with impaired concentration or even frank cognitive impairment. Sever depression may be complicated by psychosis; that is, hallucination and /or delusion (typically persecutory delusions or delusional of guilt) (Kaplan & sadock, 2003:358).

According to Diagnostic and Statistical Manual of Mental Disorders forth edition(DSM-IV) 'depression' as a clinical term is a syndrome that describes a cluster of symptoms which are generally comprised of depressed mood, loss of interest, anxiety, sleep disturbance, loss of appetite, lack of energy and sometimes suicidal thoughts (APA, 1994).

Also depression is known to be an extreme, persistent and recurrent condition that interferes significantly with the ability of the individual to function within his or her environment, and one's vulnerability to depression is determined by the interplay of multiple genes and the environment (Solomon et al., 2000:231).

2.2.2.3 Epidemiology and prevalence of depressive disorder

Depression is one of the most common psychological conditions with a lifetime prevalence has been estimated to be between 8% – 12% for men and as much as 20% – 25% for women in the adult population (Kaplan et al., 1994:415). General prevalence is between 9-20% (Andrade, et al., 2003:16). The onset of depression can begin in childhood (Reinherz et al., 1999:504), and it is now thought that the risk of developing depression is highest between the ages of 15 – 19 and 25 –29 (Burke et al., 1990:513).

The prevalence of depression is highest among females than males with a ratio of approximately 2:1and usually begins in a person's 20s or 30s (Morrison, 2002:142). Rates in men and women are highest in the 25 to 44 year old age group, whereas rates are lower for both men and women over age65 years (Chengappa, 2003:1640). However, it is now being viewed as a disorder that can occur at any age or life period, and the more recent research suggests that the prevalence, development, manifestation, or treatment response of depression in old age does not differ in any way from depression in the general population (Steffens et al.,

2000:603). Blacks were somewhat at less risk than whites, persons of a lower socioeconomic status were at greater risk than those who were better-off economically, and persons in urban area were at greater risk than persons in rural areas (Blazer, 1994:982).

2.2.2.4 Diagnosis of depression

Depression is a heterogeneous disorder and may be defined in different ways. Depression diagnosis based on the criteria established in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 1994). The DSM-IV is a frequently used classification system in psychiatric research. Depression in patients with epilepsy can present as major depression, dysthymic disorder, manic depression and minor depression (Kanner, 2003:390). These four types will be discussed in the types of depression.

2.2.2.5 Symptoms of depression

According to (Maj and Srtorius, 2002:222-226), depression symptoms classify as the following:

A. Depressed mood

Depressed mood is the hallmark of all depressions, regardless of their additional specifying features and of their intensity, duration and variation. It is a sustained emotional state that is characterized by sadness, low morale, misery, discouragement, hopelessness, emptiness, unhappiness, distress, pessimism and other related affects that, if assessed in isolation, cannot easily be delineated from the emotional states universally experienced by all human beings when faced with life's adversities.

The main differentiating features of the depressed mood from the non-morbid emotional reaction of sadness are as follows. The intensity and the depth of the pain become so unbearable that often the death wish provides comforting remedy.The sadness and the associated feelings pervade all domains of personal life and impact on the individual's social performance. The depressed mood lasts long enough to be felt as an unalterable affective state. It may occur spontaneously but, even if it has been triggered by a life event, it evolves autonomously, dissociated from that event, and resists being changed through reasoning or

encouragement. It is associated with Cognitive and somatic symptoms (guilt, self-reproach, suicidal thoughts and a variety of unpleasant and painful bodily sensations) that are not commonly encountered in non-depressed mood states.

B. Anhedonia- loss of interest

Anhedonia and loss of interest are symptoms closely associated with the depressed, varying in intensity along with the feeling of sadness. Patients are unable to express emotions, even their own psychic pain. They are unable to draw pleasure from previously enjoyable activities or to preserve their interests and affections. In sever cases they disregard and abandon most of the things they valued in the life.

C. Cognitive disturbance

Difficulty in concentrating, negative thoughts, low self-esteem and self-confidence, hopelessness, self-depreciation and self-reproach, a sense of worthlessness and sinfulness, negative outlook on the world and suicidal thoughts are some of the most common cognitive features accompanying the depressed person's state of feeling. If these thoughts are many, persistent and not amenable to change by reason, they are regarded as delusions and qualify for the diagnosis of mood-congruent (delusional-psychotic) depression. When thoughts are discordant with the depressed mood, and delusions of persecution, thought insertion, thought broadcasting and other similar delusions predominate, then mood-incongruent(delusional- psychotic) depression is diagnosed. Whether these cognitive disturbances result in depressed mood, as the cognitive theorists view it, or they are the derivatives of the depressed mood state, is still a debatable issue of limited interest to the practicing physician.

D. Psychomotor disturbance

Psychomotor disturbances have the advantage of being readily observed and even objectively measured. They include, on the one hand, agitation psychomotor disturbances have the advantage of being (hyperactivity) and on the other, retardation (hypoactivity). Although agitation, usually accompany by anxiety, irritability and restlessness, is a common symptom of depression. In contrast,

retardation, manifested as slowing of bodily movement, mask like facial expression, lengthening of reaction time to stimuli, increased speech paucity and at its extreme as an inability to move or to be mentally and emotionally activated (stupor), is consider a core symptom of depression. Their presence is currently being used as a diagnostic symptom of melancholic type of depression in DSM IV and the sever depression with somatic symptoms in International Classification of Disease.(ICD-10).

E. Vegetative symptoms

Vegetative symptoms constitute the most biologically rooted clinical feature of depressive disorders and are commonly used as reliable indicators of severity (sever depression with somatic symptoms in ICD-10 and melancholia in DSM-IV). It manifested as profound disturbances in eating; anorexia and weight loss, or the reverse, bulimia and weight gain, in sleep (insomnia or hypersomnia), in sexual function decreased sexual desire or in minority of cases the reverse, loss of vitality, motivation, energy and capacity to respond positively to pleasant events. Additionally, concomitant bodily sensation usually diffuse pains, and complaints of fatigue and physical discomfort are reported.

2.2.2.6 Course and prognosis

Depressive episode may begin suddenly or develop slowly and may occur just once or many times throughout a person's life (Thompson, 2007:387), but most probably depression appears to evolve over time. Depression is an episodic disorder ,following the first depressive episodes, subsequent episodes can be triggered by much more minor life situation or even occur spontaneously with no stressor present at all, most individuals suffering from a depressive episodes will have a recurrence, with recurrence risk greater among those with early onset disease (WHO, 2006), of all people who experience one major depressive episode, 80-90%will experience another within the following 2 years; and 50%of those people will experience further recurrence, with recurrence; the depressive episode evolve into major depression, and each recurrence increase the risk of the disorder becoming chronic, which in turn increase the risk of disability and suicide (Thompson, 2007:392). An untreated depressive episode lasts 6 to 13 months; most

treated episodes last about 3 months. The withdrawal of antidepressants before 3 months has elapsed almost always results in the return of the symptoms. As the course of the disorder progresses, patients tend to have more frequent episodes that last longer (Akiskal, 2005:94). Suicide risk increase during depression: between 10 and 15% of individual who have been hospitalized at some time due to depression eventually commit suicide, and 60%of all suicide occur among people suffering from depression (Thompson, 2007:393).

2.2.2.7 Comorbidity

Depression often co-exists with other illnesses. Such illnesses may precede the depression, cause it, and/or be a consequence of it. It is likely that the mechanics behind the intersection of depression and other illnesses differ for every person and situation. Regardless, these other co-occurring illnesses need to be diagnosed and treated. Anxiety disorders, such as post-traumatic stress disorder (PTSD), obsessive-compulsive disorder, panic disorder, social phobia and generalized anxiety disorder, often accompany depression (Devane et al., 2005:350).

In a National Institute of Mental Health (NIMH)-funded study, researchers found that more than 40 percent of people with PTSD also had depression at one-month and four-month intervals after the traumatic event (Shalev et al., 1998:633). Alcohol and other substance abuse or dependence may also co-occur with depression. In fact, research has indicated that the co-existence of mood disorders and substance abuse is pervasive among the U.S. population (Conway et al, 2006:253). Depression also often co-exists with other serious medical illnesses such as heart disease, stroke, cancer, HIV/ AIDS, diabetes, and Parkinson's disease. Studies have shown that people who have depression in addition to another serious medical illness tend to have more severe symptoms of both depression and the medical illness, more difficulty adapting to their medical condition, and more medical costs than those who do not have co-existing depression(Cassano & Fava, 2002:851). Research has yielded increasing evidence that treating the depression can also help improve the outcome of treating the co-occurring illness (Katon and Ciechanowski, 2002:861).

2.2.2.8 Factors related to depression

The etiology of depression is multifactorial in origin, where genetic, cultural, biological, social and environmental factors all interact to produce the full blown picture of the disorder.

2.2.2.8.1Biological and medical factors

- **Hereditary factor**

The incidence of depression is significantly higher among blood relatives than the general population (Carson & Butcher, 1992:59). First-degree biological relatives of people with Major Depression Disorder (MDD) are 1.5 to 3 times more likely to develop MDD than the general population (APA, 2000). More recently Fitezpatrik and Sharry (2004) have indicated that what is inherited is not a single gene, but a genetic vulnerability that may be activated by environmental factors.

- **Biochemical**

A growing body of evidence since the 1960s strongly suggests that biochemical factors are a factor in depression (Mulder et al., 2003:98). Neurotransmitters, in particular, which mediate the transfer of nerve impulse between neurons, seem to figure prominently (Stimmel & Aiso, 2005:27). The research in this area was sparked by the observation that certain medical interventions, such as electroconvulsive therapy, antidepressant drugs and lithium carbonates seemed to ameliorate depression by influencing the concentration of neurotransmitter chemicals at the synapse (Carson & Butcher, 1992:61). It was also noted that depression possessed, in many cases, a biological component, such as insomnia, loss of appetite, fatigue, which lent credence to this hypothesis (Kplan & Sadock, 1998:132). Stimmel & Aiso (2005) confirm the psychiatric view that biochemical factors, particularly the influence of neurotransmitters, are central to depression, with recent research focusing on the action of serotonin and dopamine, as well as norepeniphrene.

- **Neuroendocrine disturbance**

With regard to neuroendocrinal factors, research has focused on the role of the hormone cortisol, because of high levels of this substance in the blood plasma of people suffering from major depression (Carson& Butcher, 1992:60).More

recent studies that increased cortisol levels, probably caused by stressful life events, may themselves lead to a lowering of neurotransmitter levels, such as serotonin, which then leads to depression (Cowen, 2002:99).

- **Medication side effects**

A number of drugs can produce a depressive syndrome as a side effect. Common ones include anxiolytics, antipsychotic, and sedative-hypnotics. Antihypertensive medications such as propranolol and reserpine have been known to produce depressive symptoms (Schatzberg, 2005:23).

- **Chronic co morbid disease states**

Chronic disease states are strong psychological stressors and are also associated with risk factors that predispose patients to develop comorbid depressive disorders. Patients with severe, chronic and often fatal disease states, for example, neurological and cardiovascular disease states, are more susceptible to suffering from a co- existing depressive disorder (McCoy, 1996:39).

2.2.2.8.2 Factors related to gender

Depressive disorders are known to affect more women than men and many studies have deduced, more specifically, that the rates of depressive disorders evident in women are twice as high as those observed in men (Kessler, 2003:13).The gender differences in prevalence have stimulated much theorizing and research, including the suggestion that biological factors such as hormones play a role (Ussher,2002:309).Other hypotheses and research centre around social labeling, social inequalities and lack of social support as factors in women's depression. It has also been suggested that women tend to ruminate about their depressed condition and its causes, which only exacerbates their condition. Men, on the other hand, perhaps because of socialization, tend to respond actively to depressed mood by escapist behaviors (like playing sport) that tend to alleviate their depression (Nolen-Hoeksema, 1987:259). Kornstein (2001) explained the higher prevalence of Depressive Disorders in females, relative to males, in terms of the following three factors:

1- Females seek help for Depressive Disorders more readily than males do or they are more likely to respond to questioning about the condition in a way that reports their current and past depressive episodes.

2- Biological theories have considered variations in brain structure and function, which suggest differences in reproductive hormones amongst females and males.

3- Psychosocial factors such as differences in socialization, stress, coping techniques and styles.

2.2.2.8.3 Psychosocial factors

A. Stress factor

A large body of research has indicated that stress may lead to biochemical changes in the brain, which in turn induces depression (Van Praag et al., 2004:102). This phenomenon is particularly applicable to major depression. Beck (1967), in his pioneering research, contended that stress of various kinds was related to all types of depression. The most frequent kinds of stress seem to be:(a) situations that lower self-esteem (b) situations where a person is frustrated in the reaching of a certain goal (c) a physical disease or disability (d) any single stressor of overwhelming magnitude (e) multiple stressors (f) insidious stressors of which a person seems unaware, such as a member of police who has grown hardened to traumatic situation (Beck, 1967:77).

In recent years, stress in the form of sexual abuse (past or present) and stress resulting from HIV/AIDS has been associated with depression (Lewis, 2004). In similar vein, stress from partner abuse has been associated with depression (Fowler & Hill, 2004). Stress in the form of stroke and rheumatoid arthritis is also related to depression (Bartlett et al., 2003).

Stress is also a factor in the over fifty five age group, particularly in the form of loss (of (Wynchank, 2004). Multiple stressors that feature most prominently in breakdowns are as follows: failure to meet male or female role demands, change in marital relationships, relocation (often involving a change of a job), facing a denied reality, physical illness, failure in job performance, failure of children to meet goals set by parents, increase responsibility, damage to social status and bereavement (Carson &Butcher, 1992:63).(spouse or job), health problems and lack of social support.

B. Personality vulnerability

People who display the personality dimensions of dependency and self criticism seem particularly vulnerable to depression and people who are both dependent and self- critical seem to experience very intense depression (Hammen et al., 1985:308).There seem to be a link between people with a tendency to anxiety and depression (Kaplan & Sadock, 1998:135). People who to see problems as frustration and not as challenges may also be candidates for depression (Hirschfeld et al., 1989:345). Blatt (1995) argued convincingly that intense perfectionism is a personality characteristic associated with depression and that more extensive therapy may be necessary for intensely perfectionist people.

C. Psychodynamic factor

The psychodynamic understanding of depression defined by Sigmund Freud and expanded by Karl Abraham is known as the classic view of depression. That theory involves four key points: (1) disturbances in the infant and mother relationship during the oral phase (the first 10 to 18 months of life) predispose to subsequent vulnerability to depression; (2) depression can be linked to real or imagined object loss; (3) introjections of the departed objects is a defense mechanism invoked to deal with the distress connected with the object's loss; and (4) because the lost object is regarded with a mixture of love and hate, feelings of anger are directed inward at the self(Kaplan& Sadock, 2007:140).

D. Cognitive factor

According to cognitive theory, depression results from specific cognitive distortions present in persons susceptible to depression. Those distortions, referred to as depressogenic schemata, are cognitive templates that perceive both internal and external data in ways that are altered by early experiences.

Aaron Beck postulated a cognitive triad of depression that consists of (1) views about the self "a negative self-precept"; (2) about the environment "a tendency to experience the world as hostile and demanding", and (3) about the future "the expectation of suffering and failure". Therapy consists of modifying these distortions (Kaplan & Sadock, 2007:138).

E. Feeling of helplessness and hopelessness

These feeling have been postulated by many theoretical paradigms as feature of depression. Perhaps the best known comes from the behaviorist Seligman (1973), who experimented with dogs and electric shocks. Seligman (1973) found that when the dogs were not permitted to escape the shock, they became helpless and hopeless, even when it became possible to escape the shocks. Seligman reasoned that people who see no way out of their difficulties will subside into similar helplessness and hopelessness.

Seligman (1973) suggest that, since condition is a learned one, it can also unlearn. In more recent studies, Hedilen and strandmark (2001:144) found hopelessness to be a feature of the depression of elderly women, and Breitbart et al.(2000:514) suggest that hopelessness is related to depression and desire for death in terminally ill cancer patients.

F. Interpersonal factor

Interpersonal theory emphasizes the psychosocial nature of depression. Current interpersonal relations –support, stress and burden related to them– play major role in protecting or predisposing subjects to depression. The main application of interpersonal theory, IPT psychotherapy focuses on mood and events in relation to interpersonal context. For all people, upsetting events evoke a sad or demoralize mood. Subjects who are biologically or environmentally predisposed, disturbing life events can trigger an episode of depression. Examples of such life events are the death of significant other, which could promote depression through complicated bereavement or problematic relationship burdening subject by role dispute or role change (Markowitz, 2005:321).

2.2.2.9 Types of depressive disorder

There are several different types of depression. Often they are distinguished by their prevalent features, duration and severity of symptoms. Most of these kinds of depression are defined by the Diagnostic and Statistical Manual of Mental Disorders (DSM), an American Psychiatric Association publication which describes the standard criteria for different types of psychiatric disorders. The

following three different kinds depression are distinct depressive disorders describe in the DSM.

2.2.2.9.1 Major depression disorder

Also known as (Clinical Depression), the major depressive episode (MDE) is certainly the main feature of MDD in the DSM-IV (American Psychiatric Association, 2000). According to APA (2000) the depressive episode is characterized by depressed mood or loss of interest or pleasure in nearly all activities, for a period of two weeks or more, accompanied by four or more of the following:

- Insomnia or hypersomnia.
- Sudden weight loss or weight gain associated with appetite increase or decrease.
- Psychomotor agitation or psychomotor retardation.
- Fatigue or loss of energy.
- Feelings of worthlessness or excessive or inappropriate guilt.
- Diminished ability to think or concentrate, or indecisiveness.
- Suicidal ideation.

It is a common disorder, with lifetime prevalence of 15% overall in men and women but as high as 25% or higher in women (Kaplan & Sadock, 1998:125).

2.2.2.9.2 Dysthymic disorder

Dysthmia is characterized by depressed mood most of the day over a long period of time, lasting for at least two years(one year in adolescent and children)(American Psychiatric Association, 1994). At least two of the following symptom must be present poor appetite or over eating, insomnia or hypersomnia, low energy or fatigue, low self steam, , poor concentration, difficulty of decision making and sense of hopelessness, and during the two years the patient never to be free of the symptoms, for more than one month period, and no major episode has been present during the first two years (Lemlin et al.,1997:38). Dysthmia is identified by the presence of a steady state of symptoms which are less sever than for major depressive disorder(Kaplan & Sadock, 1998:128).

2.2.2.9.3 Manic depression

Now known as Bipolar Disorder, this kind of depression includes period of mania and depression. Cycling between these two states can be rapid or only mania can be present without any depressive episodes. A manic episode consists of a persistent elevated or irritable mood that is extreme, which lasts at least one week. At least three (four if only irritable mood) other features are also present:

- Inflated self-esteem or grandiosity
- Decreased need for sleep (e.g., feels rested after only 3 hours of sleep)
- More talkative than usual or pressure to keep talking
- Flight of ideas or subjective experience that thoughts are racing
- Distractibility (i.e., attention too easily drawn to unimportant or irrelevant external stimuli)
- Increase in goal-directed activity (at work, at school, or sexually) or psychomotor agitation
- Excessive involvement in pleasurable activities that have a high potential for painful consequences (e.g., engaging in unrestrained buying sprees, sexual indiscretions, or foolish business investments) (DSM-IV, 1994).

2.2.2.10 Other types of depression disorders

2.2.2.10.1Minor depressive disorder

Involve at least two but less than five symptoms that are identical with MD in duration, but involves less impairment. Depressed mood or loss of interest must be one of the symptoms. This disorder is relatively common in primary care and in outpatient mental health setting (Banazak, 2000:784).

2.2.2.10.2 Recurrent brief depression

According toICD-10, to make the diagnosis of RBD,depression should have occurred about once a month over the past year, and each episode should have lasted less than 2weeks(typically2–3days with complete recovery), not having occurred only in relation to menstrual cycle and otherwise fulfilling the symptom criteria for a mild, moderate or severe depressive episode. The risk for manic episode is low and thus it may not fall into the rapid-cycling form of bipolar disorder (Angst, 1994:21).

2.2.2.10.3 Psychotic (Delusional) depression

This subtype of depression is listed as severe episode with psychotic symptoms in ICD-10 and major depression with psychotic features (mood-congruent and mood-incongruent) in DSM-IV. It is also commonly cited in the literature as psychotic or delusional depression (Johnson et al., 1991:1075). Clinically this subtype is identified by the presence of delusions in conjunction with psychomotor disturbances, vegetative symptoms and occasional hallucinations. Depending on the delusional content, distinction is made between mood-congruent and mood-incongruent forms (Nelson & Davis, 1997:1498).

2.2.2.10.4 Melancholic depression

Melancholia is the oldest diagnostic term used in psychiatry and is characterized by vegetative disturbance and other clinical features that indicate a profound dysfunction of neurobiological mechanisms (Kaplan& Sadock, 1998:130). The main features of its clinical identity include sever anhedonia (lack of reactivity to pleasurable stimuli), loss of appetite, insomnia, diurnal variation (with depression at its worst in the morning), psychomotor disturbances and decreased responsiveness to the environment (Schotte et al, 1997:186).

2.2.2.10.5 Postpartum depression

Postpartum depression is diagnosed if a new mother develops a major depressive episode within one month after delivery. It is estimated that 10 to 15 percent of women experience postpartum depression after giving birth (Altshuler et al., 1998:29).

2.2.2.10.6 Atypical depression

Sub-type of Major Depressive or Dysthymia, the specifying criteria for atypical depression, according to DSM-IV, are basically the reverse vegetative-somatic symptoms most commonly encountered in typical melancholia (i.e. hypersomnia instead of insomnia, hyperphagia and weight gain instead of anorexia and weight loss), while the mood is responsive to actual or potential positive events. Excessive sensitivity to rejection is also listed as a criterion. The symptoms

have to predominate in the past recent 2 weeks of an episode of major depression or during the past 2years of dysthymia.

2.2.2.10.7 Seasonal affective disorder (SAD)

This is characterized by the onset of a depressive illness during the winter months, when there is less natural sunlight. The depression generally lifts during spring and summer. SAD may be effectively treated with light therapy, but nearly half of those with SAD do not respond to light therapy alone. Antidepressant medication and psychotherapy can reduce SAD symptoms, either alone or in combination with light therapy (Rohan et al., 2004:273).

2.2.2.10.10 Catatonic depression

Sub-type of Major Depressive characterized by at least two of the following according to DSM4:

- Loss of voluntary movement and inability to react to one's environment.
- Excessive movement (purposeless and not in response to one's environment)
- Extreme resistance to instructions/suggestions or unable/unwilling to speak
- Odd or inappropriate voluntary movements or postures.
- Involuntary repeating someone's words or movements in a meaningless way.

2.2.2.11 Burden of the disease

The World Health Organization determined that mental illness is one of the greatest causes of disability universally. Furthermore, five out of the ten leading causes of disability worldwide can be attributed to psychiatric disorders. The following psychiatric disorders are implicated: MDD, Schizophrenia, Bipolar Disorder, Alcohol use disorder and Obsessive compulsive disorder (WHO, 2001:211). Depression is among the leading causes of disability in the world and is expected to be the second leading cause of disability worldwide by 2020 (Murray & Lopez, 1997:119). There is evidence that the impact of depression extends far beyond the core symptoms and affects the individual's quality of life including the ability to function socially as well as maintaining and enjoying work, family and

other social relationships (Skarsater, 2003:153). The World Health Organization reports that depression is one of the disorders causing increased health care costs due to unnecessary investigations and inappropriate or non-specific treatments (WHO, 2001:212). Individuals with depression utilize health care services in the general medical and mental health care sector three times as often as non-depressed individuals, even after controlling for medical comorbidity (Shapiro et al., 1984:972). Undiagnosed depression places a significant socio-economic burden on individuals, families and communities, in terms of increased service needs, lost employment, reduced productivity, poor parental care with the risk of transgenerational effects and, thus as a whole an increased burden on care givers (WHO, 2001). It is also associated with more functional disability than chronic medical illness (Wells et al., 1990:914). Suicides account for just less than 1% of all deaths, of which nearly two-thirds occur in depressed people. Suicide ideation is common among depressed patients, and 10-20%of those with ideation actually commit suicide (Conwell, 2001:32).

2.2.2.12 Treatment of depression

2.2.2.12.1 Treatment phases for depressive disorders

The APA (2000) divides the treatment of Depressive Disorders into three phases, namely: acute, continuation and maintenance phases.

- **The acute phase**

Refers to the first six to 12 weeks of therapy and the aims at this stage are to reduce symptoms and improve functionality. This is done in an attempt to produce remission of the current episode, which is essentially the main goal of the acute phase. Usually after about three months of treatment, most patients will exhibit complete remission of the current depressive episode or at least a noticeable reduction in symptoms. However, there are many factors that will cause response rates to vary significantly amongst patients, including the severity of the depressive disorder, environment and treatment methods (APA, 2000:33).

- **The continuation phase**

Follows the acute phase and consists of about four to nine months of therapy post-remission. Treatment during this phase aims to prevent relapse. The APA (2000) guideline recommends that all patients who have received acute phase treatment should be placed on continuation phase therapy in order to minimize the risk of relapse, even if the patient shows complete remission of depressive symptoms in the first three months (APA, 2000:33).

- **The maintenance phase**

(One or more years) intends to prevent recurrence of a new depressive episode in susceptible patients. Susceptible patients include individuals with a history of chronic depressive disorders. Some patients may even require chronic, indefinite therapy, although there is insufficient information on the optimal duration of chronic treatment or the physiological and mental implications of long-term antidepressant therapy (APA, 2000:34).

2.2.2.12.2Treatment Modalities for the Management of Depressive Disorders

- **Pharmacotherapy**

Antidepressant medication influences the concentration of neurotransmitters at the nerve synapse, notably serotonin and norepinephrine and is available in a number of varieties (Kaplan & Sadock, 1998:131). Scientists studying depression have found that these particular chemicals are involved in regulating mood, but they are unsure of the exact ways in which they work (Simon, 2002:214). Stimmel and Asio (2005) give a helpful summary of the evolution of antidepressant medication. The earlier tricyclic antidepressants were distinguished by their broad mechanism of action, but also by their many undesirable side effects. The next phase was the development of selective serotonin re-uptake inhibitors that act more specifically, had fewer undesirable side effects and were not fatal in overdose (Stimmel & Asio, 2005:921). Response rates to active antidepressant therapy do not vary across diverse patient populations and generally range from 50% to 70% (Trivedi et al., 2006:1243). For all classes of antidepressants, patients must take regular doses for at least three to four weeks before they are likely to experience a

full therapeutic effect. If a depressed patient fails to respond to a specific antidepressant or antidepressant class, this is not a prediction of a future failed response to either a different medication within the same class (in cases where a particular agent failed to elicit a response), or a different class (when various agents within the same class have not yielded a satisfactory response) (Kando et al., 2002:1253).

- **Psychotherapy**

Several types of psychotherapy or "talk therapy" can help people with depression; some regimens are short-term (10 to 20 weeks) and other regimens are longer-term, depending on the needs of the individual. Two main types of psychotherapies—cognitive-behavioral therapy (CBT) and interpersonal therapy (IPT)—have been shown to be effective in treating depression.

A. Cognitive behavioral therapy

Cognitive behavioral therapy has clearly been demonstrated to be an effective means of treatment for unipolar, non- psychotic depression (Kaplan & Sadock, 1998:131). The treatment is based largely on the work of Beck and his colleagues (Beck et al., 1979:189). Beck suggests that early human experience can lead to the formation of dysfunctional cognitions. In the face of stress, these cognitions are activated and in turn lead to what Beck calls "negative automatic thoughts ", negative in that they are unpleasant, automatic in that they race around a person's mind in an uncontrollable manner. These uncontrollable thoughts lead to other symptoms of depression: behavioral symptoms (withdrawal, loss of energy), motivational symptoms (loss of interest), emotional symptoms (anxiety, guilt, and feeling of worthlessness), cognitive symptoms (poor concentration, difficulty in making decisions) and physical symptoms (insomnia or hypersomnia, loss or increase of appetite). A vicious circle begins: more depression leads to more negative thoughts, which in turn lead to more depression.

The cognitive behavioral therapist intervenes in the vicious circle by questioning automatic thoughts and challenging the assumptions on which these are founded. The more positive thinking pattern begins to lift the depressed feelings and a process of cognitive restructuring takes place by education and the

transferring of skills learned into the person's environment through homework assignments (Beck, 1967:85).

B. Interpersonal psychotherapy

Clinical depression in Interpersonal Psychotherapy (IPT) is seen as involving three processes: symptom formation, social functioning, and personality dimensions (Carson & Butcher, 1992:57). IPT focuses on the first two. It explores the four problem areas commonly associated with depression: grief, role disputes, role transition and interpersonal deficits (Kaplan & Sadock, 1998:189).

- **Combination therapy**

It has been estimated that 75% of depressed patients are treated with pharmacotherapy and only 60% with psychotherapy (Olfson et al., 2002:114). Additionally, the same study deduced that from 1987 to 1997, the number of patients receiving antidepressant treatments doubled, whereas there was a 15% decline in the number of individuals receiving psychotherapy. Thase (2000) stipulated that the implementation of combined psychotherapy and pharmacotherapy might be more effective than either modality on its own (Thase, 2000). The APA (2000), in turn has deduced that pharmacotherapy and psychotherapy have comparable efficacies; however, this institution still suggests that pharmacological treatment may be more useful for more severe cases, especially in the acute phase.

- **Electroconvulsive therapy**

Electroconvulsive treatment was developed 70 years ago and since then it has been used as a treatment for mental disorders. It has been found to be effective treatment for severe and psychotic depression and should be considered for MDD patients who have medication resistance or when rapid relief of depressive symptoms is needed e.g. severe suicidality (Rami et al., 2004:467).

- **Light therapy**

Light treatment (phototherapy) is most closely associated with the treatment of seasonal affective disorder. There are a number of devices used in light therapy; the most researched being the light box, with white light. Depressive symptoms usually respond within 2–4 days, although relapse is common if treatment is discontinued. The mechanism of action of light therapy is not understood. Side-effects include headaches, eyestrain, irritability and insomnia (Kasper & Neumeister, 1998:273).

2.2.3 Depression and epilepsy

Depression is highly prevalent in epileptic population and is the most frequent co-morbid psychiatric disorder in patients with epilepsy (Kanner, 2003). Overall, the rate of depression in patients with epilepsy is significantly higher than that of the general population; it is also higher than rates of depression in patients with other chronic diseases such as diabetes or asthma (Ettinger et al., 2004:1011).

Depression in patients with epilepsy can present as major depression, dysthymic disorder, and minor depression(Kanner, 2003:390). The relationship between epilepsy and depression is controversial. Both agonistic and antagonistic relationships have been proposed, and it is likely that both types of relationships do exist in different individuals and possibly in the same individual at different times (Krishnamoorthy, 2003:46). Both disorders are characterized by dysfunctional episodes separated by intervals of normality and common pathogenic mechanisms are suspected.

2.2.3.1 Epidemiology

The prevalence of depression ranges from 20-55% in patients with recurrent seizures, and from 3-9% in patients with controlled epilepsy (Jacoby et al., 1996:152). The lifetime prevalence of depression in patients with epilepsy is estimated to be between 6% and30%, and up to 50% in patients followed in tertiary care centers (Kanner, 2003:388). While a 12-month incidence of depression is around 7 % (Begley et al., 1994:1235). This variation is due to using different diagnostic criteria or different rating scales in diagnosing depression and recruiting

epileptic patients with different seizure types, variable frequency and severity, and with different antiepileptic medications.

2.2.3.2 Diagnosis

Depression in epileptic patients does not necessarily follow the diagnostic criteria of DSM-IV or ICD-10. Depression in epilepsy is frequently identified clinically by structural or semi structural interview, but on some occasions the use of depression rating scales such as Beck Depression Inventory (BDI) is helpful. The BDI, which includes 21 self-report items, is a reliable diagnostic instrument for depression in epileptic patients (Karzmark et al., 2001:182).

2.2.3.3 Etiology

The etiology of depression in epilepsy has not been determined. The higher comorbidity of these 2 disorders may result from common pathogenic mechanisms in the 2 disorders. The biopsychosocial model can be applied for depression in epilepsy patients. The etiology is multifactorial and includes biological factors (genetic factors and neurotransmitter dysfunctions), psychosocial factors, seizure-related factors, and iatrogenic factors. These factors may operate individually or synergistically.

A. Biological factors

Decreased serotonergic and noradrenergic functions are responsible for depression. At the same time they facilitate the kindling process of seizure foci, exacerbate seizure severity, and intensify seizure predisposition in some animal models of epilepsy (Jobe, 1999:251). Also, genetic factors could play a role in comorbidity of depression and epilepsy because more than 50% of epileptic patients with depression have been reported to have a family history of psychiatric illness especially affective disorders (Robertson, 1987:253).

B. Psychosocial factors

Psychosocial factors experienced as a direct result of having epilepsy such as perceived stigma, fear of seizures, joblessness, lack of acceptance and adjustment to epilepsy; discrimination; lack of control in their life caused by

random occurrence of seizures; lack of social support and the need to make significant adjustments in life style, such as giving driving privileges and changing jobs have been of particular interest (Chaplin et al., 1990:157).

C. Seizure factors

Seizure factors include age of onset, seizure type, frequency and severity of seizures, status epilepticus, and laterality of the temporal lobe spike focus (Robertson, 1998:23). Depression has been identified more frequently in patients with seizures of temporal and frontal lobe origin (seizures involving the limbic circuit), with prevalence ranging from 19-65%, which is higher than those of the patients with generalized seizure disorders (Blumer, 1991:191).

D. Iatrogenic factors

Depression could be related to antiepileptic medications such as: phenobarbital, primidone, tiagabine, vigabatrin, felbamate, and topiramate. Depression could occur after epilepsy surgery, especially anterotemporal lobectomy (Savard et al., 1998:179).

2.2.3.4 Impact of depression in epileptic patients

Co-morbid depression can have significant physical, social and financial consequences, including increased drug use, poor quality of life, social disability, and mortality (Barry et al. 2000:571). Cramer, in an assessment of the impact of co-morbid depression on health care utilization and health care coverage by people with epilepsy in US, found that people with untreated depression used significantly more health resources of all types. Patients with untreated depression also varied significantly in terms of health care utilization according to the severity of their depression (Cramer et al., 2004:563).

Depression or psychological distress have been shown to be the strongest predictors of health-related quality of life, even including seizure frequency and severity, employment, or driving status (Gilliam et al., 2003:26). Interictal anxiety and depression can exert independent adverse effects on health-related quality of life (HRQOL). In addition, frequent, severe, and chronic seizures also reduce HRQOL, but appear less powerful predictors of HRQOL than interictal psychiatric

symptoms. Recognition and treatment of co-morbid depression and anxiety thus form an important consideration in improving quality of life in epilepsy (Johnson et al. 2004:544).

The collective data yield an average suicide rate of approximately 12% among people with epilepsy, compared with 1.1-1.2% in the general population (Jones et al., 2003:31). The lifetime prevalence of suicide and suicidal attempts is between 5-14.3% in people with epilepsy, and this rate has been reported to be 6 to 25 times higher in people with temporal lobe epilepsy than in the general population (Robertson, 1997). Suicide has one of the highest standardized mortality rates of all causes of death in persons with epilepsy (Gilliam & Kanner, 2002:9). The risk factors for suicide among epileptic patients include psychiatric comorbidity especially depression, family issues, physical health, personality, life stress and previous suicidal behavior (Jones et al., 2003:34).

2.2.3.5 Treatment

The general guidelines for management of depression in epilepsy include the following points.

A. Antidepressants

Management of depression in epilepsy with antidepressants involves three major issues:

a) Effect of antidepressants on seizure threshold.

b) antidepressant-anticonvulsant interactions.

c) Efficacy of antidepressants in this category of patient.

Virtually all non-MAOI antidepressants, including the newer antidepressants such as citalopram, paroxetine, reboxetine and sertraline lower the seizure threshold in varying degrees (Edwards, 1985:119). (Robenstein et al., 1993:289) suggested that SSRIs are less seizurogenic as compared to TCAs. Antidepressants and anti-epileptic drugs can affect each other's levels, with anti-epileptic drugs usually reducing antidepressant levels and antidepressants increasing anti-epileptic drug levels (Robertson, 1998:97).

B. Psychological therapies

Several models of cognitive behavior therapy, ranging from more generic applications to more specific models based on original research, have been applied in epilepsy. In a recent meta-analysis of psychological therapies in epilepsy however, (Ramaratnam et al., 2001:4) concluded that, "in view of the methodological deficiencies and limited number of patients studied, we have found no reliable evidence to support the use of treatments and further trials are needed".

The brief form of psychotherapy, group psychotherapy, patient support groups, relaxation therapy, and EEG biofeedback have all been shown to be effective.

2.2.3.6 Summary

Epilepsy is a neurological disorder of the central nervous system that predisposes individuals to experiencing recurrent seizures. A seizure is an involuntary alteration in behavior, movement, sensation, or consciousness resulting from abnormal neuronal activity in the brain. Its prevalence globally ranges from 5 to 8 per one thousand populations. The diagnosis and causes of epilepsy vary from patient to patient. Precipitating factors also differ from patient to patient. The two major seizure classes are partial seizures and generalized seizures. In a partial seizure epileptic activity begins and remains localized in one part of the brain, while in a generalized seizure epileptic activity involves the entire brain from the onset. Between70-80% of epilepsy patients suffer from seizures whose severity and frequency can be limited with the use of antiepileptic drugs. The remaining 20-30% of epilepsy patients suffer from seizures that are refractory to medication, and seek alternative treatment options that include surgery, vagus nerve stimulation, and ketogenic diet.

People with epilepsy may be more likely than other people to experience emotional, psychological, behavioral disorder and sever social isolation. Depression is the most common psychiatric comorbidity in patients with epilepsy and its range may reach up to 60% in people with epilepsy. The etiology of depression is multifactorial and results from complex interaction between biological as decrease in serotonin level, genetic, therapeutic, and psychosocial

factors, that present as various social and personal obstacles caused by the epilepsy, stigma, fear of seizures, joblessness, lack of acceptance and adjustment to epilepsy and also social discrimination practiced by some communities against patients with epilepsy. Treatment of depression in epilepsy depends upon antidepressant drug and psychotherapy.

2.2.4 Previous studies

Study conducted in Egypt by Hamed et al. (2012), the aims of the study were to characterize the relationship between depression and epilepsy-related seizures, treatment, hormonal and biological variables. For this study, 200 Egyptian adults (male = 100, female = 100) with epilepsy (mean age: 30.87 ± 7.88 years; duration of illness: 13.89 ± 7.64 years) and 100 healthy matched subjects for comparison were included Psychiatric interview, Beck Depression Inventory (BDI-II) and Hamilton Anxiety Rating Scale (HAM-A) were used to assess depression and anxiety. Blood levels of free testosterone, sex hormone binding globulin, prolactin, free thyroxin and thyroid stimulating hormone, serotonin, noradrenalin and adrenaline neurotransmitters were measured to assess endocrine and biological states. The result evolved that, depression is a common comorbid condition with epilepsy with an estimated frequency of 25.5% which is mostly of a moderate/severe degree (78.43%), mostly intermixed with anxiety (47.06%), psychotic features (19.61%), aggression (40%) and suicide (55%). Females with epilepsy had a higher frequency of depression compared to males (60.78% *vs* 39.22%).Compared to controls, higher scores on the BDI-II were observed with right-sided epileptic foci (P = 0.011), polytherapy (*P* = 0.001) and lack of control on antiepileptic drugs (AEDs) (*P* = 0.0001).

Another study conducted in USA by Asadi-Pooya & Sperling (2011) to evaluate the prevalence of depression and anxiety among patients with epilepsy and determines whether having other chronic somatic illnesses increases the prevalence. A cross-sectional questionnaire study was used. Two hundreds patients participated, with a mean age of 40.3±16 years. Adults with epilepsy were recruited in either the inpatient epilepsy monitoring unit or the outpatient epilepsy clinic at Thomas Jefferson University in 2006. Patients anonymously filled out a

questionnaire, included data about age, sex, education, having other chronic illnesses, and degree of seizure control. The Hospital Anxiety and Depression scale was used to define the presence or absence of anxiety and depression. The result show that, nineteen (9.5%) patients had depression and 49 (24.5%) had anxiety. Age, seizure control, and having other chronic illnesses did not have a significant relationship with either depression or anxiety. Gender was significantly related to anxiety, with females displaying greater frequency of anxiety than males. Depression was more frequent among epilepsy patients with less education.

Another study conducted by Ogunrin & Obiabo (2010) in Nigeria to assess the prevalence of depression in PWE and the impact of seizure variables on the depression scores by using a case-control study of randomly selected PWE attending a tertiary hospital in a metropolitan, Nigeria. A total of 152 randomly were included in the study. Beck Depression Inventory (BDI) and Hamilton Rating Scale for Depression (HRSD) were used for quantitative assessment of depression. The result evolved that, the prevalence of depressive symptoms was 42% and 45% using the HRSD and BDI and seizure control was the most potent predictor of depression. The study recommended by early detection and prompts management and good seizure control with an appropriate antiepileptic drug, may contribute to the prevention of depression in epilepsy.

Also there is study conducted in Turkey by Kutlu et al. (2010) to investigate the health-related quality of life (HRQOL), anxiety and depression states of patients with epilepsy. In this study a cross sectional design was used, and it was carried out in University Hospital Neurology Department. Sixty ambulatory patients with epilepsy and healthy, age and sex-matched control group of 33 people were included in the study. For this study, Short Form Health Survey, Beck Depression Inventory and Hamilton Anxiety Scale (HAM-A) were used to evaluate quality of life and psychological status of people with epilepsy. The results show that, the Short Form-36 Health Survey scores were significantly lower in all subscales in patients with epilepsy compared with the control group ($P<0.05$). Total scores for Beck Depression Inventory were 16.5±9.44 and 6.24±6.81 in patients and control groups, respectively. This difference was statistically significant ($P<0.05$). HAM-A were also found to be significantly increased in the epilepsy

group (P<0.05). Study concluded that, epilepsy significantly interferes with quality-of-life and psychologic health of patients and there is not any relationship except the seizure frequency and vitality in the patient group among variables such as educational status, follow-up period, age at onset of seizures, the duration of the disease, single or multiple antiepileptic drug use, and types of seizures with both health-related quality of life and psychologic health status.

Study of de Oliveira et al. (2010) conducted in Brazil to evaluate the frequency and intensity of psychiatric disorders in a group of temporal lobe epilepsy patients from a tertiary care centers.73 participants were included in this study. A neuropsychiatric evaluation was performed with the following instruments: Mini-disorders (49.3%). At assessment, 27.4% of the patients were depressed and 9.6 Mental State Examination (MMSE), structured clinical interview (MINI-PLUS), Hamilton Anxiety Scale (HAM-A), Hamilton Depression Scale (HAM-D) and Brief Psychiatric Rating Scale (BPRS). The age of participant more than 18 years and patients were excluded if they had severe medical or neurological disease other than epilepsy. The results evolved that, patients with TLE showed a high frequency of lifetime psychiatric disorders (70%), the most frequent being mood % met criteria for bipolar disorder. Nevertheless, depression had not been properly diagnosed nor treated. Anxiety disorders were also frequent (42.5%), mainly generalized anxiety disorder (GAD) (21.9%). Obsessive compulsive disorder (OCD) was present in 11.0% and psychotic disorders in 5.5% of the sample. Patients with left mesial temporal sclerosis (LMTS) exhibited more psychopathologic features, mainly anxiety disorders (p=0.006), and scored higher on HAM-A and HAM-D (p<0.05 in both).

In addition, study of Suljic, (2010) conducted in Bosnia; the goals of his study were to determine social and economic characteristics of the patients with epilepsy, presence of depression in comparison to duration of illness and stigmatizing circumstances. Prospective study was used included 300 patients with epilepsy treated at the Ambulatory for epilepsies of the Clinical Center of Sarajevo University. The result was, sample included 300 patients from both genders, where the male patients was slightly more dominant with the average age of 37.67 years +/- 12.86 compared to female patient which were significantly (p< 0.05) younger with mean age of 32.83 +/- 12.26. For the female patients average age of the first

epileptic seizure was at 14.05 years +/- 8.55, and for males 19.53 years +/- 12.39. Significant difference is noted also regarding the marriage and work in favor of men's, which is important stigmatizing factor for the women with epilepsy. Presence of depression was noticed among 34% of patients at the Beck Depression Scale, and 38.9% at the Hamilton scale with the significant difference in presence of severe depression among women. 14% of patients had suicidal ideas, which requires special attention during the treatment. Compared to the presence of depression, largest percent of women with epilepsy had duration of illness for more than 20 years, which men had somewhat shorter duration of illness. This difference among the genders is significant at the level $p< 0.01$. The study concluded that, epilepsy stigma, recurrent epileptic seizures and early occurrence of epilepsy in life have significant influence on development of depression and quality of life, especially for women.

Study conducted in Pakistan by Yousafzai et al. (2009), the objectives of the study were to know the frequency of depression in epileptic patients coming to neurology clinic of tertiary care hospital and also to find an association of clinical and demographic variables of epileptic patients with depression. Convenient sampling method was used to select patients after informed consent. Depression was diagnosed using semi structured interview based on ICD-10. The results showed that, Out of total 100 patients 55% were males, 47% were married and mean age of the patients was 25.5±4.34 years. About 60% patients were found depressed at the time of interview. Male patients, being married, uncontrolled epilepsy and coming from low socioeconomic stratum were significantly associated with depression.

Study of Thomson & Brennenstuhl (2009) in Canada, the goals of the study were to determine the national prevalence of epilepsy and depression, prevalence of depression among those with epilepsy & demographic correlates of depression among those with epilepsy and those without. Full sample of the nationally representative 2000 /2001Canadian Community Health Survey (n=130,880) was used to determine prevalence of epilepsy and depression. A subsample of 781 individuals reporting an epilepsy diagnosis and with complete depression data was used to determine prevalence and correlates of depression.

Depression was ascertained by the Composite International Diagnostic Interview-Short Form (CIDI-SF). The results show Thirteen percent of those with epilepsy were depressed, in comparison to 7% of those without ($p < 0.001$). The odds of depression among individuals with epilepsy were higher for females, older individuals, and individuals experiencing food insecurity. Household income, education, marital status, and income were not found to be significantly associated with depression.

Study of Zahiroddin et al. (2008) in Iran aimed to study the prevalence of epilepsy, as well as the related risk factors. This was a descriptive convenience study, and it was carried out on people with epilepsy referred to the clinics of Neurology in an Iranian University Hospital during 2004-2005. In this study, 97 epileptics with documented generalized tonic-clonic seizures according to the history and EEG were included. Thirty seven were female and 60 were male. Patients younger than 18 and older than 40years of age, illiterate patients, and patients suffering from other medical or psychiatric disorders as well as individuals with secondary epilepsy were not included in the study. Beck questionnaires consisting of 21 items of multiple-choice questions with increasing severity of depression (from A-D) were given to the patients and the following scores obtained:0-15normal, 16-30 mild depression, 31-47moderate depression, and 47-63 severe depression. Also, questionnaire with demographic information as well as information regarding duration of the illness, drug history, and family history of mood disorder or epilepsy was distributed. The result showed that, 51.6%of the patients were depressed, divided between mild and moderate depression without sever depression. Forty-eight percent of males and 53.5% of females were depressed according to the Beck criteria, which was not statistically significant ($p>0.05$). Also, there was no significant difference between the age group18-30 years and beyond ($p>0.05$). Also, there was no direct or significant relationship between depression and other variables such as duration of the illness (epilepsy), history of epilepsy, or family history of mood disorder, family, and marital history, and the dose of medication given ($p>0.05$ in all measured parameters). There is a significant relationship between depression and level of education ($p=0.037$), depression was more frequent among epilepsy patients with less education. Also, from an economic point of view, there was a significant difference ($p=0.048$)

between the people whose expenses were equal or less than their income compared to the people who had income less than that of expenses.

Study of Mehmedika-Suljić, (2008) in Bosnia, the aims of the study were to test relation between depressive disorder in patients with epilepsy, duration of illness and type of antiepileptic therapy. For this study, prospectively, by random selection, 300 patients with epilepsy were tested, with or without depressive affective disorder at the Outpatient Department for Epilepsies in the Clinical Center of Sarajevo University. The result evolved that, 54% of baseline at the average age of 37.7 years SD = 12.86, as well as female patients at average age of 32.83 years SD = 12.26. All patients answered Beck and Hamilton depression scales. The result shows that, Depressive disorder according to the results at the Beck scale was present in 34%, and according to the Hamilton scale in 38.9% of patients. Carbamazepin as monotherapy was applied for more than a half of the baseline, Phenobarbital as monotherapy and combined with Carbamazepin significantly more frequently among men's ($p < 0.0001$). Duration of illnesses longer than 20 years had 56% women with the expressed depressive disorder, compared to the 42% men's with depression ($p < 0.01$), and the study concluded that, depressive disorder occurs significantly more frequently among women with the longer epilepsy duration, as well as among male patients who had Phenobarbital as single or add on therapy.

Study of Nidhinandana et al. (2007), the aims of the study to determine the prevalence of depression among epileptic patients in Phramongkutklao Hospital and to find the factors associated with depression. For this study, one hundred and ten epileptic patients were enrolled and 60 patients met the inclusion criteria. These subjects were screened with Thai Geriatric Depressive Scale (TGDS) and were interviewed. Demographic data that effect depression were evaluated. The results showed that, prevalence of depression was 38.3%, divided between mild depression 65.2% and moderate 34.8%, without severe depression. Comparing between male and female, there was no statistical significant difference ($p = 0.75$). The age group that compared between age equal or less than 25 years and more than 25 years had no statistical significant difference ($p = 0.77$). Other variables were not found to be significant risk factors of depression among epileptic patients including duration of

seizures [equal or less than 5 and more than 5 per year (p = 0.43)], type of seizures [generalized tonic-clonic seizures and partial seizures (p = 0.69)], and number of antiepileptic drugs [monotherapy and polytherapy (p = 0.44)].

Study conducted by Kanitpong et al. (2007), the aim of the study was to study the prevalence of depression and anxiety in Thai epileptic patients at Songklanagarind Hospital by using cross sectional design. For this study one hundred and twenty six patients were included, hospital anxiety and depression scale (HADS) was used for data collection in this study. The result evolved that, twenty percent of respondent had depression. Predictors of depression were seizure frequency (p = 0.001) and a history of trauma associated with seizure activity (p = 0.005). Age, type of seizure, amount of medication, duration of disease, socioeconomic status, occupation, education level, and marital status were not predictors of depression.

Study of Mensah et al. (2006) in U.K aimed to explore depression in a nonspecialist care-identified population. Clinical and demographic associative factors also were examined. This study used a community-based postal questionnaire of primary care-identified people with epilepsy. Depression symptoms were assessed using Hospital Anxiety and Depression Scale (HADS) and depression defined by a score of 11 or greater on the scale. The results showed that, the prevalence of depression in our sample (n = 499) was found to be 11.2% (95% CI: 8.3-13.7%). Depression was most strongly associated with unemployment. It was also associated with having had a recent seizure and complaints of side effects of antiepileptic medications. Depression was not associated with gender, marital status, or monotherapy or polytherapy antiepileptic medication.

Study conducted in Brazil by de Souza &Salgado, (2006), the aims of the study were to study anxiety and depression in patients with epilepsy and evaluate their relationships with neuroepilepsy and psychological variables. Sixty patients 28 men and 32 women selected from patients who had epilepsy for more than 2years, and 60 healthy subjects 20 men and 40 women, were interviewed at the outpatient clinic for epilepsy, using the Beck Depression Inventory and State–

Trait–Anxiety Inventory. Both patients and controls were between 20 and 45years old and did not have any evident psychiatric disease or mental retardation. The objective of the semi structured interview was to identify the patient's perception of the disease, self-concept, personal strategies, and perception of seizure control. The result show that 33.3%of the subjects with epilepsy had anxiety and31.6% had depression, more frequent than in the control group. These symptoms were not associated with TLE and other disease variables (onset, duration, medication). There was a significant difference in anxiety and depression between the groups, as well as a strong relationship between perception of seizure control and depression and anxiety, independently assessed. Epilepsy was associated with disease (63.4%), mental problems (11.6%), feelings of shame, fear, worry, and low self-esteem (56.6%), and perception of stigma (26.6%).The strategies were: looking for social support, seeking medical treatment, withdrawal, denial, and spiritual support. There was a significant association between psychological symptoms and perception of seizure control, which reinforces the importance of subjective aspects involved in epilepsy.

Study conducted in China by Fu et al. (2006), the aim of the study was to describe the prevalence of depressive and/or anxiety symptoms in patients with some neurological diseases in the general hospitals of major cities in China. This was a hospital-based cross-sectional study and was conducted in four big cities in China in 2004. In this study 1197 eligible subjects with Stroke, Parkinson's disease and Epilepsy were recruited from the outpatient or inpatient departments within three months. Face-to-face interview was used in data collection together with the self-completed Hospital Anxiety and Depression (HAD) scale for depressive and/or anxiety symptom, were screened. Subjects getting a HAD score of 9 and above were further assessed for depressive and/or anxiety disorders with Hamilton anxiety scales and Hamilton depression scales by the licensed psychologists or psychiatrists. The result showed that, the prevalence rates of "self-scaled" depressive and/or anxiety symptoms were 19.5%, 24.1% and 21.9% respectively in patients with stroke, Parkinson's disease and epilepsy. Among cases with "self-scaled" depressive and/or anxiety symptoms, the prevalence rates of depressive and/or anxiety symptoms were 50.8%, 73.1% and 38.6% respectively; less than

17% of subjects had obtained a diagnosis of depressive disorders and had been treated but only 4% of the subjects having obtained a diagnosis of anxiety disorders and been treated prior to the study. The sex specific prevalence varied over the somatic diseases. In patients with Parkinson's disease, the prevalence of "self-scaled" anxiety symptom was significantly higher in females than in males (21.1% vs. 12.2%; chi2 = 5. 679, P = 0.017), and the total prevalence of "self-scaled" depressive and/or anxiety symptoms was also higher in female (30.3% vs. 20.5%; chi2 = 4.978, P = 0.026); in patients with stroke while the prevalence of depressive and anxiety symptoms in female was higher than that in male (52.2% vs. 20.0%; chi2 = 6.009, P = 0.014), and a higher prevalence of depressive symptoms in female patients with epilepsy was also reported (32.4% vs. 13.6%; chi2 = 4.108, P = 0.043).

Study of Cramer et al. (2005) in USA to examine whether anxiety and depression exist independently in this population of patients with partial epilepsy and if they affect all quality-of-life domains. Adult epilepsy patients taking two or more antiepileptic drugs completed a health status survey including demographic items, the Hospital Anxiety and Depression Scale, and the Quality of Life in Epilepsy—10 (QOLIE-10). The questionnaire was completed by 201 epilepsy patients. Symptom prevalence of anxiety (52% none, 25% mild, 16% moderate, 7% severe) and depression (62% none, 20% mild, 14% moderate, 4% severe) were high. All health-related quality-of-life (HRQOL) domains worsened significantly with increasing levels of anxiety and depression: Total QOLIE-10 scores decreased from 72 ± 18 in patients with no anxiety to 54 ± 13 in those with mild, 48 ± 18 in those with moderate, and 40 ± 23 in those with severe anxiety ($P < 0.0001$). Total QOLIE-10 scores decreased from 70 ± 16 in patients with no depression to 50 ± 16 in those with mild, 45 ± 16 in those with moderate and 24 ± 21 in those with severe depression ($P < 0.0001$). No significant difference in anxiety scores was observed controlling for seizure frequency or epilepsy duration. Regression analyses showed that anxiety and depression account for different proportions of variance as predictors of HRQOL ($R^2 = 0.337$ (anxiety) and 0.511 (depression). The data suggest that patients may benefit from increased attention to the role of anxiety separately from depression.

Study of Hayat Khan & Tahir (2005), to evaluate the proportion of depression among epileptic patients, by using cross sectional design. One hundred consecutive cases of primary epilepsy from the outpatient department were included in the study sample. Patients with severe physical or mental disability were excluded from the study. Beck Depression Inventory and ICD10 criteria were used to evaluate depression. The result showed that, out of 100 epileptics, 36 patients were found to be depressed, more female patients 55.2% were suffering from depression as compared to males 28.2%. Various demographic features like educational status, social class, rural or urban background, did not seem to influence the existence of depression. Also there is no correlation with epilepsy type and the type of medication and finally highest percentage of depression was found out in the age group 21-30years (41%), followed by age group 41-52 years (37%), then age group 31-40 years (35.2%).

Study of Grabowska-Grzyb et al. (2005) in Poland, the aim of the study was to determine the major depression risk factors in patients with epilepsy. The study was conducted on 203 patient with epilepsy (117 female and 86 male), aged 18 to 50 years. Convenient sampling method was used to select patients. Patients with active neurological disease, mental retardation (moderate to severe), or terminal disease were excluded. Depression was diagnosed by according to ICD10 criteria supported by Beck depression inventory and Hamilton depression rating scale(HDRS). The result showed that 100 patients with epilepsy out of 203 suffer from depression (49.2%); 76 of them had severe depression (37.4%) and 24 patients had mild depression (11.8%). Complex partial seizures and absence of secondary generalized tonic–clonic seizures were found to be the risk factors for depression. Treatment with clonazepam, frequent hospitalizations (drug-resistancy) and lack of occupational activity were revealed to be additional significant contributing factors.

Study of Lopez-Gomez et al. (2005) in Mexico, the purpose of the study was to determine associations between depression and demographic, clinical, and pharmacological factors among epileptic patients. In this study a cross-sectional survey was used and 241 epileptic outpatients at a neurological center in a 6-month period was evaluated. Depression symptom was diagnosed by Montgomery–

Asberg Scale and the Beck Depression Inventory. The result showed that, depressive symptom was diagnosed in 42.7% of patients ($n = 103$). Factors associated in the bivariate analysis were: cryptogenic etiology, posttraumatic epilepsy, use of primidone, and inadequate seizure control.

Study conducted in Morocco by Agoub et al. (2004), the aim of the study was to evaluate the prevalence of depressive disorders among patients with primary epilepsy and to determine the risk factors of the occurrence of the depressive illness. The survey was conducted in a outpatient epilepsy clinic in the Ibn Rochd University Hospital Centre in Casablanca. All patients with idiopathic or cryptogenic epilepsy aged 15 years and above were eligible, except for patients with severe physical and mental disabilities. The depressive disorders were diagnosed by ICD-10 criterion. In this study, Ninety-two subjects participated in the survey, 57.6% were men and the mean age was 30.3 +/- 10.8 Years. The epilepsy age of onset was 16.3 +/- 11.4 years with an average duration of 14.1 +/- 9.2 years, and the result show that, the prevalence of depressive disorders among epileptic patients in our survey was 18.5%. According to sex, the prevalence was 23.1% in women and 15.1% in men. The depressed patients were compared with the remaining patients without depression with regard to seizure variables and sociodemographic characteristics. The epilepsy-depression and epilepsy-control groups did not differ significantly in the duration of epilepsy or in the type of anticonvulsant therapy (mono versus polytherapy). Three variables were significantly different between the two groups. The mean age in the epilepsy-depression group was significantly higher (34.4 +/- 9.6 years versus 29.4 +/- 10.9, $p<0.03$), the mean age of epilepsy age of onset was also higher in the epilepsy-depression group than in the epilepsy-control group (21.8 +/- 11.9 Years versus 15.04 +/- 11.0, $p<0.03$) and the seizure frequency per week was more important among depressed epileptic patients (2.4 + 5.2 seizures versus 0.4 + 1.5, $p<0.007$).

Another study was conducted in south India by Seshadri et al.,(2004), aimed to assess the prevalence of depression and its effect on quality of life in patient with epilepsy. The study was done in 22 villages, by a door-to-door survey. The depression was diagnosed according to the Mini International Neuropsychiatric Interview (MINI Plus). The results showed that, a total number of identified

patients with epilepsy were 450. Among them, depression was a common psychiatric co-morbidity and was present in 73 (16%) individuals. Of these, 9 (12%) had mild depressive episodes, 29 (40%) had moderate depressive episodes and 5 (6%) had severe depressive episodes.

Study of Astejada et al. (2004) in Philippine, the objectives of this study were to screen for anxiety and depression among Filipino epileptics using HADS, and to correlate different variables (age, sex, duration of illness, frequency of seizures) with anxiety and depression. For this study a case-control study was used 102 Filipinos with epilepsy aged > 18 with a mini-mental state exam score of > 27were age-, sex- and social class-matched to 102 non-epileptics. Both the subjects and the controls were interviewed using the HADS. The Hospital Anxiety and Depression Scale (HADS) was originally developed and designed as a self-completed questionnaire to assess patients' anxiety and depression in in-patient care according to two sub-scales, the anxiety and depression scales, which both comprise 7 questions, each rated from a score of 0-30depending on the severity. The severity of anxiety and depression are graded as follows: 0-7 (Normal), 8-10 (mild), 11-14(moderate) and 15-21(severe).The result showed that, Forty percent of the subjects were males, with a mean age of 35 years. The mean duration of illness was 8 years with a mean seizure frequency of1.5 per month. Sixty four percent of person with epilepsy have anxiety while 51% have depression. Seizure, age <45 and <3years of illness were predictive of a higher anxiety score (p=0.007, p=0.001, p=0.029respectively).The presence of seizure was predictive of a higher depression score (p=0.01). The mean anxiety score for the epilepsy group was8.4. Sixty-six percent of patient with anxiety subscale score of 8 and above were classified under mild degree of anxiety. The mean depression score for the epileptic group was 7.5. Fifty-two percent of those who have depression were classified under mild degree of depression.

Study of Ettinger et al. (2004), the objectives of the study were to assess the frequency of depression symptoms, quality of life, and disability in a community-based sample of epilepsy (EPI), asthma, and healthy control (NCH) subjects, and the relationship of depression with EPI-specific aspects of quality of life, social concerns, antiepileptic drug-related side effects, and employment. Mail

survey with depression (Center for Epidemiology Studies-Depression Scale [CES-D]), quality of life (Short Form [SF]-36), and Sheehan Disability (SDS) scales to 775 EPI, 395 asthma, and 362 NCH subjects. EPI subjects completed Quality of Life in Epilepsy-89 (QOLIE-89), Social Concerns Index, Adverse Events Profile, and employment questions. The result showed that a total of 36.5% EPI, 27.8% asthma, and 11.8% NCH were positive on CES-D ($p < 0.001$). EPI had the most prior consultations and treatments for depression but 38.5% of EPI-CES-D+ and 43.7% of asthma-CES-D+ were never previously evaluated for depression. EPI subjects had worse quality of life on SF-36 subscales and greater SDS disability but were similarly disabled as asthma subjects in the presence of depression. Among EPI subjects, CES-D-based depression was significantly associated with being female, being younger, lower income, worse QOLIE-89 scores, more SDS disability, more social concerns, more adverse drug events, less past-month employment, and fewer working days.

2.2.4.1 Comment on the previous studies

The researcher will discuss previous studies of depression and other independent variables with epilepsy; the first one is tools were used in these studies, the second is samples of the studies and the third about the results of the previous studies, as the following:

- **Tools of the previous studies**

Most of the studies used different tools, the most common international tools used in the previous studies were Beck Depression Inventory (BDI) and Hamilton Rating Scale for Depression (HRSD) for quantitative assessment of depression which used alone or together or with another scales as shown in the studies of (Ogunrin & Obiabo, 2010; Kutlu et al., 2010; Suljic, 2010; Zahiroddin et al., 2008; Mehmedika-Suljić, 2008; Souza &Salgado, 2006; Hayat Khan & Tahir, 2005; Grabowska-Grzyb et al., 2005 and Lopez-Gomez et al., 2005).

Another famous international tool which used in the studies was Hospital Anxiety and Depression scale to determine the presence and degree of anxiety and depression in the studies which used alone or with the previous tools as shown in

the studies of (Asadi-Pooya & Sperlings, 2011; Cramer et al., 2006; Mensah et al., 2006; Fu et al., 2006; Astejada et al., 2004).

Also some of the previous studies used others scales to evaluate the presence of depression as shown in (CIDI-SF) (Thomson & Brennenstuhl, 2009), (TGDS) (Nidhinandana et al., 2007) and (CES-D) (Ettings et al., 2004).

In addition to the previous scales most of the studies used questionnaires about socio-demographic characteristics and epilepsy related variables such as age of onset, duration of the disease, frequency of seizures and type of medication.

- **Samples of previous studies**

In the field of samples of the previous studies, the study samples were ranged between small samples as the study of Kutlu et al.(2010) sixty ambulatory patients with epilepsy and healthy, age and sex-matched control group of 33 people were included in the study, Oliveira et al.(2010) 73 participants were included in this study, Agoub et al.(2004) ninety-two subjects participated in the survey ,Zahiroddin et al.(2008) 97 epileptics with documented generalized tonic-clonic seizures were included and in the studies of Hayat Khan & Tahir (2005),Lopez-Gomez et al.(2005), Yousafzai et al.,(2009) about one hundred patients were included in the study sample.

However, the medium samples shown in the study of Ogunrin & Obiabo (2010) 152 participants were shared in the study, Asadi-Pooya & Sperling (2011), Cramer et al. (2006) 200 patients participate in the studies with a mean age of 40.3±16 years, Suljic, (2010) 300 participants shared in the study.

While; some studies have large samples as studies of Mensah et al.(2006) 500 patients participated in the study, Fu et al.(2006) 1197 patients participated in the study, and survey sample (n=130,880) in the study of Thomson & Brennenstuhl (2009) in Canada.

- **Summary of the results of the previous studies**

The studies differ in their result, and it was as the following:

Prevalence of depression among patients with epilepsy

The prevalence of depression among those with epilepsy in the previous studies reported from higher rates as shown in the study of (Yousafzai et al.,. 2009) around 60% of the participants were depressed, to lower rates as shown in the study of (Asadi-Pooya & Sperling, 2011), which (9.5%) patients had depression.

The researcher shows that, the explanation of that discrepancy in the results related to many causes such as use of different methodology in different studies including method of patient selection (e.g., hospital or community based), types of epileptic patients, and the method of evaluation for depression (different scales).

Demographic characteristics associated with depression

Gender: Many of the studies evolved increase prevalence of depression among female patients as showed in the studies of (Hayat Khan & Tahir, 2005; Ettinger et al., 2004; Thomson & Brennenstuhl, 2009; Hamed et al., 2012), except study of (Yousafzai et al., 2009) which found male more significally with depression and the study of (Nidhinandana et al., 2007) which found no significance relationship between male and female.

Age : Some of the studies found older age to be associated with increased odds of depression (Thomson & Brennenstuhl, 2009), while other found increase depression in younger age (Ettinger et al., 2004) and other found no relationship (Asadi-Pooya & Sperling, 2011; Nidhinandana et al., 2007).

Marital status: Some of the studies evolved differences between depression and being married as shown in the study of Yousafzai et al.(2009), and others found no differences (Thomson & Brennenstuhl, 2009; Kanitpong et al., 2007; Zahiroddin et al., 2008; Mensah et al., 2006).

Level of education: Some studies found differences between depression and low level of education (Mensah et al., 2006; Asadi-Pooya & Sperling, 2011; Zahiroddin et al., 2008) and others found no differences (Thomson & Brennenstuhl, 2009; Kanitpong et al., 2007; Kutlu et al., 2010; Hayat Khan & Tahir ., 2005).

Income: Some of the study found differences between depression and lower income (Ettinger et al.,2004; Yousafzai et al., 2009), and others showed no differences (Thomson & Brennenstuhl, 2009; Kanitpong et al., 2007).

Employment: Many of the studies evolved significant differences between depression and unemployment (Ettinger et al., 2004; Mensahetal, 2006; Grabowska-Grzyb et al., 2005).

Epilepsy related variables

Duration of illness: Many of the studies evolved no differences between depression and duration of epilepsy (Nidhinandana et al., 2007; Kutlu et al., 2010; Zahiroddin et al., 2008; Kanitpong et al., 2007), except study of (Mehmedika-Suljić, 2008) which evolved depressive disorder occurs significantly more frequently among women with the longer epilepsy duration.

Age of onset: Most of the study showed no differences between depression and age of onset (Zahiroddin et al., 2008; Kutlu et al., 2010; Souza & Salgado, 2006) except study of (Suljic, 2010) which reported early occurrence of epilepsy in life have significant influence on development of depression .

Controllability of seizures: Many of the studies evolved significant differences between depression and uncontrolled seizures (Ogunrin & Obiabo, 2010; Suljic, 2010; Yousafzai et al., 2009; Lopez-Gomez et al., 2005; Hamed et al., 2012) and other found no differences (Asadi-Pooya & Sperling, 2011).

Type of medication: Most of the studies evolved no relationship between depression and type of medication except the studies of (Lopez-Gomez et al., 2005) which found relationship between depression and use of primidone, study of

(Mehmedika-Suljić, 2008) which showed the use of Phenobarbital as single or add on therapy is associated with depression and finally study of (Grabowska- Grzyb et al., 2005) which evolved treatment with clonazepam is associated with depression.

Conclusion: depression is highly prevalent among epileptic patients in the previous studies and the highest percentage reach up to 60%, the prevalence and the differences between depression rate and other variables differ from study to study because there are many factors which may play in the result such as diagnostic criteria, scales, selection of the patients, type of the seizures and cultures of the patients.

Chapter three

Methodology

3.1 Introduction

This chapter presents an overview of the research methodology used for this study. As mentioned in Chapter 1, they include: study design, study sample (study population, sample size, sampling process), study place, ethical consideration, study instruments, and data collection and data analysis procedures.

3.2 Study design

The study is quantitative, descriptive, analytic design.

3.3 Study population

The target population of this study is all patients with epilepsy who are registered at Governmental Community Mental Health Centers which estimated by 850 patients.

3.4 Sample size and sampling

According to Ministry of Health Office, the number of the epileptic patients in Governmental community mental health clinic is around 850 patients, distributed in five clinics in Gaza strip governorates and the number of patients according to inclusion criteria is 450 patients. The sample size was 150 participants and was drawn by using probability systematic random sample by selecting each third participant on the list.

3.5 Setting of the study

It was carried out at Governmental community health centers in Gaza strip that include (Abu shback clinic, West Gaza clinic, Nusirat clinic, Khanyounis clinic and Rafah clinic).

3.6 Period of the study

The study carried out between the period of 25th, September, 2011 until 5th, August, 2012.

3.7 Inclusion criteria

- All clients who are diagnosed with epilepsy, male and female.
- Aged from 19 to 65 years.
- Have file in Governmental Community Mental Health Centers.
- Have no history of mental or physical disorders included in the study.

3.8 Exclusion criteria

- All clients less than 19 years and above 65years.
- Don't have file in Governmental Community Mental Health Centers.
- Have mental or physical disorders excluded from the study.

3.9 Instruments of the study

3.9.1 Socio-demographic questionnaires

The demographic information included age, gender, education, occupation, area of residence, monthly income and marital status.

3.9.2 Epilepsy related variables

The epilepsy-related variables included current medications, duration of illness, age of onset and controllability of the disease.

3.9.3Beck Depression Inventory (BDI)

The Beck Depression Inventory (BDI) is an inventory used for assessing the severity of depression state. It consists of 21 items, and each of its items describes a specific behavioral manifestation of depression. Scores on each item can range from 0 indicating no depression, to 3 indicating a severe level of symptomatology. Index score <15 is considered to be within normal range, a score of 16–31 points toward mild depression, a score of 32–47 is in favor of moderate depression and a score of >47 indicates severe depression(Beck et al.,1988). It is a universal scale, its validity and reliability are already tested. This scale was translated in Gaza strip by doctor Abd Elaziz thabt assistant professor in psychiatry in al-quads university in Gaza and this scale was used in many of the studies in Gaza strip.

3.10 Ethical consideration

- Approval from Islamic University of Gaza.
- Approval from Ministry of Health.
- Approval consent from each participant was obtained.

3.11 Data collection

The data was collected directly from the patients by using standardized questionnaires in Governmental community mental health centers. Detailed information about the study was given to each participant using their own Arabic language and consent to participate was obtained.

3.12 Data entry

Over viewing of the questionnaire was the first step, prior to data entry; this followed by designing an entry model using the computer Statistical Package for Social Science "SPSS". The coded questionnaires were entered into the computer by the researcher. Data cleaning was done through checking out a random number of the questionnaires and through exploring descriptive statistics frequencies for all variables. All suspected or missed values will be checked by revising the available sheets.

3.13 Data analysis

The researcher used Statistical Package for Social Science "SPSS" to analyze the research questions by using Chi square, ANOVA, person and t test. Also, the researcher used descriptive statistics to explore frequencies of all variables. Statistically significant values are considered at P values is equal or less than 0.05.

3.14 Limitation of the study

- No statistical recourses of chronic patients in Palestinian territories, especially epileptic patients.
- Difficulty in interviewing the subjects of the samples due to the presence of the family without the patients in the clinic.
- Change in clients personnel data such as, telephone number and address.

Chapter Four

Results

5.1 Introduction

In this chapter the researcher will present the main results of the study after data collection and analysis by using statistical tool (SPSS) of a sample of 150 patients attending Community mental health centers in Gaza Strip, the results are represented under the following findings and headings. The researcher used many statistical tests like descriptive statistics, frequencies, percentage, means and standard deviation. In addition, differences between study variables using chi square test for categorical data.

5.2 Demographic characteristic of the study sample

The sample consist of 150 subjects, the respondents were 138 with response rate of (92%), 81 of them were male (58.7%), and 57 were female (41.3%). The age range from 19 to 65 years old (mean age was 31.3). According to place of residency 30 of them live in North (21.7%), 40 live in Gaza (29%), 35 live in Mid zone (25.4%), 13 live in Khanuonis (9%) and 20 live in Rafah (20.5%). According to educational level 23.2% finished the elementary schools, 28.3% finished the preparatory schools, also 28.3% finished secondary schools, and 20.3% have a university degree. According to marital status 38.4%were single, 59.4% were married, and 2.2% were divorced. According to the working status 39.1% work and 60.9% not work and depend on aids, according to monthly income 46.4% with monthly income less than 500NIS, 19.6%with monthly income between 500-1000NIS, 17.4% with monthly income between 1001-1500NIS, and 16.7%above 1500NIS.

Below is the table witch illustrates demographic characteristics of the sample.

Table"1"sociodemographic characteristics of population

Variables	Class	Frequency	Percentage
Age	19-30 years.	80	58
	31-40 years.	41	29.7
	More than 40 years.	17	12.3
Gender	Male	81	58.7
	Female	57	41.3
Marital status	Single	53	38.4
	Married	82	59.4
	Divorced	3	2.2
Address	North Gaza	30	21.7
	Gaza	40	29
	Mid-zone	35	25.4
	Khanyounis	13	9.4
	Rafah	20	14.5
Education level	Primary	31	23.2
	Preparatory	39	28.3
	Secondary	39	28.3
	University	28	20.3
Monthly income	Less than 500NIS	64	46.4
	500-1000NIS	27	19.6
	1001-1500NIS	24	17.4
	More than 1500NIS	23	16.7
Occupation	Employee	54	39.1
	Not employee	84	60.9

5.3 Characteristics of epilepsy related variables

According to controllability of the disease, most of the subjects were uncontrolled 64.5% (89/138) in spite of taking their medication, while 35.5 % controlled did not complain from epileptic fits. According to type of medication, most of the study subjects 97% "134/138" were taking Tegretol even alone or with combination, 34.1 % were taking Tegretol alone, and 25.4% were taking Tegretol in combination with Depakine. According to age of onset, most of the study subjects have the disease since their ages were between 1 - 19 years 89/138 "64.5%" & the mean of the age of onset was 18.12 years with minimum one year & maximum 45 years.

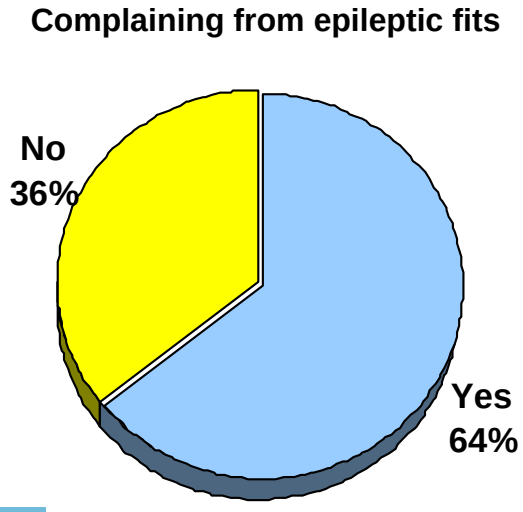
Distribution of subjects with Complaining from epileptic fits:-

Table "2" distribution of subjects with complaining from epileptic fits:-

Title	Frequency	Percent
Uncontrolled	89	64.5
Controlled	49	35.5
Total	138	100%

This table showing that most of the subjects "89/138 64.5 %" complaining from epileptic fits & 35.5 % did not complaining.

Figure" 2"



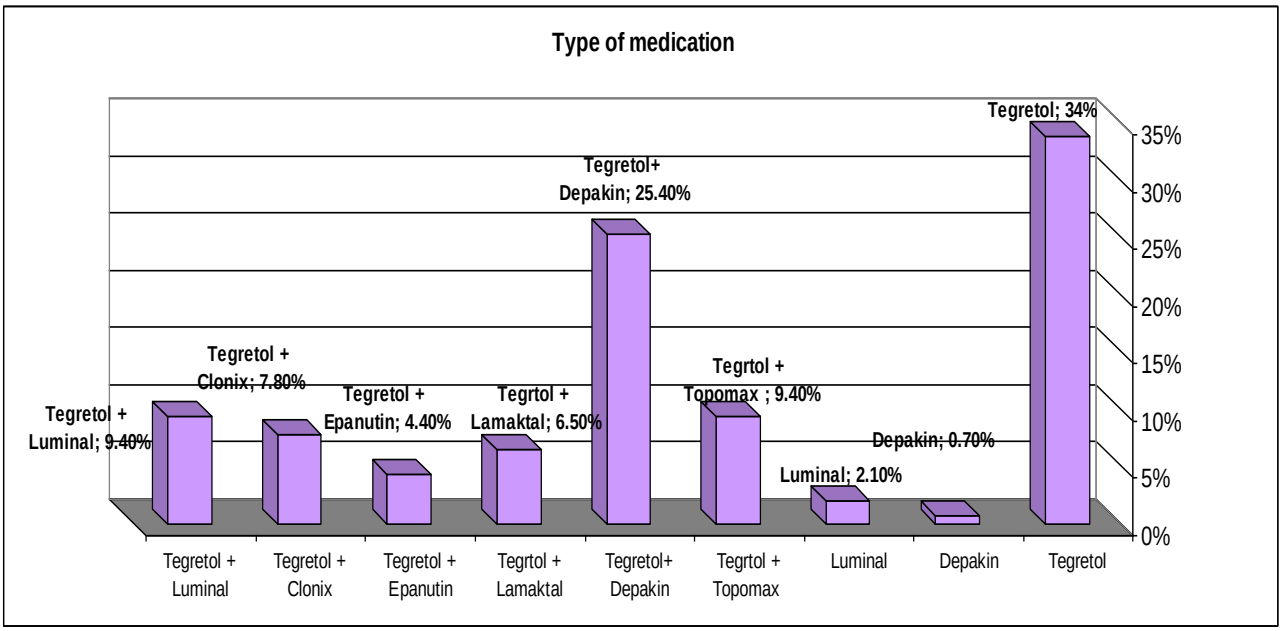
Distribution of subjects with type of medication:-

Table "3" distribution of subjects with type of medication:-

Title	Frequency	Percent
Tegretol	47	34.1
Depakin	1	.7
Luminal	3	2.2
Tegretol + Topomax	13	9.4
Tegretol + Depakin	35	25.4
Tegretol + Lamaktal	9	6.5
Tegretol + Epanutin	6	4.3
Tegretol + Clonix	11	8
Tegretol + Luminal	13	9.4
Total	138	100%

Table showing that most of the study subjects 97% "134/138" were taking Tegretol even alone or with combination, 34.1 % were taking Tegretol alone, and 25.4% were taking Tegretol in combination with Depakine. The use of Tegretol and Depekin in most of the sample patients related to its low cost for MOH.

Figure "3"



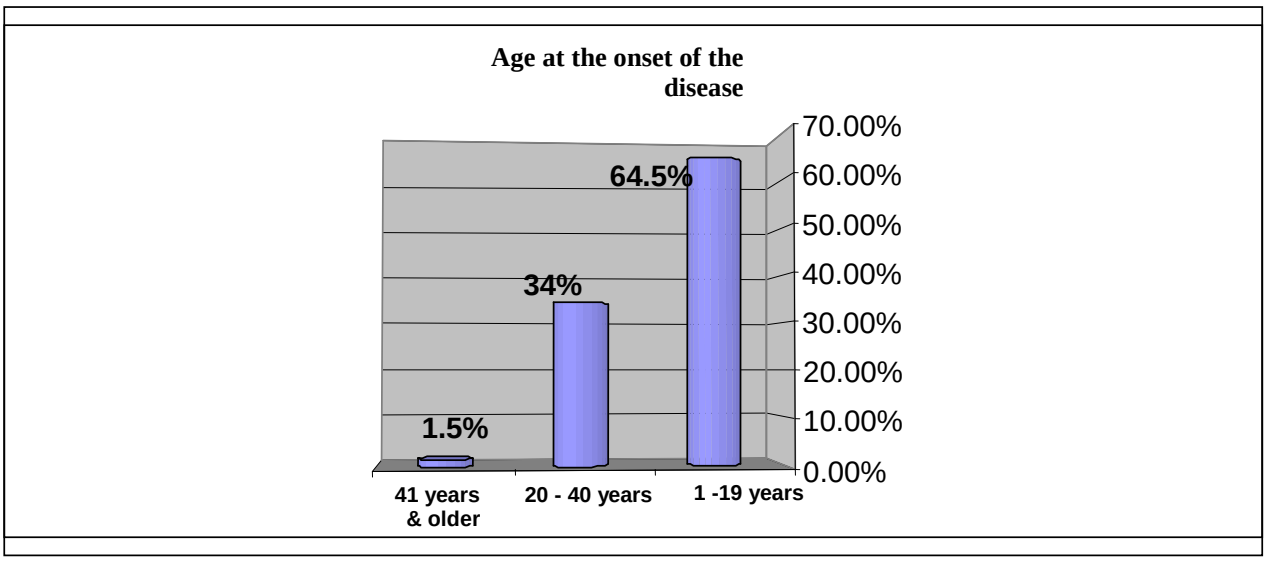
Distribution of subjects with age at the onset of the disease:-

Table "4" distribution of subjects with age of onset of the disease:-

Title	Frequency	Percent	Minimum	Maximum	Mean
1- 19 years old	89	64.5	1	45	18.12
20- 40 years old	47	34.1			
41 & more	2	1.4			
Total	138	100%			

This table showing that most of the study subjects have the disease since their ages were between 1 - 19 years 89/138 "64.5%" & the mean of the ages of onset were 18.12 years with minimum one year & maximum 45 years.

Figure "4"



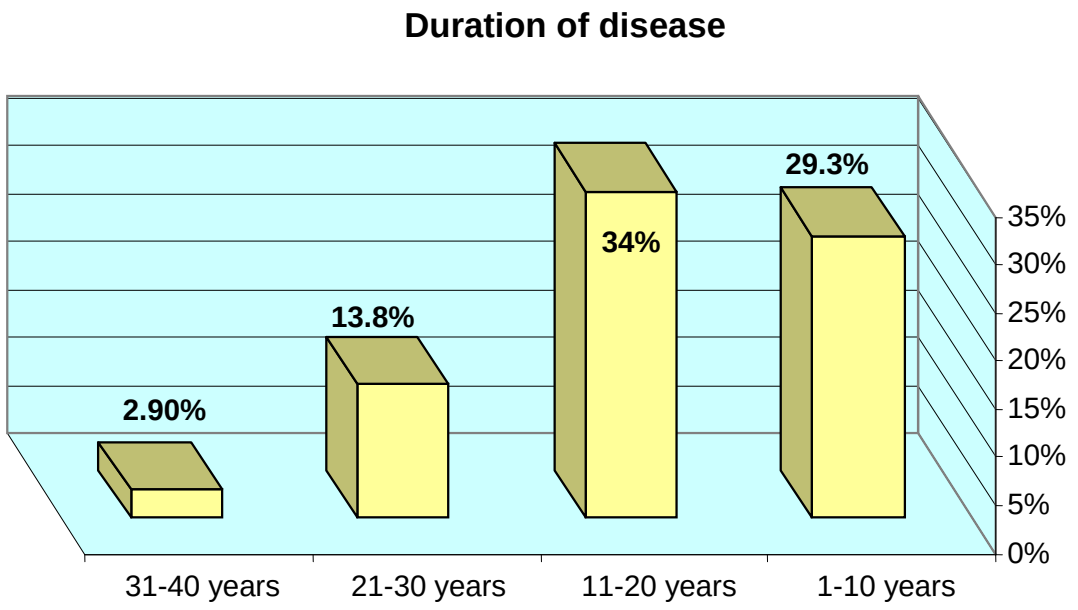
Distribution of subjects with duration of disease:-

Table "5" distribution of subjects with the duration of the disease:-

Title	Frequency	Percent	Minimum	Maximum	Mean
1- 10 years	68	49.3	2	40	12.91
11- 20 years	47	34.1			
21 – 30 years	19	13.8			
31 – 40 years	4	2.9			
Total	138	100%			

This table showing that about half of the study subjects have the disease since 10 years or less 89/138 "64.5%" & the mean duration of the disease was 12.91 years with minimum 2 years & maximum 40 years.

Figure "5"



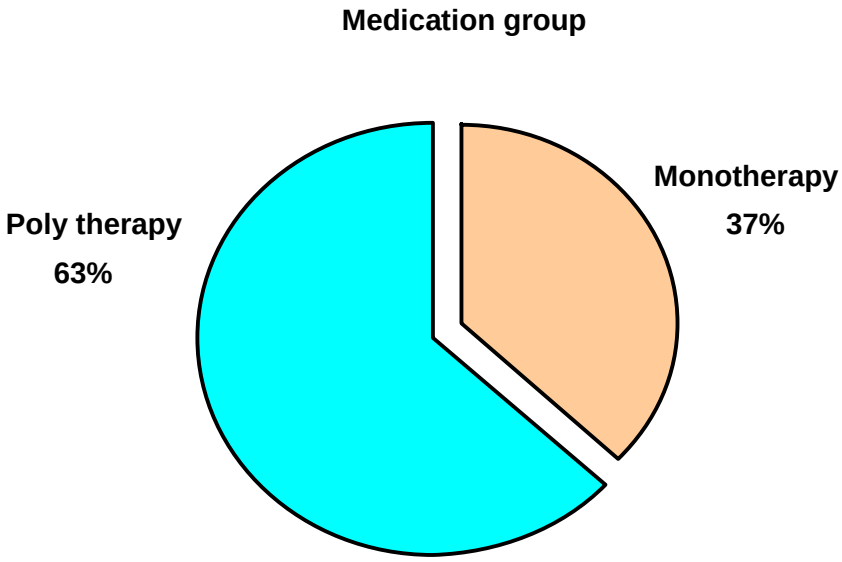
Distribution of subjects with Medication group:-

Table "6" distribution of subjects with medication group:-

Title	Frequency	Percent
Mono therapy	51	37
Poly therapy	87	63
Total	138	100%

This table showing that most of the study subject 87/138 "63%) were taking multiple drugs while 37% were taking one drug only.

Figure "6"



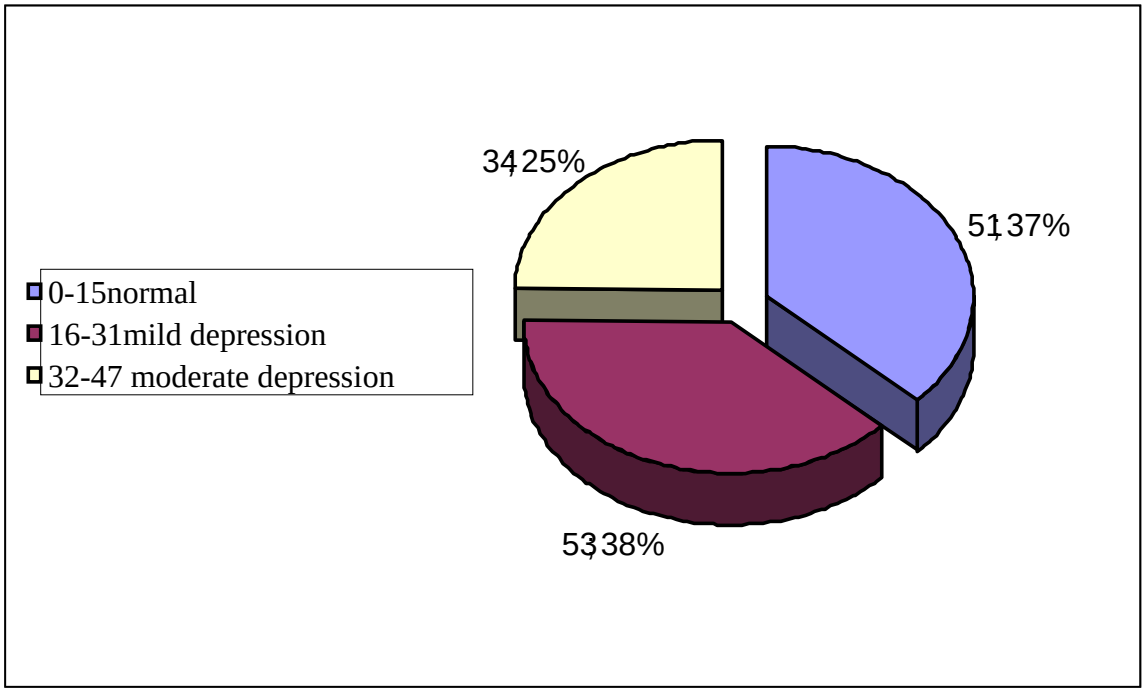
5.4Questions referring to the prevalence and level of depression.

The following table shows that 63% of all subjects "138" have depression, divided between 38.4% have mild depression, 24.6% have moderate depression, no subject have sever depression, while 37 % among the total have no depression.

Table "7" Prevalence and level of depression among epileptic patients

Title	Frequency	Percent
0-15 normal	51	37
16-31 mild depression	53	38.4
32-47 moderate depression	34	24.6
Total	138	100%

Figure "7"



5.5 Questions referring to differences between depression rate and sociodemographi characteristics.

Difference between depression rate & address

Table "8" Difference between depression rate & residential area by using ANOVA test.

(I)Address	(J)Address	Mean difference (I-J)	Standard error	significance	95% Confidence level	
					Lower Bound	Upper Bound
North	Gaza	2.11	2.519	1.000	-5.08	9.30
	Mid-zone	5.58	2.595	.334	-1.83	12.98
	Khanyounis	4.60	3.346	1.000	-5.28	14.49
	Rafah	4.53	3.010	1.000	-4.06	13.13
Gaza	North	-2.11	2.519	1.000	-9.30	5.08
	Mid-zone	3.47	2.414	1.000	-3.42	10.36
	Khanyounis	2.46	3.329	1.000	-7.01	12.00
	Rafah	2.43	2.856	1.000	-5.73	10.58
Mid-zone	North	-5.58	2.595	.334	-12.98	1.38
	Gaza	-3.47	2.414	1.000	-10.36	3.42
	Khanyounis	-.97	3.387	1.000	-10.64	8.70
	Rafah	-1.04	2.293	1.000	-9.39	7.30
Khanyounis	North	-4.60	3.346	1.000	-14.49	5.28
	Gaza	-2.46	3.329	1.000	-12.00	7.01
	Mid-zone	.97	3.387	1.000	-8.70	10.64
	Rafah	-.07	3.715	1.000	-10.67	10.54
Rafah	North	-4.53	3.010	1.000	-13.13	4.06
	Gaza	-2.43	2.856	1.000	-10.58	5.73
	Mid-zone	1.04	2.293	1.000	-7.30	9.39
	Khanyounis	.07	3.715	1.000	-10.54	10.67
F test	1.4					

In this table the researcher used Anova test to test the relation between the address and the depression rate among epileptic patients which shows that there is no differences between both variables in respect to the five governorates in Gaza strip & does not reached the significance level "0.235" higher than "0.05", so the researcher rejects the research hypothesis which suppose that there is differences between residential area "sociodemographic variable" and depression rate among epileptic patients and accepts the null hypothesis.

Differences between depression rate and age

Table "9" Differences between depression rate & age by using ANOVA test

(I)Age	(J)Age	Mean difference (I-J)	Standard error	significance	95% Confidence level	
					Lower Bound	Upper Bound
19-30 years	31-40years	-.47	2.027	1.000	-5.38	4.45
	41years &more	-1.76	2.818	1.000	-8.59	5.08
31-40years	19-30 years	.47	2.027	1.000	-4.45	5.38
	41years &more	-1.29	3.044	1.000	-8.67	6.09
41years &more	19-30 years	1.76	2.818	1.000	-5.08	8.59
	31-40years	1.29	3.044	1.000	-6.09	8.67
F test	0.197					

In this table the researcher used ANOVA test to identify the differences between the age and the depression rate among epileptic patients which shows that there is no differences between the depression rate and the different age groups & did not reach the significance level (P=0.821) higher than "0.05", so the researcher rejects the research hypothesis which suppose that there is difference between age "sociodemographic variable" and depression rate among epileptic patients and accepts the null hypothesis.

Differences between depression rate & marital status

Table "10" Differences between depression rate & marital status by using ANOVA test

(I) Marital status	(J) Marital status	Mean difference (I-J)	Standard error	significance	95% Confidence level	
					Lower Bound	Upper Bound
Single	Married	-2.72	1.847	.431	-7.20	1.76
	Divorced	-2.96	6.221	1.000	-18.04	12.12
Married	Single	2.72	1.847	.431	-1.76	7.20
	Divorced	-.24	6.162	1.000	-15.18	14.69
Divorced	Single	2.96	6.162	1.000	-12.12	18.04
	Married	.24	6.221	1.000	-14.69	15.18
F test	1.105					

In this table the researcher used Anova test to test the differences between the marital status and the depression rate among epileptic patients which shows that there is no differences between both variables & does not reached the significance level "0.344" higher than "0.05", so the researcher rejects the research hypothesis which suppose that there is difference between the marital status "sociodemographic variable" and the depression rate among epileptic patients and accepts the null hypothesis.

Differences between depression rate & educational level

Table "11" Differences between depression rate & educational level by using ANOVA test

(I) Educational level	(J) Educational level	Mean difference (I-J)	Standard error	significance	95% Confidence level	
					Lower Bound	Upper Bound
Primary level	Elementary level	-.42	2.254	1.000	-6.46	5.61
	Secondary level	8.52*	2.254	.001	2.49	14.56
	University level	10.13*	2.445	.000	3.59	16.68
Elementary level	Primary level	.42	2.254	1.000	-5.61	6.46
	Secondary level	8.95*	2. 140	1.000	3.22	14.68
	University level	10.56*	2.341	.000	4.29	16.83
Secondary level	Primary level	-8.52*	2.254	.000	-14.56	-2.49
	Elementary level	-8.95*	2.140	.001	-14.68	-3.22
	University level	1.61	2.341	.000	-4.66	7.88
University level	Primary level	-10.13*	2.445	.000	-16.68	-٣.٥٩
	Elementary level	-10.56*	2.341	.000	-16.83	-4.29
	Secondary level	-1.61	2.341	1.000	-7.88	4.66
F test	11.613					

In this table the researcher used ANOVA test to test the differences between the educational level and the depression rate among epileptic patients which shows that whenever the educational level increased the depression rate decreased which shown in the comparison between primary & preparatory level with secondary & university level, and this differences reached the significance level " 0.00" less than 0.05. So the researcher accepts the research hypothesis which says, that there is differences between depression rate & the educational level & rejects the null hypothesis.

Differences between depression rate & monthly income

Table "12" Differences between depression rate & monthly income by using ANOVA test

(I) Monthly income	(J) Monthly income	Mean difference (I-J)	Standard error	Significance	95% Confidence level	
					Lower Bound	Upper Bound
500 NIS & below	501-1000 NIS	8.99	1.905	.000	3.89	14.09
	1001-1500 NIS	13.03*	1.987	.000	7.70	18.35
	1501 NIS & more	15.71*	2.018	.000	10.30	21.11
501-1000 NIS	500 NIS & below	-8.99*	1.905	.000	-14.09	-3.89
	1001-1500 NIS	4.04	2. 329	.512	-2.20	10.27
	1501 NIS & more	6.72*	2.356	1.000	.41	13.03
1001-1500 NIS	500 NIS & below	-13.03*	1.987	.000	-18.35	-7.70
	501-1000 NIS	-4.04	2.329	.512	-10.27	2.20
	1501 NIS & more	2.68	2.422	1.000	-3.81	9.17
1501 NIS & more	500 NIS & below	-15.71*	2.018	.000	-21.11	-10.30
	501-1000 NIS	-6.72*	2.356	1.000	-13.03	-.41
	1001-1500 NIS	-2.68	2.422	1.000	-9.17	3.81
F test	28.246					

In this table the researcher used ANOVA test to test the differences between the monthly income and the depression rate among epileptic patients which shows that whenever the monthly income increased the depression rate decreased which shown in the comparison between the least income "500 NIS" with the higher different income , and this difference reached the significance level "0.00" less than 0.05 so the researcher accepts the research hypothesis which say that there is differences between depression rate & the monthly income & rejects the null hypothesis.

Differences between depression rate & occupation

Table "13" Differences between depression rate & occupation by using Pearson correlation test

Title	Title	Depression rate	Occupation
Depression rate	Pearson correlation	1	.466**
	Sig. "2-tailed"	.	.000
	N	138	138
Occupation	Pearson correlation	.466**	1
	Sig. "2-tailed"	.000	.
	N	138	138

The researcher in this table used Pearson test to test the differences between the occupation and the depression rate among epileptic patients which shows that there is strong correlation ".466" between variables, and this difference reached the significance level "0.00" less than 0.05, so the researcher accepts the research hypothesis which say that there is differences between depression rate & the occupation & rejects the null hypothesis.

Differences between depression rate & gender

Table "14" Differences between depression rate & the gender by using cross tabulation and Chi square test

Depression rate	Number / Percentage	Gender		Total	P. value
		Male	Female		
Normal	No.	36	15	51	0.041
	%	26.1%	10.9%	37%	
Mild depression	No.	20	33	53	
	%	14.5%	23.9%	38.4%	
Moderate depression	No.	13	21	34	
	%	9.4%	15.2%	24.6%	
Total	No.	69	69	138	
	%	50%	50%	100%	

The researcher in this table used cross tabulation & Chi square test to identify the differences between the gender and the depression rate among epileptic patients which shows that most of the subjects 87/138 63% have depression "mild & moderate", in which female "54/138" 39.1% have depression "mild & moderate" while the depressed male "33/138" 23.9%, and this differences between variables reached the significance level "0.041" less than 0.05 so the researcher accepts the research hypothesis which say that there is differences between depression rate & the gender & rejects the null hypothesis.

Questions referring to differences between depression rate and epilepsy related variables.

Differences between depression rate & duration of illness

Table "15" Differences between depression rate & the duration of illness by using Pearson correlation test

Title	Title	Depression rate	Duration of disease
Depression rate	Pearson correlation	1	.092
	Sig. "2-tailed"	.	.285
	N	138	138
Duration of disease	Pearson correlation	.092	1
	Sig. "2-tailed"	.285	.
	N	138	138

The researcher in this table used Pearson test to test the differences between the duration of illness and the depression rate among epileptic patients which shows that there is very weak correlation ".092" between variables, and this differences did not reach the significance level "0.285" higher than 0.05 so the researcher rejects the research hypothesis which say that there is differences between depression rate & the duration of illness & accepts the null hypothesis.

Differences between depression rate & controllability of the disease

Table "16" Differences between depression rate & the controllability of the disease by using Independent sample T test

Title	Complaining from epileptic fits	Number	Mean	SD	SE of mean
Depression rate	yes	89	21.12	10.269	1.088
	No	49	11.37	7.546	1.078
		t	Df	Sig.	CI
	Equal variances assumed	5. 889	136	.000	6.540 - 13.152
	Equal variances not assumed	6.427	124.931	.000	6.814 – 12.878

The researcher in this table used Independent sample T test to test the differences between the controllability of the disease and the depression rate among epileptic patients which shows that 89/138 "64.5%" "mean 21.21" have epileptic fits "uncontrolled disease" while 49/138 "35.5%" "mean 11.37" have controlled disease also there is correlation " t 5.889" between variables, and this differences reached the significance level "0.00" less than 0.05 so the researcher accepts the research hypothesis which say that there is differences between depression rate & the controllability of the disease & rejects the null hypothesis.

Differences between depression rate & age of onset

Table "17" Differences between depression rate & age of onset by using Pearson correlation test

Title	Title	Depression rate	Age of onset
Depression rate	Pearson correlation	1	-.031
	Sig. "2-tailed"	.	.715
	N	138	138
Age of onset	Pearson correlation	-.031	1
	Sig. "2-tailed"	.715	.
	N	138	138

The researcher in this table used Pearson test to test the differences between the age of onset and the depression rate among epileptic patients which shows that there is negative correlation "-.031" between variables, and this differences did not reach the significance level "0.715" higher than 0.05 so the researcher reject the research hypothesis which say that there is differences between depression rate & age of onset & accept the null hypothesis.

Differences between depression rate & type of medication

Table "18" Differences between depression rate & type of medication by using Pearson correlation test

Title	Title	Depression rate	Anti –epileptic drug
Depression rate	Pearson correlation	1	-.128
	Sig. "2-tailed"	.	.134
	N	138	138
Anti-epileptic drug	Pearson correlation	-.128	1
	Sig. "2-tailed"	.134	.
	N	138	138

The researcher in this table used Pearson test to test the differences between the type of medication and the depression rate among epileptic patients which shows that there is negative correlation "-.128" between variables, and this relationship did not reach the significance level "0.134" higher than 0.05 so the researcher rejects the research hypothesis which say that there is differences between depression rate & the medication type & accepts the null hypothesis.

Chapter five

Discussion, Conclusion and Recommendation

5.1 Overview

This is cross sectional descriptive study, aimed to understand the depression among epileptic patients from its prevalence and its relationship with other variables. It was carried out on people with epilepsy referred to the clinics of community mental health in Gaza strip. The research was approved by Islamic University of Gaza and Ministry of Health, and informed consent was obtained from each of the study participants. Patients younger than 19 and older than 65 years of age, and patients suffering from other medical or psychiatric disorders were not included in the study. In this study, the Beck questionnaires (with more emphasis on the cognitive and the behavioral aspects) consisting of 21 items of multiple-choice questions with increasing severity of depression were given to the patients and they were asked to answer the questions independently (self-report). The Beck Depression Inventory (BDI) is perhaps the best known and widely used self-report measure of depression.

5.2 Demographic and clinical characteristics of the study sample

In this study, the sample comprises of 150 subjects, the respondents were 138 with response rate of (92%), 81 of them were male (58.7%), and 57 were female (41.3%). The age of participants range from 19 to 65 years old (mean age was 31.3). The age at seizure onset varied from 1to45 (mean=18.12), and duration of epilepsy ranged from2 to 40 years (mean=12.91). Thirty ate of the participant were single, 59.4% were married and 2.2% of them were divorced. Thirty of subjects live in North (21.7%), 40 live in Gaza (29%), 35 live in Mid zone (25.4%), 13 live in Khanuonis (9%), and 20 live in Rafah (20.5%). Also, 23.2% of participants had elementary schools, 28.3% had the preparatory schools, 28.3% had secondary schools, and 20.3% had a university degree. Most of the sample participants not work and depend on social aids 60.9%, and only 39.1% work. Also most of them have low monthly income divided between 46.4% with monthly income less than 500NIS, 19.6%with monthly income between 500-1000NIS, 17.4% with monthly income between 1001-1500NIS, and 16.7%above 1500NIS. Thirty seven percent patients were under monotherapy and sixty three percents were using two or more drugs. The most frequently used drugs were carbamazepineand sodium valproate. Sixty four of the participants were

uncontrolled in spite of taking their medication, while 35.5 % were controlled with taking medication.

5.3 Prevalence and level of depression

In this study, data analysis revealed that the prevalence of depression among epileptic patients was 63% of all subjects "138", divided between 38.6% have mild depression, 24.4% have moderate depression, no severe depression, while 37 % among the total have no depression.

The prevalence of depression among epileptic patients is variable in the previous studies, from as low as (9.5%) as shown in the study (Pooya & Sperlin, 2011), to as high as (61%) as shown in the study (Yousafzai et al., 2009).

My study finding is nearly in agreement with previous research. About 63% of our patients had depression, in spite of high prevalence in comparison with some previous studies.

My explanation for the differences of the prevalence in the previous studies and high prevalence in our study in comparison with other studies that, these various prevalences are possibly due to the different methodology in different studies including method of patient selection (e.g., hospital or community based) and the method of evaluation for depression (different scales).

Also here in Gaza strip the situation is difficult, the society is full of many stressors that include poverty, unemployment, social troubles, loss of security, continuous Israeli attacks, and siege which is continuous for more than five years and lead to deficiency of drugs and special needs. All these stressors will play important role in the developing mental illness (depression) among general population and chronic illness particularly.

In addition, provision of universally, acceptable and funded health care may result in important differences in health outcomes. In this contest, the researcher shows that, the care and the treatment which the epileptic patient received in Gaza strip still unacceptable and consider bellow the accepted level and this is supported by most of the study participants were uncontrolled in spite of taking their medication and this affect on the health and psychological status of the patients.

5.5 The differences between depression and sociodemographic characteristics

** In this study the researcher found there is no differences between age and depression rate (p>0.05), which is consistent with studies of (Asadi-Pooya & Sperling, 2011; Nidhinandana et al., 2007; Kanitpong et al., 2007) and contrast to (Ettinger et al., 2004) who found an inverse relationship between age and depression and (Thomson & Brennenstuhl, 2009) who found older age to be associated with increased odds of depression.

The researcher shows that the impact of epilepsy include all of age stages and not rest only on particular age that includes school, feeling of stigma, marriage, employment, social responsibilities and many of social aspects, so for younger patients, epilepsy may play important obstacle in achieving their goals and aspirations and for older patients, they become more hopeless and frustrated about their condition and their prospects for the future. So the epilepsy consider major obstacle in each of age stages and impact equally on all ages.

**Also in this study findings there is no significant differences between depression rate and residential area (p=0.235>0.05) which is consistent with the study of (Hayat Khan & Tahir, 2005) that found rural or urban background did not seem to influence the existence of depression and contrast to (Zahiroddin et al., 2008) that found differences in the rate of depression between patients who live in Tehran and those living outside Tehran in small cities or in villages.

The researcher shows that Gaza strip is small area and patient with epilepsy live in the same condition, the same level and receive the same level of treatment and care in the clinics. So there are no differences between depression rate and residential area among the patients.

**In my study female gender was found to be positively associated with depression in our sample of those with epilepsy, which is consistent with the studies (Hamed et al., 2012; Thomson & Brennenstuhl, 2009; Ettinger et al., 2004; Hayat Khan & Tahir, 2005;Agoub et al., 2004) except study of (Yousafzai et al., 2009) which found male more significantly associated with depression & the

studies of (Mensah et al., 2006; Nidhinandana et al., 2007) which found no relationship between depression and gender.

The researcher shows that, females suffer more than males from the burden of epilepsy particularly in Arabic and Islamic culture and epilepsy causes unique problems for female, that present as barred from marriage, prevent them from participating in many social activities, social exclusion as a result of negative attitudes of others toward people with epilepsy, social embracement, social isolation as a result of seized in front of other or public area and problems in married life present as inability to care for their husband and children, face difficulty in performing activities of daily living and they may face several dangers with regard to reproductive activity and pregnancy and women with epilepsy face difficulty in decision making in major life events as marriage or to have children.

**Also, in this study depression was more frequent among epilepsy patients with less education and there was direct or significant differences between depression and education level ($p<0.05$).

This result was supported by many previous studies (Mensah et al., 2006; Asadi-Pooya & Sperling, 2011; Zahiroddin et al., 2008) and contrast to (Thomson & Brennenstuhl, 2009; Kanitpong et al., 2007; Kutlu et al.,2010; Hayat Khan & Tahir, 2005) which found no relationship between depression and educational level.

The researcher shows that, individuals with higher levels of education may generally have greater cognitive resources, which in turn facilitate better coping strategies and adjustment to life with epilepsy. It is probable that people with higher education use more effective ways to psychologically and physically adapt to their illness and engage in more active coping strategies. Conversely, a low level of education may lead to impaired cognition that contributes to relatively poorer psychological adjustment.

**In this study there is no direct or significant differences between depression and marital status ($p=0.344>0.05$) which is supported by many result of the previous studies ((Thomson & Brennenstuhl, 2009; Kanitpong et al., 2007; Zahiroddin et al., 2008; Mensah et al., 2006) and contrast to the result of (Yousafzai et al., 2009) who find more married have depression than single.

The researcher can explain this result that, the marital responsibilities stressful parallel the goal achievement responsibilities stressful of the singles that present as marriage and build their future, also in Gazian society most of the social aids go to the married patients and the singles depend on their families. In addition to, both single and married live in small area in gaza strip under the same types of stressors such as poverty, siege and occupation stressors.

**In addition, the study found significance differences between depression rate and employment ($p<0.05$), depression rate is high among unemployed patients which is consistent to (Ettinger et al., 2004; Mensahetal, 2006; Grabowska-Grzyb et al., 2005) and contrast to study of (Kanitpong et al., 2007).

The researcher shows that, a lot of patients with epilepsy are unemployed as shown in our study sample about 61% unemployed. The presence of work for this patients increase the self-steam and self-confidence, decrease the feeling of discrimination against them, help them in engage in the society, decrease the sense of burden on the others, allowed them to improve their conditions and improve their quality of life .

**In relation to income, the study found strong differences between income and depression rate ($p<0.05$), depression rate scientifically increased with lower income and this result is approved by study of (Ettinger et al., 2004; Yousafzai et al., 2009) and rejected by (Thomson & Brennenstuhl, 2009; Kanitpong et al., 2007).

The researcher shows that, poverty is considered risk factor for depression for general population, high income for people with epilepsy may play important role in their life by helping them in controlling their seizures by purchase new generation of antiepileptic as lamictal and topomax which consider from the drug with highly abilities to control seizures and improve mood with less side effects, and these drugs most of the time not available in ministry of health and their price is high. Also high income helps epileptic patient follow up in specialized clinics and do investigation for them that may help in controlling their seizures.

From other point high income for people with epilepsy may help them overcome the stressors of life and improve their quality of life that helps in prevention psychiatric comorbidity.

5.5 The differences between depression and epilepsy related variables

**This study evolved, there is no differences between depression rate and duration of illness($p=0.285>0.05$) and this result is consistent with many of the previous studies(Nidhinandana et al., 2007; Kutlu et al., 2010; Zahiroddin et al., 2008; Kanitpong et al., 2007), and contract to study of (Mehmedika-Suljić,2008) which found depressive disorder occurs significantly more frequently among women with the longer epilepsy duration, and the study of (Mensah et al., 2006) which shows depression is associated with individuals with recent seizures.

The researcher shows that epilepsy can impact equally on patient in early and late duration. That's in early duration the patient shocked with the epilepsy as chronic illness and its major impact on many aspect of the life and their inability to live with seizures, and in late duration the patients my failed to have better coping strategies and adjustment to life with epilepsy especially in our study most of the patient still complain from seizures in spite of taking medication, this condition lead the patients to feeling of frustration, hopelessness to live and adapt with epilepsy .

**Also the result found that no differences between depression rate and age of onset ($p=0.715 > 0.05$) and that consistent with the previous studies (Zahiroddin et al., 2008; Kutlu et al.,2010; Souza & Salgado, 2006) and contrast to study of (Suljic, 2010) which reported early occurrence of epilepsy in life have significant influence on development of depression .

**My study find strong differences between depression rate and controllability of the disease, depression was more frequent among uncontrolled patients ($p<0.05$).

This result was accepted by (Ogunrin & Obiabo, 2010; Suljic, 2010; Yousafzai et al., 2009; Lopez-Gomez et al., 2005, Astejenda et al., 2004; Hamed et al., 2012) and rejected by (Asadi-Pooya & Sperling, 2011).

My explanation for that result that uncontrolled patients suffer continuously in the society, and the presence of seizures can impact many aspects of the life including, change the patient life style, prevent them from engage and have full

roles and responsibilities in their family and society, prevent them from participating in normal activities including, education, marriage, work and sports and this condition cause them helplessness ,hopelessness , frustration, poor self-confidence, poor self-esteem and decrease quality of life of the patients.

**This study also showed no differences between depression rate and mono or poly therapy of epilepsy and that supported by many of the previous studies (Zahiroddin et al., 2008; Nidhinandana et al., 2007; Kanitpong et al., 2007; Agoub et al., 2004; Mensah et al., 2006) except the studies of (Lopez-Gomez et al., 2005) which found relationship between depression and use of primidone, the study of (Mehmedika-Suljić,2008) which evolved the use of Phenobarbital as single or add on therapy is associated with depression and finally study of (Grabowska-Grzyb et al., 2005) which found treatment with clonazepam is associated with depression.

The researcher accepts that depression may be sometimes a side effect of AEDs such as Phenobarbital group as approved by a lot of studies, but in our study the luminal drug only represent that group and its percentage in the sample is small around 2.2 % monotherapy and 9.4 polytherapy. Also these side effects depend on dose related and duration of taking drug and in our study the dose and duration may be not enough to cause depression and finally most of the drugs in study depend mainly on Tegretol and Depakin as mono or poly therapy

5.6 Conclusion

Prevalence of depression among the presented epileptic patients was 63%, divided between mild (38.4%) and moderate (24.65%).

Female gender, having uncontrolled epilepsy, unemployment, lowers level of education and lower income have significally associated with depression rate.

No demonstration of any variables such as age, marital status, and resedential area, type of medication, duration of illness and age of onset showed a difference with depression rate.

5.7 Recommendations

- Refer epileptic patients to specialized neurologist clinics supplied with highly qualified professionals able to deal with those patients and provide more comprehensive and effective care and treatment.
- Good management of epileptic patients include optimize seizure control, regular follow up of the patients, administration of newly AEDs, EEG monitoring ,laboratory investigation for the therapeutic levels of AEDs and adoption of universally developed ways in the treatments of epileptic patients
- Early recognition of depression symptoms in people with epilepsy should be of great concern for health care providers and refer them to specialist to give them more comprehensive individualized care.
- Health education programs for patients and their family about the disease and risk factors for developing depression among adult patients with epilepsy through lectures and educational materials.
- Health care providers should be instruct adult with epilepsy to use more adaptive strategies such as searching for family and social support, and spiritual help to deal with seizures in addition to medical treatment.
- The use of psychotherapeutic techniques such as group therapy, problem solving therapy and interpersonal therapy is beneficial and effective in treatment and decrease depression symptoms.
- Coordination with officials in the Ministry of Social Affairs and work offices to improve the social and economical status of the patients and provide job opportunities for patients suitable for their health status.

5.8 Recommendation for further studies

- Intervention program to decrease depression symptoms among epileptic patients.
- Psychiatric comorbidity among epileptic patients.
- The impact of depression on quality of life among epileptic patients.
- Burden of family caregiver of epileptic patients.

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صحيح: أخرجه البخاري (٢٠٠٣) " **فى كتاب المرض ، باب فضل من يصرع من الريح"، حديث برقم ٥٦٥٢٠، ص ١٤٤٥، دار الفكر للطباعة.

Annexes

Annexes (1)

نموذج موافقة للمشاركة في الدراسة

الأخ الفاضل....الأخت الفاضلة.....

أنا الطالب /أحمد عبد الكريم أبو شعير، طالب دراسات عليا في الجامعة الإسلامية بغزة، تخصص تمريض صحة نفسية مجتمعية،أقوم بإعداد بحث بعنوان"الاكتئاب بين مرضى الصرع المسجلين لدى مراكز الصحة النفسية المجتمعية الحكومية في قطاع غزة" باعتباره متطلب للتخرج أو الحصول على درجة الماجستير.

تهدف هذه الدراسة إلى التعرف على ظاهرة الاكتئاب بين مرضى الصرع من حيث مدى انتشارها وعلاقتها بالمتغيرات الأخرى وذلك لمعرفة مدى معاناتهم وبالتالي تخفيف هذه المعاناة.

وحيث اننى أؤمن بأنكم خير مصدر للمعلومات المطلوبة، لذا توجهت إليكم وكلى أمل في أن أجد التعاون من قبلكم وذلك من خلال الإجابة على أسئلة هذه الاستبانة، علما بان الإجابة ستعامل بسرية تامة، وسوف تستخدم لأغراض البحث العلمي فقط.

شاكرين لكم حسن تعاونكم معنا

وتفضلوا بقبول فائق الاحترام والتقدير

الباحث/

احمد أبو شعير

Annex2

المعلومات الشخصية و الاجتماعية.

١-العمر ☐

٢-الجنس: ☐ ذكر ☐ أنثى ☐

٣- مكان الاقامة:

الشمال ☐ غزة ☐ الوسطى ☐ خان يونس ☐ رفح ☐

٤-الحالة الاجتماعية:

أعزب/آنسة ☐ متزوج/ة ☐ أرمل/ة ☐ مطلق/ة ☐

٥-المستوى التعليمي:

ابتدائي ☐ اعدادى ☐ ثانوي ☐ جامعي ☐

٦-المهنة: يعمل/ت ☐ لا يعمل/ت ☐

٧-قيمة الدخل الشهري:

☐ أقل من ٥٠٠ شيكل ☐ من ٥٠٠-١٠٠٠ شيكل

☐ من ١٠٠١-١٥٠٠ شيكل ☐ فوق ١٥٠٠ شيكل

معلومات خاصة بالمرض:

٨-الفترة الزمنية للمرض ☐

٩-العمر عند بداية الإصابة ☐

١٠-هل تعانى من نوبات صرعيه بالرغم من اخذ العلاج نعم ☐ لا ☐

١١-العلاجات التي يتناولها المريض:

تجر تول ☐ ديباكين ☐ لومينال ☐ ايبانيوتين ☐

☐ لامكتال ☐ توبوماكس ☐ كلونكس

مقياس بيك للاكتئاب

أخي الفاضل... أختي الفاضلة.....

يشتمل هذا الاستبيان على مجموعات من العبارات . المرجو منك أن تقرأ كل مجموعة من العبارات بتمعن واتقان ،ثم تنتقي من كل مجموعة العبارة التي تصف تماما الحالة التي كنت تشعر بها خلال الأسبوعين الماضيين " بما في ذلك اليوم الحالي " ، ضع دائرة حول الرقم المكتوب على يمين العبارة التي اخترتها ، مع ملاحظة ان الرقم "صفر" يعني انك تتمتع بحالة جيدة وانك عادي وطبيعي .

تأكد من قراءة كل عبارة قبل أن تختار إحداها.

الرقم	البند		العبارة
١	الحزن	٠	لا اشعر بالهم والحزن.
		١	اشعر بشيء من الهم والحزن.
		٢	اشعر بالهم والحزن معظم الوقت ومن الصعب على الخروج من هذه الحالة.
		٣	اشعر بالهم والحزن طوال الوقت ولا اشعر بالفرح أو السعادة على الإطلاق.
٢	التشاؤم	٠	أنا لست متشائم بخصوص المستقبل.
		١	اشعر بان المستقبل غير مشجع.
		٢	اشعر بأنه لا يوجد شيء أتطلع إليه في المستقبل أو يستحق الاهتمام.
		٣	اشعر باليأس التام من المستقبل ولن يحدث تقدم في أي شيء من حياتي.
٣	الفشل	٠	لا اشعر بالفشل.
		١	اشعر باني فشلت أكثر من أي شخص عادى.
		٢	كلما تطلعت إلى حياتي الماضية أجد فيها الكثير من الفشل.
		٣	اشعر باني فاشل تماما في القيام بأي مهمة أو دور.
٤	فقدان الاستمتاع	٠	استمتع بالأشياء بنفس قدر استمتاعي بها في الماضي.
		١	لا أجد متعة كالسابق في الأشياء التي تعودت القيام بها.
		٢	احصل على قدر قليل جدا من الاستمتاع في الأشياء التي اعتدت الاستمتاع بها.
		٣	لا استطيع الحصول على أي استمتاع من الأشياء التي اعتدت الاستمتاع بها.
٥	مشاعر الإثم "تأنيب الضمير"	٠	لا اشعر بالذنب و تأنيب الضمير.
		١	لدى شعور بالذنب وتأنيب الضمير بعض الوقت.
		٢	ينتابني الشعور بالذنب وتأنيب الضمير معظم الوقت.
		٣	اشعر بالذنب وتأنيب الضمير طوال الوقت.
٦	مشاعر العقاب	٠	لا اشعر بان عقابا يحل بى الآن.
		١	اشعر بأنه ربما يقع على عقابا.
		٢	أتوقع أن يحل بى عقابا.
		٣	اشعر اننى بالفعل أعاقب.

٧	عدم حب الذات	٠	لا اشعر بان أملى قد خاب في نفسي.
		١	أنا غير راضى عن نفسي.
		٢	خاب رجائي في نفسي.
		٣	اكره نفسي.
٨	نقد الذات	٠	لا اشعر باننى أسوا من اى شخص عادى.
		١	انتقد نفسي على نقاط ضعفي أو اخطائى.
		٢	ألوم نفسي معظم الوقت على اخطائى.
		٣	ألوم نفسي باستمرار على كل شيء يحدث لي.
٩	الأفكار أو الرغبات الانتحارية	٠	لا تراودني رغبات أو أفكار للخلاص من حياتي.
		١	تنتابني أفكار للتخلص من حياتي ولكنى لا أنفذها.
		٢	ارغب في قتل نفسي.
		٣	لو أتيحت لي الفرصة بالانتحار سوف افعل ذلك.
١٠	البكاء	٠	لا ابكي أكثر من المعتاد.
		١	ابكي الآن أكثر مما تعودت.
		٢	ابكي بكثرة من اى شيء بسيط.
		٣	ارغب في البكاء الآن ولكن لا استطيع حتى لو أردت ذلك.
١١	التهيج أو الاستثارة	٠	لست أكثر استثارة مما اعتدت عليه.
		١	اشعر بالاستثارة أكثر مما اعتدت عليه.
		٢	استثار لدرجة من الصعب على البقاء بدون حركة.
		٣	استثار لدرجة تدفعني للحركة أو فعل شيء ما.
١٢	فقدان الاهتمام	٠	لم افقد الاهتمام بالآخرين.
		١	اهتم بالآخرين اقل من قبل.
		٢	فقدت اغلب اهتمامي بالآخرين والأمور الأخرى.
		٣	من الصعب على الاهتمام باى شيء.
١٣	التردد	٠	اتخذ القرارات بنفس الكفاءة التي اعتدت عليها.
		١	أجد صعوبة أكثر من المعتاد في اتخاذ القرارات.
		٢	لدى صعوبة أكثر بكثير مما اعتدت في اتخاذ القرارات.
		٣	لدى مشكلة في اتخاذ اى قرار.
١٤	انعدام القيمة	٠	لا اشعر باننى عديم القيمة.
		١	لا اعتبر نفسي ذو قيمة كما اعتدت أن أكون.
		٢	اشعر باننى عديم القيمة بالمقارنة بالآخرين.
		٣	اشعر باننى عديم القيمة تماما.
١٥	فقدان الطاقة	٠	لدى نفس القدر من الطاقة كالمعتاد.
		١	لدى قدر من الطاقة اقل مما اعتدت.
		٢	ليس لدى طاقة كافية لعمل الكثير من الأشياء.
		٣	ليس لدى طاقة كافية لعمل اى شي

١٦	تغيرات في نمط النوم	٠	لم يحدث اى تغير في نمط نومي.
		١	أ.أنام أكثر من المعتاد إلى حد ما. ب.أنام اقل من المعتاد إلى حد ما.
		٢	أ.أنام أكثر من المعتاد بشكل كبير. ب.أنام اقل من المعتاد بشكل كبير.
		٣	أ.أنام اغلب الوقت. ب.أنام اقل من ساعتين في الليلة ولا استطيع العودة إلى النوم.
١٧	القابلية للغضب أو الانزعاج	٠	قابليتي للغضب أو الانزعاج لم تتغير.
		١	قابليتي للغضب أو الانزعاج اكبر من المعتاد.
		٢	قابليتي للغضب أو الانزعاج اكبر بكثير من المعتاد
		٣	قابليتي للغضب أو الانزعاج طوال الوقت.
١٨	تغيرات في الشهية	٠	لم يحدث اى تغير في شهيتي.
		١	أ.شهيتي اقل من المعتاد إلى حد ما. ب.شهيتي أكثر من المعتاد إلى حد ما.
		٢	أ.شهيتي اقل من المعتاد بشكل كبير. ب.شهيتي أكثر من المعتاد بشكل كبير.
		٣	أ.ليست لدى شهية على الإطلاق. ب.اشعر بالجوع طوال الوقت.
١٩	صعوبة التركيز	٠	استطيع التركيز بكفاءتي المعتادة.
		١	لا استطيع التركيز بنفس الكفاءة المعتادة.
		٢	من الصعب على أن أركز عقلي على اى شيء لمدة طويلة.
		٣	أجد نفسي غير قادر على التركيز على اى شيء.
٢٠	الإرهاق أو الإجهاد	٠	لست أكثر إرهاقا من المعتاد.
		١	أصاب بالإرهاق بسهولة أكثر من المعتاد.
		٢	يعوقني الإجهاد عن عمل الكثير من الأشياء التي اعتدت عملها.
		٣	أنا مرهق جدا لعمل اغلب الأشياء التي اعتدت عليها.
٢١	فقدان الاهتمام بالجنس	٠	لم ألاحظ اى تغير في اهتمامي بالجنس حديثا.
		١	اهتمامي اقل بالجنس مما اعتدت.
		٢	اهتمامي اقل بدرجة كبيرة بالجنس الآن.
		٣	فقدت الاهتمام بالجنس الآن.

Annex 3

Consent form' English version

Dear participant

I am student in Islamic University of Gaza in the master of community mental health (nursing science). I wish to carry out a study; the goal of this study is to understand the depression among epileptic patients, from its prevalence and relationship with other variables.

This study has a scientific goal, and all the data which will collect from you will consider confidential and the researcher will present to you any information you need regarding this study.

I cordially invite you to participate in this study and complete this questionnaire.

Thank you for your cooperation with me.

Your sincerely

Researcher, Ahmed abu sheer

Annex4

Questionnaire in English

Sociodemographic data:

Age ☐

Gender ☐

Residential area:

North ☐ Gaza ☐ Middle ☐ khanyounis ☐ Rafah ☐

Marital status:

Married ☐ Single ☐ Divorced ☐ Widowed ☐

Level of education:

Primary ☐ Preparatory ☐ Secondary ☐ University ☐

Occupation: Employee ☐ Not employee ☐

Monthly income:

☐ Less than 500 NIS ☐ Between 500-1000 NIS

☐ Between1001-1500 NIS ☐ Over 1500 NIS

Disease related questions:

Age of onset ☐

Duration of illness` ☐

Do you complain from epileptic fits in spite of taking medication?

Yes ☐ No ☐

Type of medication:

Tegretol ☐ Depakine ☐ Luminal ☐ Epanutin ☐

Topomax ☐ Lamictal ☐ Clonex ☐

Beck Depression Inventory

1. **Sadness**
   0 I do not feel sad.
   1 I feel sad much of the time.
   2 I am sad all the time.
   3 I am so sad or unhappy that I cannot stand it.

2. **Pessimism**
   0 I am not discourage about my future.
   1 I feel more discourage about my future than I used to be.
   2 I do not expect things to work out for me.
   3 I feel my future is hopeless and will only get worse.

3. **Failure**
   0 I do not feel like a failure.
   1 I have failed more than I should have.
   2 As I look back, I see a lot of failure.
   3 I feel I am a total failure as a person.

4. **Loss of Pleasure**
   0 I get as much pleasure as I ever did from the things I enjoy.
   1 I don't enjoy things as much as I used to.
   2 I get very little pleasure from the things I used to enjoy.
   3 I cannot get any pleasure from the things I used to enjoy.

5. **Guilty Feeling**
   0 I don't feel particularly guilty.
   1 I feel guilty over many things I have done or should have done.
   2 I feel quite guilty most of the time.
   3 I feel guilty all of the time.

6. **Punishment Feelings**
   0 I don't feel I am being punished.
   1 I feel may be punished.
   2 I expect to be punished.
   3 I feel I am being punished

7. **Self-Dislike**
   0 I feel the same about myself as ever.
   1 I have lost confidence in myself.
   2 I am disappointed in myself.
   3 I dislike myself.

8. **Self-Criticalness**
   0 I don't criticize or blame myself more than usual.
   1 I am more critical of myself than I used to be.
   2 I criticize myself for all my fault.
   3 I blame myself for everything bad that happens.

9. **Suicidal Thoughts**
   0 I don't have any thoughts of killing myself.
   1 I have thoughts of killings myself, but I would not carry them out.
   2 I would like to kill myself.
   3 I would kill myself if I had the chance.

10. Crying
   0 I don't cry anymore than I used to.
   1 I cry more than I used to.
   2 I cry over every little thing.
   3 I feel like crying, but I can't.

11. **Agitation**
   0 I am no more restless or wound up than usual.
   1 I feel more restless or wound up than usual.
   2 I am so restless or agitated that it's hard to stay still.
   3 I am so restless or agitated that I have to keep moving or doing something.

17. **Irritability**
   0 I am no more irritable than usual.
   1 I am more irritable than usual.
   2 I am much more irritable than usual.
   3 I am irritable all the time.

12. **Loss of Interest**

0 I have not lost interest in other people or activities.
1 I am less interested in other people or thing than before.
2 I have lost most of my interest in other people or things.
3 It's hard to get interest in anything.

13. **Indecisiveness**

0 I make decisions about as well as ever.
1 I find it more difficult to make decisions than usual.
2 I have much greater difficulty in making decisions than I used to
3 I have trouble making any decisions.

14. **Worthlessness**

0 I do not feel I am worthless.
1 I do not consider myself as worthwhile and useful as I used to.
2 I feel more worthless as compared to other people.
3 I feel utterly worthless.

15. **Loss of Energy**

0 I have as much energy as ever.
1 I have less energy than I used to have.
2 I don't have enough energy to do very much.
3 I don't have enough energy to do anything.

16. **Change in Sleeping Pattern**

0 I have not experienced any change in my sleeping pattern.

1a I sleep somewhat more than usual.
1b I sleep somewhat less than usual.

2a I sleep a lot more than usual.
2b I sleep a lot less than usual.

3a I sleep most of the day.
3b I wake up 1-2 hours early and cannot get

18. **Change in Appetite**

0 I have not experienced any change in my appetite.

1a My appetite is somewhat less than usual
1b My appetite is somewhat greater than usual.

2a My appetite is much less than before.
2b My appetite is much greater than usual

3a I have no appetite at all.
3b I crave food all the time.

19. **Concentration Difficulty**

0 I can concentrate as well as ever.
1 I cannot concentrate as well as usual.
2 It's hard to keep my mind on anything for very long.
3 I find can't concentrate on anything.

20. **Tiredness or Fatigue**

0 I am no more tired or fatigued than.
1 I get more tired or fatigued more easily than usual.
2 I am too tired or fatigued to do a lot of the things I used to do.
3 I am too tired or fatigued to do most of the things I used to.

21**. Loss of Interest in Sex**

0 I have not noticed any recent change in my interest in sex.
1 I am less interested in sex than I used to be.
2 I am much less interested in sex now.
3 I have lost interest in sex completely.

Annex 5

Palestinian National Authority

Ministry of Health

Mental Health General Administration

السلطة الوطنية الفلسطينية

وزارة الصحة

الإدارة العامة للصحة النفسية

Date: 5/5/2012

الرقم:

السادة / المدراء الطبيين للمراكز حفظهم الله،،،

السادة / المدراء الإداريين للمراكز حفظهم الله،،،

السلام عليكم ورحمة الله وبركاته،،

الموضوع / تسهيل مهمة الباحث احمد أبو شعير

بخصوص الموضوع أعلاه يرجي تسهيل مهمة الباحث الحكيم/ **أحمد أبو شعير** رقم وظيفي **43144** الملتحق ببرنامج ماجستير الصحة النفسية بالجامعة الإسلامية و عنوان البحث:

" الاكتئاب بين مرضي الصرع المسجلين في عيادات الصحة النفسية المجتمعية في قطاع غزة"

حيث سيقوم الباحث بالاطلاع على ملفات المرضي والاستعانة بالطواقم الطبية و الفنية في عيادات الصحة النفسية المجتمعية وأخذ نتائج التحاليل اللازمة لبحثه، كما سيقوم بتعبئة الاستبيانات لعينة من المرضي وذلك حيث لا يكون يتعارض مع مصلحة العمل في المراكز ويكون ضمن أخلاقيات البحث العلمي دون تحمل المراكز والمرضي بالمراكز أي أعباء من إجراء هذا البحث.

وتفضلوا بقبول فائق الاحترام والتقدير،،،

د. عايش سمور

مدير عام الصحة النفسية

فلسطين – غزة – شارع العيون – مستشفى الطب النفسي تلفاكس: 08.2879845

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