# Introduction

Recent studies have demonstrated that public mental health patients die as much as 25 years earlier than individuals in the general population, largely as the result of medical causes rather than suicide or accidental death. Standardized mortality ratios for medical deaths among these patients are between 1.5 and three times greater than the rate for persons without mental disorders, and this differential mortality gap appears to be increasing over time ***(Druss, 2009).***

The excess mortality due to diseases and medical conditions, especially cardiovascular diseases and diabetes, can theoretically be explained by 1) excess morbidity due to unhealthy life style, connected to lack of health literacy and failure of health promotion actions to target this vulnerable population which may have a reduced ability to pick up information on need for behavioral changes 2) excess iatrogenic morbidity, especially cardiovascular diseases and diabetes, due to adverse effects of psycho-pharmaceutical medication; 3) under-diagnosis and under-treatment of physical disorders among mentally ill; and 4) common genetic risk factors for psychiatric and somatic disorders. These different explanations and their importance need to be further explored in order to plan how to reduce the excess

mortality. Deaths with diabetes as the main cause can be due to hyper- or hypoglycemia, but more often they are related to cardiovascular complications due to diabetes. Deaths in the category other diseases were in many cases related to substance abuse, especially alcohol ***(Nordentoft et al, 2013).***

The prevalence of several physical diseases is increased in people with mental disorders compared with the general population. In a study carried out in the United States, people with psychotic disorders were found to be more likely than other people to develop diabetes, hypertension, heart disease, asthma, gastrointestinal disorders, skin infections, malignant neoplasms, and acute respiratory disorders. The rate was increased even when only patients without a concomitant substance use disorder were considered. A strong prospective association has been documented between depression and coronary heart disease outcomes, including fatal myocardial infarction; on the other hand, the incidence of depression is increased after myocardial infarction, especially in the first month after the event. Depression also increases the risk for type II diabetes. People with severe mental disorders are at increased risk of contracting HIV infection, although prevalence rates vary substantially worldwide. Evidence from both developed and developing countries shows that adherence to highly active antiretroviral therapy (HAART) is negatively affected by

depression, cognitive impairment, and substance abuse ***(Kaplan & Sadock's, 2009).***

Moreover, people with mental illness are also less likely to receive effective screening for cancer and have higher case-fatality rates. This is partly due to the particular challenges when treating these patients including medical co-morbidity, drug interactions, lack of capacity and difficulties in coping with the treatment as a result of psychiatric symptoms ***(Thornicroft, 2011).***

There is now strong evidence that people with mental illness receive worse treatment for physical disorders (‘diagnostic overshadowing’). This takes place because general healthcare staff are poorly informed or mis-attribute physical symptoms to a mental disorder. For example, after adjusting for other risk factors, such as cardiovascular risk factors and socioeconomic status, depression in men was found to be associated with an increase in cardiovascular-related mortality ***(Thornicroft, 2011).*** Evidence shows that psychiatrists and family physicians are poor at recognizing and treating physical conditions in psychiatric patients. Several explanations have been suggested. Because physical complaints may occur as part of a psychiatric illness, some physicians might neglect physical assessment in their psychiatric patients, wrongly assuming that their symptoms are psychological. Alternatively, the psychiatric symptoms

may render patients less able or less likely to communicate their physical needs. Attending physicians may be uncomfortable dealing with patients with psychiatric problems, which might impair their clinical assessment. The stigma of mental illness may be another hurdle that prevents patients from receiving the correct treatment. In the United States, many people with mental disorders report difficulty in obtaining insurance. Therefore, cost is the barrier that prevents them from obtaining the right medical care when it is needed ***(Osborn, 2011).***

To address this situation, the first step is raising awareness of the problem among mental health care professionals, primary care providers, and patients with schizophrenia and their families. The research information about the increased morbidity and mortality due to physical illness in people with schizophrenia as well as other psychiatric patients should be appropriately disseminated ***(Kaplan &Sadock's, 2009).***

It is important that psychiatrists retain their basic medical skills. Nursing staff working in long-stay institutions must have competencies in physical health care. Clinical staff should be alert to the possibility that medical disorders can present as psychiatric disorders. Furthermore, psychiatric patients with physical disorders may not complain of symptoms or may have atypical symptoms ***(Cormac, 2004).***

For many patients, occasional hospitalization in mental health facilities may be their only chance to receive care for medical conditions. However, how medical care is provided to psychiatric patients is highly variable. While most free-standing psychiatric hospitals have a medical consultant available, usually an internist or family practitioner, there is no established standard dictating the provision of medical care in psychiatric facilities ***(Frost, 2006).***

Another essential step is the development of an appropriate integration between mental health and physical health care. A well-identified professional should be responsible for physical health care in each person with a severe mental disorder. Mental health services should be able to provide at least a standard routine assessment of their patients to identify or at least suspect the presence of physical health problems. Guidelines about the management of patients receiving antipsychotic drugs should be known and applied by all mental health services. Patients should be involved as much as possible; for instance, mental health professionals should encourage patients to monitor and chart their weight. Dietary and exercise programs should be routinely provided by mental health services. Flexible smoking cessation programs, which have shown some degree of success, could be considered in some settings ***(Kaplan & Sadock's, 2009).***

# Rationale of the study

A number of reviews and studies have shown that people with severe mental illness (SMI), including schizophrenia, bi-polar disorder, schizoaffective disorder and major depressive disorder, have an excess mortality, being two or three times as high as that in the general population. There are no documented studies investigating mortality and medical co-morbidity in mental hospitals in Egypt.

# Hypothesis

Psychiatric inpatients are more likely to have more physical illness, which result in excess mortality in this group of patients as compared to the general population's mortality statistics.

# Aim of the Work

## The aim of this study is to:

1- Address the mortality and its related factors in El-khanka psychiatric hospital as one of the largest governmental psychiatric hospitals in our country.

2- Detect any history of physical illnesses in psychiatric inpatients who died of natural causes that could lead to the reported excess mortality in this group of patients.

# Chapter (1):

# Overview of the Problem

A number of reviews and studies have shown that people with severe mental illness (SMI), including schizophrenia, bipolar disorder, schizoaffective disorder and major depressive disorder, have an excess mortality, being two or three times as high as that in the general population ***(Harris and Barraclough, 1998).*** This mortality gap, which translates to a 13-30 year shortened life expectancy in SMI patients ***(Rössler et al., 2005) ,*** has widened in recent decades ***(Robson and Gray, 2007),*** even in countries where the quality of the health care system is generally acknowledged to be good **(Ösby et al., 2000).**

In a study by ***Harris and Barraclough (1998)***, it was found that the highest risks of premature death, from both natural and unnatural causes, are for substance abuse and eating disorders. Risk of death from unnatural causes is especially high for the functional disorders, particularly schizophrenia and major depression. Deaths from natural causes are markedly increased for organic mental disorders, mental retardation and epilepsy**.**

In a study about the size of the problem in the United States, it was found that people with serious mental illness (SMI) die, on average, 25 years earlier than the general

population. The study documented recent increases in death rates over those previously reported. While suicide and injury account for about 30-40% of excess mortality, 60% of premature deaths in persons with schizophrenia are due to medical conditions such as cardiovascular, pulmonary and infectious diseases ***(Svendsenet al., 2006).***

The prevalence of several physical diseases is increased in people with mental disorders compared with the general population. In a study carried out in the United States, people with psychotic disorders were found to be more likely than other people to develop diabetes, hypertension, heart disease, asthma, gastrointestinal disorders, skin infections, malignant neoplasms, and acute respiratory disorders ***(Sadock et al., 2009).***

Although many factors contribute to the poor physical health of people with SMI, the increased morbidity and mortality seen in this population are largely due to a higher prevalence of modifiable risk factors, many of which are related to individual lifestyle choices ***(Svendsen et al., 2006).***

There is increasing evidence that disparities not only in health care access and utilization, but also in health care provision contribute to these poor physical health outcomes **(Mitchell et al., 2009).** A confluence of patient, provider, and system factors has created a situation in which access to

and quality of health care is problematic for individuals with SMI ***(Kisely et al., 2007).*** This is not totally surprising as we are today in a situation in which the gaps, within and between countries, in access to care are greater than at any time in recent history ***(Blas and Kurup, 2010)***. Therefore, this growing problem of medical co-morbidities and premature death in people with SMI needs an urgent call to action ***(HERT et al., 2011).***

In a Systematic Review of Mortality in Schizophrenia extracted from 37 studies that were conducted in 25 countries, it was found that there is no significant difference in SMRs (Standardized Mortality Ratio) among sites when sorted by economic status. It was also found that people with schizophrenia have increased mortality risks attributable to a wide range of somatic conditions. The increased mortality risk affects both sexes equally. Substantial variation occurs in all-cause SMRs among sites. In recent decades, the differential mortality gap associated with schizophrenia has been increasing. It is sobering to reflect on this paradox of schizophrenia treatment. As we become better at detecting and treating the core symptoms of schizophrenia, patients have worsening SMRs. Given the potential for an even greater disease burden as a result of the introduction of second-generation antipsychotic medications, research aimed at optimizing the physical health of people with

schizophrenia needs to be undertaken with a sense of urgency ***(Saha et al., 2007).***

In one study examining the effect of long stay versus short stay admission for schizophrenic patients in mental health facilities in Taiwan, it was found that there are decreased mortality gaps in the age and sex groups with relatively high proportions experiencing the whole comprehensive rehabilitation program is one of the positive long-term consequences of the increased provision of community facilities. In terms of the decreased gaps in mortality due to unnatural causes, social reintegration in the local community of the long-stay facility might offer protection against accidents and suicide. The major implication of our study results could be limited to the subgroup of long-stay patients with chronic schizophrenia who might receive psychiatric rehabilitation during their middle age. Although those patients could have long-term mental disability and a collapse of family support, our study results support the promotion of community programs for them under the coverage of social welfare programs and the introduction of national health insurance in countries without deinstitutionalization ***(Cheng et al., 2014).***

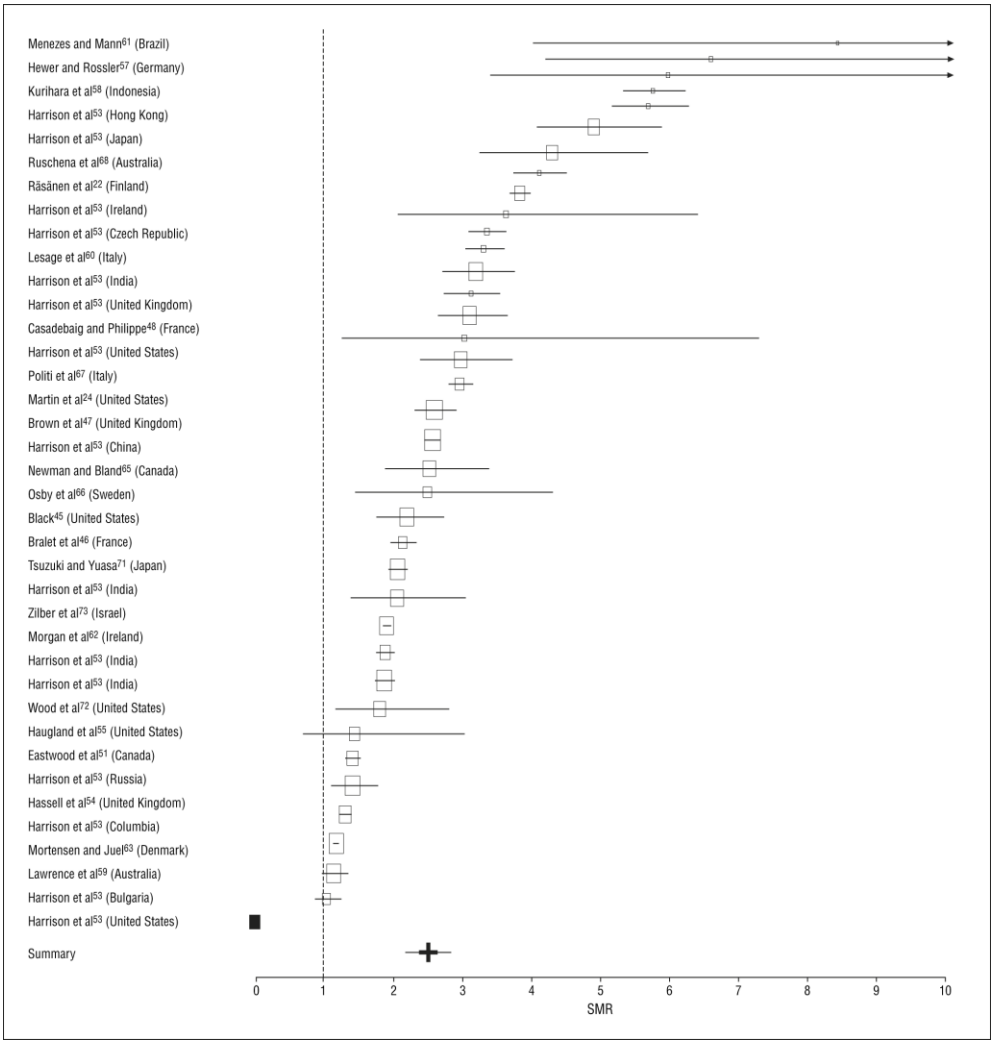


**Fig. (1):** Systematic Review of Mortality in Schizophrenia extracted from 37 studies that were conducted in 25 countries ***(Saha et al., 2007).***

Chapter (2):

# Common Physical Diseases Linked to SMI

Nutritional and metabolic diseases, cardiovascular diseases, viral diseases, respiratory tract diseases, musculoskeletal diseases, sexual dysfunction, pregnancy complications, stomatognathic diseases, and possibly obesity-related cancers are, compared to the general population, more prevalent among people with SMI. It seems that lifestyle as well as treatment specific factors account for much of the increased risk for most of these physical diseases. Moreover, there is sufficient evidence that people with SMI are less likely to receive standard levels of care for most of these diseases ***(Hert et al., 2011).***

## 1- Obesity:

Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health. A crude population measure of obesity is the body mass index (BMI), a person's weight (in kilograms) divided by the square of his or her height (in metres). A person with a BMI of 30 or more is generally considered obese. A person with a BMI equal to or more than 25 is considered overweight ***(WHO, 2015).***

Obesity is associated with significant increases in both morbidity and mortality. A great many disorders occur with greater frequency in obese people .The most important and common of these are hypertension, type 2 diabetes mellitus, hyperlipidemia, coronary artery disease, degenerative joint disease, and psychosocial disability ***(McPhee and Papaddekis, 2009)***.

***Obesity and SMI:***

SMI and obesity overlap to a clinically significant extent. Increasing evidence suggests that persons with SMI are, compared to the general population, at increased risk for overweight (i.e., BMI =25-29.9, unless Asian: BMI =23-24.9), obesity (i.e., BMI ≥30, unless Asian: BMI ≥25) and abdominal obesity, even in early illness phase and/or without medication **(Holt et al., 2005).**The risk of obesity in persons with SMI, however, varies by diagnosis.Some studies have reported rates of obesity (BMI ≥30) in patients with schizophrenia of 42-60% ***(Strassniget al., 2003).*** On the other hand, those with major depression or bipolar disorder have a 1.2 to 1.5 increased likelihood of being obese (BMI ≥30) ***(Mather et al., 2004).*** Clinical research has suggested that up to 68% of treatment-seeking bipolar disorder patients are overweight or obese ***(McElroy et al., 2004).*** One study found an obesity rate (BMI ≥30) of 57.8% among those with severe depression ***(Scott et al., 2008).***

***Role of life style:***

In patients with SMI, as in the general population, obesity is associated with lifestyle factors (e.g., lack of exercise, poor diet), but also with illness-related (negative, disorganized and depressive symptoms) and treatment-related factors, including weight liability of certain psychotropic agents. Adverse effects, such as sedation, should also be considered as potential contributors to weight gain in addition to, still not fully elucidated, medication induced effects on appetite and food intake ***(Abbott and Lilly, 2009).***

***Role of pychotropics:***

*1-Antipsychotics:*

There is a hierarchy for risk of weight gain with AP that has been confirmed in different studies and meta-analyses ***(Parsonset al., 2009).*** Weight gain is greatest with clozapine and olanzapine, while quetiapine and risperidone have an intermediate risk. Aripiprazole, asenapine, amisulpride and ziprasidone have little effect on weight. A recent systematic review of randomized, placebo controlled trials of novel AP in children and adolescents (<18 years old) identified the same hierarchy for risk of weight gain for this vulnerable population ***(HERT et al., 2011).***