



Cardiovascular disease among severe mental illness and psychiatric medication

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ABSTRACT

People with mental illness are more likely to have serious coexisting physical health problems than the general population. Although lifestyle and genetics may contribute independent risks of cardiovascular dysfunction in schizophrenia and other serious mental illness, antipsychotic treatment also represents an important contributor to risk of cardiovascular disorder, particularly for certain drugs and for vulnerable patients. Mental health professionals and other health care provider must give emphasis to recognize the clinical signposts indicating mental health related cardiovascular problems to forestall progression to type II diabetes, cardiovascular events and premature death.

Keywords: Severe Mental Illness, Cardiovascular Disease, Psychiatric Medication

INTRODUCTION

Patients with serious mental illness, including schizophrenia, major depressive disorder, and other psychoses, have lower life expectancy and higher rates of cardiovascular disease (CVD) than those without these conditions.¹

Patients with severe mental illnesses are at increased metabolic risk. Psychiatric medications can increase metabolic risk through obesity-related mechanisms.² Lifestyle and genetics may contribute independent risks of cardiovascular dysfunction in schizophrenia and other serious mental illness, antipsychotic treatment also represents an important contributor to risk of cardiovascular disorder, particularly for certain drugs and for vulnerable patients.³ The excess cardiovascular mortality associated with schizophrenia and bipolar disorder is attributed in part to an increased risk of the modifiable coronary heart disease risk factors; obesity, smoking, diabetes, hypertension and dyslipidaemia. Antipsychotic medication and possibly other psychotropic medication like antidepressants can induce weight

gain or worsen other metabolic cardiovascular risk factors. Patients may have limited access to general healthcare with less opportunity for cardiovascular risk screening and prevention than would be expected in a non-psychiatric population.^{4, 5}

Individual with psychiatric illness have a double than the normal individual of dying with cardiovascular disease.⁶ The prevalence of cardiovascular disease among severe mental disorder of schizophrenia is five times high as compared with general population⁷ as a result schizophrenic patients has 20% shorter life expectancy than the general population.⁸

The high prevalence of under treatment of cardiovascular risk factors was recently confirmed in a study of 2463 people with schizophrenia from 12 European countries.⁹ People with severe mental illnesses (SMI), such as schizophrenia, depression or bipolar disorder, have worse physical health and reduced life expectancy compared to the general population.^{10, 11} Evidence shows that they have a 2–3 fold increased mortality rate and that the mortality gap associated with mental illness compared to the

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general population has widened in recent decades.¹² This excess mortality is not only caused by increased suicide; people with SMI have an increased risk of mortality associated with physical illness, with the commonest cause of death being cardiovascular disease (CVD).¹³

RISK FACTORS OF CARDIOVASCULAR DISEASE AMONG SEVERE MENTAL ILLNESS

There are different factors that can cause cardiovascular disease among severe mental illness. These include life style like eating habits, lack of adequate physical exercise which leads weight gain. Hence individual with severe mental illness are prone to be overweight, hypertensive, to smoking cigarettes, increased blood sugar level or diabetics and dyslipidemia.¹⁴⁻¹⁷ Smoking, obesity, and diabetes are 2-3 times as likely among people with SMI as in those without SMI.¹⁸ Among those with SMI and diabetes; mortality is increased in comparison to those without severe mental illness.¹⁹

There is a lot of factors inadequate access to general medical care²⁰ and medication use (e.g., atypical antipsychotic use.²¹ Behaviors like poor nutrition and lack of adequate exercise leads patients and even normal individual to weight gain. This may open the opportunity of having an increased risk of cardiovascular disease among patients with severe mental illness.²² In addition as weight increase adiposity will increase leading increased adiposity is associated with a variety of adverse physiological effects, including decreases in insulin sensitivity and changes in plasma glucose and lipid levels.²³

Severe obesity is a major public health concern, and it disproportionately affects people with serious mental illness. Lifestyle interventions targeting diet and exercise offer valuable opportunities for promoting weight loss and reducing cardiovascular risk in this vulnerable group, and the current study offers additional strong evidence for implementing these programs as part of core services delivered within community mental health settings. Targeting people with severe obesity and serious mental illness, a group that is at elevated risk of cardiovascular disease, could help advance ongoing efforts aimed at reducing the dramatic life expectancy disparity

impacting people with serious mental illness. These findings provide strong support for the inclusion of individuals with severe obesity in lifestyle interventions targeting fitness and weight loss in people with serious mental illness.²⁴

Patients with severe mental illness and diabetics are prone to develop metabolic disorder due to multiple factors possibly of the following²⁵:

Factors related with individual patients

(e.g. lifestyle choices, diet, tobacco consumption, substance use, exercise, obesity, low degree of implementation of education programs)

Illness factors

(e.g. pro-inflammatory states from MDD or depressive symptoms, possible disease-related risks for developing diabetes)²⁶

Medication factors

(i.e. psychiatric medications have a variable effect on glycemic control, weight and lipids)

Environmental factors

(e.g. access to healthcare, availability of screening and monitoring programs, social supports, education programs)

PSYCHIATRIC MEDICATION AND CARDIOVASCULAR DISEASE

Metabolic side effects of antipsychotic treatment include weight gain, dyslipidemia and increased susceptibility to diabetes. Patients with schizophrenia have increased coronary heart disease mortality and reduced life expectancy than those who are not mentally ill.²⁷ Psychiatric medications (primarily second-generation/atypical antipsychotics, but in some cases antidepressants as well) have the potential to affect weight, lipids and glycemic control in patients without diabetes.²⁸ Psychopharmacological treatment with antipsychotics, antidepressants and mood stabilizers is an effective and necessary component of the management of most mental disorders. People who adhere to psychiatric medication had less risk of mortality, suicide and hospital admission than those who are on adhering to regular medication. Those who are children and adolescents on antipsychotic

medication are more affected by cardiac problem than the adults.^{29, 30} This is because these age groups are more prone to weight gain as a result of altering energy expenditure and appetite stimulation. Hence different brain chemical receptors like histamine H₁ receptors, 5-HT_{2c} receptor and β_3 and α_1 adrenergic receptors will interact with psychiatric medication leading to weight gain.³¹ In addition antipsychotic medications are associated with an increase in LDL cholesterol and decrease in HDL-C.³²

ASSESSMENT OF CARDIOVASCULAR DISEASE

Risk factors should automatically have all their risk factors actively managed.³³

Now a day patients with common mental disorder are so young, those who have high blood pressure with common mental illness are those younger, and are more likely to be smokers than the populations that have cardiovascular disease.³⁴⁻³⁶

As obesity and metabolic abnormalities are also seen in children and adolescents who take antipsychotic medication are at particularly high risk to develop cardiovascular disease.³⁷⁻³⁹ This implies that focus should be given in close monitoring of risk factors such as weight and lipid levels in these age groups. Appropriate dietary, lifestyle and therapeutic intervention shall be employed to reduce bad outcome.⁴⁰

METABOLIC MONITORING

Identification of treatable disease in a high-risk population, that is, screening for CVD, dyslipidemia, and hypertension; Diabetics and identifying additional risk factors and disease markers to facilitate preventative strategies and early diagnosis. Tracking and linking of metabolic disturbance in relation to antipsychotic treatment. Progression CHD and type 2 DM risks factors are extremely increased in patients with schizophrenia and other forms of serious mental illness.⁴¹

Many patients with serious mental health problems frequently have poor access to general healthcare services. Such annual screening for CVD and metabolic disorders in patients with SMI, however,

can be cost effective, owing to the reduction in costs of treating the complications of diabetes.³³

Psychiatrists are often best placed to coordinate CVD risk assessment and management, ideally as part of shared care arrangements with general and specialist healthcare services. It is particularly important to establish baseline CVD risk at initial presentation so that any subsequent change during treatment can be monitored.

The medical history and examination should therefore include:

- 1) History of previous CVD, diabetes or other related disease
- 2) Family history of premature CVD, diabetes or other related disease;
- 3) Smoking habit;
- 4) Weight and height in order to calculate body mass index (BMI) and waist circumference;
- 5) Fasting blood glucose;
- 6) Fasting blood lipids: total cholesterol, triglycerides, LDL cholesterol (by calculation) and HDL-C;
- 7) Blood pressure (measured twice and average taken), heart rate, heart and lung auscultation, foot pulses;
- 8) ECG.

WHAT ALL MENTAL HEALTH CARE PROVIDERS SHOULD UNDERSTAND

- 1) All measurements should be taken at the initial visit and before the first prescription of psychiatric medication.
- 2) The frequency of testing will depend on the patient's medical history and the prevalence of baseline risk factors.
- 3) For patients with normal baseline tests, it is recommended that biochemical measurements are repeated at 6 weeks and 12 weeks after initiation of treatment and at least annually thereafter.
- 4) The frequency of testing will depend on the presence of risk factors and detected abnormalities. During the initial phase of treatment, it is important to measure weight weekly to identify those individuals who gain weight rapidly with psychiatric medication.

In patients with diabetes, an assessment of glycemia control by HbA_{1c} should be made regularly

(approximately every 3 months).⁴²

Table 1 Abnormal Values for Major Measurable Cardiovascular Disease Risk Factors^{33, 43}

Parameter	Abnormal Value
Fasting Blood Glucose	Impaired fasting glucose: between 6.1 and 7 mmol/l (110–125 mg/dl) Diabetes: 7.0 mmol/l (126 mg/dl)
Lipids	
Total cholesterol	Without diabetes: > 5 mmol/l (190 mg/dl) With diabetes: > 4.5 mmol/l (175 mg/dl)
LDL-cholesterol	Without diabetes: > 3 mmol/l (115 mg/dl) With diabetes: > 2.5 mmol/l (100 mg/dl)
Blood Pressure	Without diabetes: > 140/90 mmHg With diabetes: > 130/80 mmHg

RECOMMENDATION TO PREVENT DEVELOPMENT OF CARDIOVASCULAR DISEASE AMONG SEVERE MENTAL ILLNESS PATIENTS

All persons with severe mental illness have need of a holistic approach to their healthcare to addressing both their mental and their physical health needs. Routine monitoring of physical health and the provision of lifestyle guidance.

Lifestyle assessment (feeding practice including substance use history) and advice, assessment of medication side-effects and side-effect management, and physical healthcare. This will produce positive outcomes including the early detection of serious physical illnesses such as cardiac disease, diabetes and other chronic illness before the onset of complications. Further it can help patients to engage patients with lifestyle changes like smoking cessation and weight reduction through increased exercise and improved diet and become aware of side-effects and how to manage them.⁴⁵

Maintaining a healthy body weight and shape by healthy eating and regular physical activity is a key component of lowering CVD risk and prompt action is needed in patients who are overweight at initial assessment or who show signs of early weight gain with antipsychotic medication.

Patients should be advised to lose weight if they have: BMI > 25 kg/m² (especially if it is greater than 30 kg/m²)

Risk factor management for those with severe mental disorder shows better control of blood pressure and glycosylated hemoglobin than the general population. However, smoking and obesity rates remain high and should be the target of public health programs. The effective management of individuals with a common mental or severe mental illness requires the adoption of a holistic approach to their care. Individuals with schizophrenia or bipolar disorder, for example, need a tie together of care that offers adequate and reliable control of their symptoms, while enhancing their quality of life, and optimizing their personal self-sufficiency, their ability to live and work independently, and their ability to remain socially integrated.

Most individuals with common mental or severe mental disorder live relatively unhealthy lifestyles; they smoke more, they eat less fruit and vegetables, they exercise less, and they are more prone to alcohol or drug abuse than the general population. These lifestyle factors, coupled with an apparent natural predisposition to developing metabolic abnormalities and the potential metabolic side-effects of antipsychotic medications, mean that special attention must be given to the physical health needs of individuals with a severe mental illness. It is not by chance that obesity, dyslipidaemia, hypertension and diabetes are all highly prevalent in severe mental illness populations and that individuals with schizophrenia are twice as likely to die from

cardiovascular disease as individuals in the general population.^{44, 46}

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