

Medical comorbidity among patients diagnosed with schizophrenia spectrum disorders - A hospital based cross sectional study

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Abstract

Background: Medical comorbidity is higher among persons with persistent mental illness due to various factors. When compared to general population, patients with schizophrenia have a shorter life expectancy with a difference of 10-25 years and mortality rate is higher. Hence it is important to determine which chronic medical conditions are most common in patients with schizophrenia to deliver preventive and primary care at the earliest. **Aims and Objectives:** To study the prevalence of medical comorbidity in patients with schizophrenia spectrum disorders. **Material and Methods:** Patients aged between 20-40 years attending psychiatry OPD and IPD services in MVJ MC and RH who were diagnosed with schizophrenia spectrum disorders according to ICD-10 criteria were included in the study. Informed consent was obtained. Data was entered in the sociodemographic proforma and scales like BPRS and CGI were applied to assess the severity of symptoms clinically. Participants were screened for any medical morbidity by physical examination and routine blood investigations were carried out. Chi-square test was applied and p-value was obtained to study the association. **Results:** 100 patients were assessed of which 69 had one or more had medical comorbidity. The most common was Diabetes mellitus (32%), hypertension (28%) and metabolic syndrome (17%), hypothyroidism (19%), nutritional deficiencies (39%), skin manifestations (16%), respiratory conditions (3%), cardiovascular (3%), gastrointestinal conditions (4.3%), hyperprolactinemia (3%) and HIV (1.4%). Significant association was found with diabetes mellitus, metabolic syndrome, skin manifestations and hypothyroidism in patients with schizophrenia spectrum disorders. It was found to be more common in females than males in the age group of 31-40 years and subjects from low socioeconomic status and rural background were more affected. **Conclusion:** Treatment gap in patients with schizophrenia is high. Detection and management of medical/physical illness in patients with schizophrenia should be done at the earliest to improve the socio-occupational functioning.

Keywords: chronic medical condition, schizophrenia spectrum disorders

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INTRODUCTION

Psychosis is defined as a severe mental disorder in which thought and emotions are so impaired that contact is lost with external reality. Psychosis includes schizophrenia spectrum disorders. Schizophrenia spectrum disorders include schizophrenia, acute and transient psychotic disorder, schizotypal disorder, delusional disorder, other nonorganic psychotic disorders, unspecified nonorganic psychosis and schizoaffective disorder both mania type and depressive type.

Schizophrenia is a major mental disorder that encompasses a wide range of emotional, social and thought impairments.¹ Schizophrenia is a debilitating mental illness

that affects about one percent of the population in all cultures and it has varied and ominous symptoms that usually begins in late adolescence or early adulthood and is generally chronic.² it is often associated with comorbid diseases and a cause of major public health concern worldwide. Medical comorbidities associated with these disorders involve respiratory system, cardiovascular system, gastrointestinal system, endocrinological and urogenital system. Substance abuse is high among these patients which further contribute to medical comorbidities. The patients with schizophrenia spectrum disorders, have about 15 to 20 years reduced life expectancy compared to the general population and excess mortality in these patients is also well documented.^{3,4} they have a 2-3 fold increased risk of dying, and this mortality gap associated with schizophrenia compared to the general population has widened in recent decades.⁵ a meta-analysis showed 60% of the excess mortality in patients with schizophrenia is attributable to physical illness.⁶ the causes of death comprises a broad range of conditions, similar to the general population, but however death occurs as a result of cardiovascular (cv) complications represents the leading natural cause of excess mortality in patients with schizophrenia.^{7,8} a review by mitchell aj et.al has identified four main reasons for the shorter life expectancy; 1) an unhealthy lifestyle, including reduced physical activity, smoking, poor diet and alcohol; 2) adverse effects of antipsychotic medicines; 3) delayed diagnosis and insufficient treatment of physical illness; and 4) a higher risk of suicide and accidents.⁹

The greatest research need at the moment seems to be identification of these specific risk factors responsible for the excess mortality among patients with schizophrenia.¹⁰ to help the psychiatrists to focus more on these cardiovascular risks in patients with schizophrenia, the concept of metabolic syndrome (mets) has received a lot of attention in psychiatric literature.¹¹ the metabolic syndrome is a constellation of different conditions which are predictive of cardiovascular disease risk.¹² metabolic syndrome is a cluster of risk factors which includes increased abdominal obesity, impaired glucose tolerance, dyslipidemia and high blood pressure that causes increased cardiovascular disease and type 2 diabetes mellitus.^{12,13} A number of explanations like lifestyle and dietary habits that facilitate the development of obesity among patients with schizophrenia spectrum disorders, direct antipsychotic drug action on lipid and carbohydrate metabolism, the tendency to accumulate intraabdominal adiposity and fat, certain alterations of the hypothalamic pituitary-adrenal axis (hpa) producing hypercortisolemia and its genotypic expression in the form of truncal obesity, poor blood glucose control and possible associated alterations in hippocampal volume have been proposed.¹¹ schizophrenia

brings together a series of socio-demographic, clinical and metabolic parameters which are predictive of cardiovascular disease risk. For the increased risk of medical comorbidities in patients with schizophrenia, three complementary and partially overlapping causes are put forward in the literature: lifestyle factors, aspects of the psychotic disorder and antipsychotic medication. Age, gender, ethnicity, socioeconomic status, education, employment, marital status and residence; all of these factors have been found to influence in various studies. Clinical variables like age at onset, genetic risk factors, total duration of illness, family history, number of hospitalization, co-morbid medical and psychiatric disorders, sedentary life style, eating habits, substance use, chronic stress and use of psychotropic agents (particularly antipsychotics), have all been implicated in contributing to the pathogenesis of many comorbidities in patients with schizophrenia.¹⁶⁻²⁰ early screening and knowledge about these co-morbidities can help primary (prophylactic), secondary (ameliorative), or tertiary (mitigating) prevention. The association between schizophrenia spectrum disorders and the medical comorbidities is emerging as a public health question of importance to both mental health and primary care practitioners. In order to address the above issue, the current study was carried out with an aim to evaluate the association of medical comorbidities in patients with schizophrenia spectrum disorders and to evaluate which is the most common comorbidity. There are some studies from india till date, which have focused on the prevalence of metabolic syndrome and other medical comorbidities among patients with schizophrenia spectrum disorders. As medical comorbidities are common among these patients and as these conditions are identified in a general hospital setting we would like to take up this study.

MATERIALS AND METHODS

Study design: Cross-sectional descriptive study.

Source of data: Patients who were attending psychiatry OPD and IPD services in MVJ Medical College and Research Hospital diagnosed with schizophrenia spectrum disorders will be considered for the study after obtaining informed consent. This study was conducted for a period of one year from October 2019 to October 2020.

Sample Size = 100

Age group: Age: 20-40 years.

Method of collection of data

The study participants were 100 patients who met the International Classification of Diseases, Tenth revision (ICD-10) criteria (F20-29) for schizophrenia spectrum disorders. They were recruited by convenient sampling from the psychiatry outpatient and inpatient services of MVJ Medical College and Research Hospital over a period

of October 2019 to October 2020. Ethical clearance was obtained from institutional ethics committee. Before participation all participants provided written informed consent. Diagnosis and symptom severity of participants with schizophrenia spectrum disorders were determined by using brief psychotic rating scale (BPRS) and clinical global impression scale (CGI)

Sampling procedure

Purposive sampling is defined as a type of non-probability sampling method. It involves determination of persons as per the requirements of the researcher. The requirement is generally based upon several criteria which also includes information about the research issue or ability and motivation of the sample group to participate in the research.

Patients with schizophrenia spectrum disorders attending psychiatry IPD and OPD services in MVJ MC and RH will be included in the study. They will be screened through BPRS and CGI to assess the severity of symptoms.

Inclusion Criteria

Patients aged 20-40 years. Both males and females. Suffering from schizophrenia spectrum disorders, Qualifying ICD-10 criteria for the disorder will be considered. Those who agreed to participate in the study gave a written, informed consent.

Exclusion Criteria

Patients suffering from mental retardation. Patients who don't give consent for the study.

Instruments

Informed Consent. Semi-Structured proforma for Socio-Demographic Profile. General Physical Examination including weight, height, BMI and blood pressure. ICD 10 diagnostic guidelines for diagnosis of Schizophrenia (F 20). BPRS. CGI. Basic blood investigations.

A self-designed Informed consent form which explained the nature of the study was used. It was explained in the language best understood by the patient. Written informed consent was obtained on the form.

STATISTICS

The data was entered first into Microsoft Excel 2016 into tabular form. Statistical analysis of the data was done on the SPSS version 22.0 (Statistical Package for Social Sciences software). The tables depicting prevalence and correlation between variables were made using SPSS version 22.0. Frequency distribution was done for the sociodemographic variables. Qualitative variables will be presented as percentages and quantitative variables will be presented as mean \pm SD. P-Value and Chi-square test are applied to see the association.

RESULTS

Out of 100 subjects, 69 were found to have one or more comorbidities and 31 did not have any. Out of 100 subjects, 32 were in the age group of 20-30 years and 47 were in the age group of 31-40 years. Out of 69 around 22 subjects are in the age group of 20-30yrs and 47 subjects were in the range of 31-40 years. Out of 100 patients, 38 subjects were males and 62 subjects were females. As mentioned in table 1, 69 subjects had comorbidities out of which 26 were males and 43 females respectively with comorbidities. 36 subjects were educated up to primary school or below out of which 22 had comorbidity and 64 were educated up to high school and above among whom 47 subjects had comorbidities. In the current study population 85 subjects were from rural background out of whom 25 had comorbidity and 15 were from urban background among whom 9 had comorbidity.

Table 1: Distribution of different medical comorbidities in the study population

Comorbidity	No. of patients with comorbidity	Percentage (n=69)
Nutritional deficiency	39	57%
Diabetes mellitus	32	46%
Hypertension	28	40.5%
Hypothyroidism	19	28%
Metabolic syndrome	17	25%
Skin manifestations	16	23.1%
Gastrointestinal conditions	3	4.3%
Cardiac condition	2	3%
Respiratory conditions	2	3%
Hyperprolactinemia	2	3%
HIV	1	1.4%

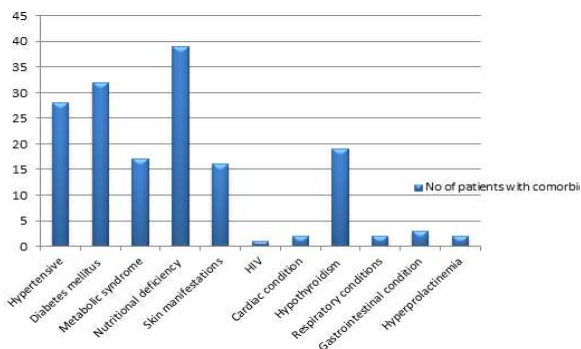


Figure 1:

The above table and graph depicts the percentage and number of subjects with comorbidities out of 100 patients with schizophrenia spectrum disorders was found to be 69 i. e. Hypertension 28 subjects (40.5%), Diabetes mellitus in 32 subjects (46%), metabolic syndrome in 17 subjects (25%), nutritional deficiency in 39 subjects (57%), skin manifestations in 16 subjects (23%), HIV in one subject (1.4%), cardiac conditions in the form of heart block and myocardial infarction in 2 subjects(3%), hypothyroidism in 19 subjects (28%). Significant association was found with diabetes mellitus, metabolic syndrome, skin manifestations and hypothyroidism in patients with schizophrenia spectrum disorders

DISCUSSION

The main objective was to study the prevalence of medical comorbidities in patients suffering from schizophrenia spectrum disorders. Schizophrenia afflicts approximately one per cent of the population worldwide and is among the most disabling diseases in the young age group. Although the disability due to schizophrenia is coming down with advances in treatment, physical comorbidities such as cardiovascular, respiratory, neurological, infectious and sexually transmitted diseases remain cause for concern. Comorbid physical illnesses are one of the potential reasons for reduced life expectancy in schizophrenia. Various risk factors associated with lifestyle and treatment such as obesity, smoking, hypertension, dyslipidemia, hyperglycemia and neuroleptic medications add to the risk for developing physical illnesses.^{112,113-115} The prevalence of physical comorbidities in patients with schizophrenia has been reported to be high compared to the general population with odds ratios varying from 2.62 to 7.54. The patients are often unable to seek adequate physical care due to social isolation, lack of insight, lack of employment, difficulty in communication and reduced pain sensitivity. The present study was conducted in the Outpatients Visiting Department of Psychiatry, MVJ MC and RH suffering from schizophrenia spectrum disorders in the age group of 20-40 years to assess the presence of common physical comorbidities in patients with schizophrenia, their

clinical and socio-demographic correlates and impact on functioning. One hundred patients (38 males and 62 females) were included in the study. The mean age was 32.94±5.65 years. Regarding educational status around 47 subjects out of 69 with comorbidities are educated up to high school. In terms of demographic status we found 60 subjects out of 69, belong to rural background and 9 belong to urban. Occupational status showed 68 subjects with comorbidity were unemployed out of 69 subjects. Marital status showed out of 69 patients with comorbidity 51 patients were married, 31 were unmarried and 5 were separated. We found that patients with schizophrenia were over-represented in areas of higher social deprivation. It is well documented that socioeconomic disadvantage and urban residence contribute to the risk of developing a psychotic disorder.¹¹⁶ Additionally, we found that women with schizophrenia were more likely than men with schizophrenia to have multiple comorbidities-this gender difference was also observed in the Swedish National Cohort Study noted above. People with schizophrenia and other mental illnesses have high rates of preventable risk factors and physical co morbidity accounts for 60% of premature deaths. In the present study in 69% patients, comorbid physical illnesses were detected on history and physical assessment. Koran *et al.* estimated that 45% of patients in California’s public mental-health system had physical disease. A study by Koranyi *et al.* of psychiatric clinic patients revealed that 43% of patients had physical illnesses. Hall *et al.* found that 46% of patients admitted had an unrecognized physical illness that either caused or exacerbated their psychiatric illness. Common comorbidities included hypertension (40.5%), diabetes mellitus (46%), metabolic syndrome (25%), nutritional deficiency (57%), hypothyroidism (28%) and skin manifestations (23.1%). A study by Holt and Pevler reported that diabetes occurred in 15% patients with schizophrenia lower as compared to present study (46%). Increased risk in people with schizophrenia of developing glucose regulation abnormalities, insulin resistance and type 2 diabetes mellitus found to be due to lifestyle factors (poor diet, sedentary behavior); and all antipsychotic agents (atypical more than typical) increase the propensity to develop diabetes. People with severe mental illness have 2-3 times more risk for cardiovascular disorders than the general population. People with mental illness have higher rates of cardiovascular and respiratory disorders than the general population; antipsychotic agents contribute to metabolic syndrome X (hypertension, hyperlipidemia, hyperglycemia, insulin resistance and obesity); lifestyle factors (smoking, alcoholism, poor diet, and lack of exercise) contribute to increased risk of cardiac problems. Mortality due to ischemic heart disease, cardiac arrhythmias and myocardial infarction is higher in people

with mental illness. The present study reported prevalence of endocrinological abnormalities to be higher (28%) than the cardiovascular morbidity at 3%. Our findings are consistent with a study conducted by Smith DJ *et al.* who reported that people with schizophrenia had lower recorded rates of cardiovascular disease as compared to other physical health comorbidities. It is a well-known fact that both typical and atypical antipsychotics though are main stay of treatment for schizophrenia, are also associated with their side effects. In the present study out of 100 patients 72 patients were using antipsychotic drugs Gupta *et al.* (2003) reported a prevalence rate of 30% for hypertension, 17% for diabetes and 43% for lipid abnormalities in 208 patients with psychotic disorders who were receiving anti-psychotic medications. Risk of metabolic syndrome also found to be higher in patients being treated with atypical antipsychotics. Heiskanen *et al.* (2003) found that 37% of patients with schizophrenia receiving antipsychotic medications developed metabolic syndrome higher as compared to present study (25%). Tarricone *et al.* (2006) found that patients treated with atypical antipsychotics had higher mean glycaemia and triglyceridemia and a significantly higher risk of receiving a diagnosis of hyperglycemia and hypertriglyceridemia than the reference group.

LIMITATIONS OF THE STUDY

The study was cross-sectional and descriptive with no intervention or follow up. Our study had a limited sample size. The study population was hospital based and not representative of the community. Use of a basic set of physical investigations and lack of a control population. It showed presence of physical comorbidities in a substantial number of patients with schizophrenia even with a limited number of investigations. There is a need for multicentric nationwide studies with a larger sample and an expanded battery of investigations to reach to a valid conclusion.

CONCLUSION

Our study concludes that:

People with schizophrenia have high rates of multiple physical comorbidities, emphasizing the importance of an integrated approach to their care.

As shown by this study, patient with schizophrenia spectrum disorders reported comorbid diabetes mellitus, hypertension, and metabolic syndrome among many others. Schizophrenia patients often receive inadequate medical care and low rates of treatment for co-morbidities like HTN, DM, dyslipidemia and obesity.

Sometimes the physical comorbidities remain unrecognized in such patients so integrated approaches such as assessment of medical illness by physician and

psychiatric diagnosis by psychiatrist require to prevent and treat the comorbid disorders.

Ultimately, to improve treatment outcomes and to reduce the suffering of people with schizophrenia, it is crucial to treat physical comorbidity promptly and assertively from the appearance of the first symptoms of psychotic disorder. Further research is needed to provide more insight into the risk factors and treatment modalities.

REFERENCES

1. Sadock BJ, Sadock VA, Ruiz P. Synopsis of Psychiatry-Behavioral Sciences / Clinical Psychiatry. 11th edition. Newyork: LWW; 2014.p.300-339.
2. Schultz SH, North SW, Shields CG. Am Fam Physician. 2007;75(12):1821-1829.
3. Newman SC, Bland RC, Mortality in a cohort of patients with schizophrenia: a record linkage study. Canadian Journal of Psychiatry, 1991;36(4):239-45.
4. Ringen PA, Engh JA, Birkenaes AB, Dieset I, Andreassen OA. Increased mortality in schizophrenia due to cardiovascular disease: a non-systematic review of epidemiology, possible causes, and interventions. Front Psychiatry. 2014; 5:137.
5. Saha S, Chant D, McGrath J. A systematic review of mortality in schizophrenia: is the differential mortality gap worsening over time? Arch Gen Psychiatry. 2007; 64(10):1123-31.
6. Brown S. Excess mortality of schizophrenia. A meta-analysis. Br J Psychiatry, 1997;171:502-8.
7. Laursen TM, Munk-Olsen T, Vestergaard M. Life expectancy and cardiovascular mortality in persons with schizophrenia. Curr Opin Psychiatry. 2012;25(2):83-88.
8. Osby U, Correia N, Brandt L, Ekblom A, Sparén P. Mortality and causes of death in schizophrenia in Stockholm county, Sweden. Schizophr Res. 2000;45(1-2): 21-8.
9. Mitchell AJ, Vancampfort D, Sweers K, van Winkel R, Yu W, De Hert M. Prevalence of metabolic syndrome and metabolic abnormalities in schizophrenia and related disorders-a systematic review and meta-analysis. Schizophr Bull. 2013;39(2):306-318.
10. Mortensen, P. B. Mortality and physical illness in schizophrenia. In R. M. Murray, P. B. Jones, E. Susser, J. van Os, and M. Cannon (Eds.), The epidemiology of schizophrenia.2003. p.275-287. Cambridge University Press.
11. Malhotra N, Grover S, Chakrabarti S, Kulhara, P. Metabolic syndrome in schizophrenia. Indian Journal of Psychological Medicine. 2013;35(3):227-240.
12. Papanastasiou E. The prevalence and mechanisms of metabolic syndrome in schizophrenia: a review. Ther Adv Psychopharmacol. 2013;3(1):33-51.
13. Kaur, J. A comprehensive review on metabolic syndrome. Cardiol. Res. Pract. 2014;11:1-21.
14. Cornier MA, Dabelea D, Hernandez TL, Lindstrom RC, Steig AJ, Stob NR, *et al.* The metabolic syndrome. Endocr Rev. 2008;29(7):777-822.
15. Edwardson CL, Gorely T, Davies MJ, *et al.* Association of sedentary behaviour with metabolic syndrome: A meta-analysis. PLoS One. 2012;7(4):e34916.

16. Correll CU, Frederickson AM, Kane JM, Manu P. Does antipsychotic polypharmacy increase the risk for metabolic syndrome? *Schizophr Res.* 2007; 89:91-100.
17. Hert MD, Schreurs V, Vancampfort D, Winkel RV. Metabolic syndrome in people with schizophrenia: a review. *World Psychiatry* 2009;8:15-22.
18. Gautam S, Meena PS. Drug-emergent metabolic syndrome in patients with schizophrenia receiving atypical (second-generation) antipsychotics. *Indian J Psychiatry* 2011;53:128-33.
19. Prussian KH, Barksdale-Brown D, Dieckmann J. Racial and ethnic differences in the presentation of metabolic syndrome. *J Nurse Pract.* 2007;3:229-239.
20. Hasnain MR, Vieweg WV. Acute effects of newer antipsychotic drugs on glucose metabolism. *Am J Med.* 2008;121.
21. Koran LM, Sox HC, Marton KI, *et al.* Medical evaluation of psychiatric patients. I. Results in a state mental health system. *Arch Gen Psychiatry.* 1989;46(8): 733-40.
22. Koranyi EK. Morbidity and rate of undiagnosed physical illnesses in a psychiatric clinic population. *Arch Gen Psychiatry.* 1979;36(4):414-9.
23. Hall RC, Gardner ER, Popkin MK, *et al.* Unrecognized physical illness prompting psychiatric admission: a prospective study. *Am J Psychiatry.* 1981;138(5):629-35.
24. Holt RIG, Peveler RC. Association between antipsychotic drugs and diabetes. *Diabetes Obesity and Metabolism.* 2006;8(2):125-35.
25. Dixon L, Weiden P, Delahanty J, *et al.* Prevalence and correlates of diabetes in national schizophrenia samples. *Schizophr Bull.* 2000;26(4):903-12.
26. Sernyak M, Leslie D, Alarcon R, *et al.* Association of diabetes mellitus with use of atypical neuroleptics in the treatment of schizophrenia. *Am J Psychiatry.* 2002;159(4):561-6.
27. Felker B, Yazel JJ, Short D. Mortality and medical comorbidity among psychiatric patients: a review. *Psychiatr Serv.* 1996;47:1356-63.
28. Lawrence, D., Jablensky, A., Holman, C. *et al.* Mortality in Western Australian psychiatric patients. *Soc Psychiatry Psychiatr Epidemiol.* 2000 ; 35 : 341–347 .
29. Davidson M. Risk of cardiovascular disease and sudden death in schizophrenia. *J Clin Psychiatry.* 2002;63:5-11. (Erratum appears in *J Clin Psychiatry.* 2002; 63:744.)
30. Ryan MC, Thakore JH. Physical consequences of schizophrenia and its treatment: the metabolic syndrome. *Life Sci.* 2002;71:239-57.
31. Kendrick T. Cardiovascular and respiratory risk factors and symptoms among general practice patients with long-term mental illness. *Br J Psychiatry.* 1996;169(6):733-9.
32. Smith DJ, Langan J, Mclean G, *et al.* Schizophrenia is associated with excess multiple physical-health comorbidities but low levels of recorded cardiovascular disease in primary care: cross-sectional study. *BMJ Open.* 2013;3(4):e002808.
33. Gupta S, Steinmeyer C, Frank B, Madhusoodanan S, Lockwood K, Lentz B, *et al.* Hyperglycemia and hypertriglyceridemia in real world patients on antipsychotic therapy. *Am J Ther.* 2003;10:348-55.
34. Heiskanen T, Niskanen L, Lyytikäinen R, Saarinen PI, Hintikka J. Metabolic syndrome in patients with schizophrenia. *J Clin Psychiatry.* 2003;64(5):575-9.
35. Ilaria T, Michela C, Beatrice FG, Daniela G, Marco M, Alessandro S, *et al.* Metabolic risk factor profile associated with use of second generation antipsychotics: a cross sectional study in a community mental health centre. *BMC Psychiatry.* 2006;6(1):11.

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