

Medical Co-Morbidity in Schizophrenia from Rural Region of Central India: A Cross-Sectional Study

Siddharth Kalucha¹, Sachin Ratan Gedam², Prakash Behere³

ABSTRACT

Background: The patients with schizophrenia have higher mortality rates and shortened life span. The major causes of this excess mortality are medical disease, unhealthy lifestyle, substance misuse, poor compliance or treatment refusal, and suicide among unnatural causes. The peoples diagnosed with schizophrenia expect to live 9-12 years lesser than those in the general population on average. **Objectives:** To study the prevalence of medical co-morbidities; association of medical co-morbidities with socio-demographic and clinical variables among schizophrenia patients; and to determine the association of I.C.D. -10 subtypes of schizophrenia with medical co-morbidities. **Materials and methods:** The cross-sectional study was conducted on 100 patients over a period of 4 months as per defined inclusion and exclusion criteria at tertiary care center. A semi-structured proforma, designed for the study was used to collect the socio-demographic and clinical details. **Results:** Co-morbid medical illness was reported in 22% of patients. The most common physical illness was endocrinological disorders (31.82%). The patients who had higher age and exposure to psychotropic medications were significantly associated with medical co-morbidities ($p < 0.05$). The co morbid medical illnesses were not significantly associated with type of medication used, subtype of schizophrenia and family history of mental illness ($p > 0.05$) whereas reported significant association with history of substance use ($p < 0.05$). **Conclusion:** The prevalence of medical co-morbidities was found to be 22%, lower than that in previous literature. Sometimes the physical illnesses remain unrecognized in such patients so integrated approaches require for prevention and treatment modalities.

Key words: Medical illness, Co-morbidities, Schizophrenia, Chronic illness.

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INTRODUCTION

The patients with schizophrenia have higher mortality rates and shortened life span as compared to the general population.^{1,2} The literature reported that the major causes of this excess mortality are medical disease, unhealthy lifestyle, substance misuse, poor compliance or treatment refusal, and suicide among unnatural causes.³

This vulnerable group of patients does not receive the physical health care because of physical symptoms being misinterpreted as part of physical illness by professionals, lack of motivation, social isolation, poor social skills and cognitive impairment making them less likely to adhere to treatment.⁴ The peoples diagnosed with schizophrenia can expect to live 9-12 years fewer than those in the general population on average.⁵ Recent literature showed that men with schizophrenia die 20 years earlier and women die 15 years earlier than people without major mental illness.⁶ The common physical conditions found in patients with mental illness include diabetes, hyperlipidaemia, cardiovascular disease (hypertension, cardiac arrhythmias), obesity, malignant neoplasm, HIV/AIDS, Hepatitis C, osteoporosis, hyperprolactinaemia and other physical illnesses.⁷ A study by Sokal *et al*

reported greater odds of respiratory illnesses for persons with schizophrenia even after controlling for smoking and medical illnesses found to be more severe among them.^{8,9}

Mortensen and Juel noted that some proportion of mortality in schizophrenia may be directly associated with side effects of neuroleptic medications.¹⁰ Several factors are known to increase the risk of medical disorders among mental illness. Among them are use of medications that contribute to weight gain, which is associated with diabetes and hypertension; poor attention to personal hygiene, which is associated with skin infections; high rates of smoking, which contributes to asthma, acute respiratory disease, heart disease, and lung cancer; reduced physical activity and fitness, which contributes to hypertension and heart disease; and use of medications with adverse gastrointestinal effects.⁹

Some variances associated with mental illness may remain unexplained. In our country, the study has not received much attention. Hence this study was undertaken to know the present scenario in the rural region.

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The aims and objectives of the present study are as follows:

1. To determine the prevalence of medical co-morbidities in schizophrenia patients.
2. To study the association of medical co-morbidities with socio-demographic and clinical variables.
3. To determine the association of I.C.D. -10 subtypes of schizophrenia with medical co-morbidities.

MATERIAL AND METHOD

Study design and sample

The cross-sectional study was conducted at Department of Psychiatry, Jawaharlal Nehru Medical College, Sawangi (M) Wardha, Maharashtra, India. The approval from Institutional ethics committee was obtained prior to the study. Total 100 patients diagnosed as schizophrenia as per International Classification of Diseases–10th revision of WHO (ICD-10) diagnostic criteria fulfilling the inclusion and exclusion criteria between Jan to Apr 2013 were included in the study. The majority of the physical illnesses were diagnosed by medical specialists within our hospital setup and documented in the medical records of the patients.

Inclusion criteria

1. Patients in the age group of more than 18 and less than 55 years of age (due to increase risk of cognitive deficits in the patients).
2. Patients diagnosed to be suffering from Schizophrenia according to ICD 10 criteria.
3. Patients who were stable on medications since at least past three months.
4. Both inpatients and out patients.

Exclusion criteria

1. Patients who were violent and uncooperative.
2. Patients who have any cognitive deficits and mentally subnormal patients.
3. Patients with any other psychiatric co-morbidity.
4. Patients not accompanied with reliable relative, previous medical record or documents.

Tools

A semi-structured proforma, designed for the study was used to collect the socio-demographic and clinical details. ICD-10 diagnostic criteria were used to validate the diagnosis of schizophrenia.

Procedure

The patient and close relative were explained the nature of the study. The written consent obtained from the patient. The patient was then interviewed using the available tools. The relative was subsequently interviewed to obtain other relevant details along with previous medical records or documents. Whenever patient presented with any physical complaint he/she was referred to consultant physician at our Institute. The diagnosis and treatment given by physician was entered into the record. Those patients who were already having co-morbid physical illness were entered in proforma. Thus presences of medical co morbidities were assessed using family member report, patient self-report or previous medical records.

Statistical analysis

The data was collected and entries were done using SPSS version 17.0 and Epi Info software. Analysis was studied using Chi square test and Odds ratio. P value of less than 0.05 was considered statistically significant.

RESULTS

The sample consisted of 47 male and 53 female schizophrenia patients (Table 1). The mean age of onset of schizophrenia was 29.24 years (SD 13.07), mean duration of illness was 8.40 years (SD 8.60) and 93% patients had less than 20 years of duration of schizophrenia (Table 2). The result reported, 69% patients were exposed to psychotropic medications for less than 5 years while 23% were exposed for 6 to 10 years; 22.73% of patients had medical illness before onset of schizophrenia and 77.27% had developed medical illness after the onset of schizophrenia (Table 2). Among them medical illness worsened schizophrenia in 27.27% of patients (Table 2) and causes may include electrolyte disturbances such as hypocalcaemia, hyponatremia, hypernatremia, hypokalemia, hypomagnesemia; disorders causing the delirious state and endocrine disorders causing hormonal changes. It was found that schizophrenia patients who had higher age and exposure to psychotropic medications were significantly associated with medical co-morbidities (Table 3). The patients with schizophrenia developing medical illness were not significantly associated with duration of illness (Table 3). The co morbid medical illnesses were not associated with type of medication used, subtype of schizophrenia and family history of mental illness whereas reported significant association with history of substance use (Table 4).

As shown in Figure 1, prevalence of medical co morbidities found to be 22%. The endocrine disorders were found to be highest (32%) followed by disorders of respiratory system (Figure 2). Figure 3 showed, 67% were exposed to atypical anti psychotics, 11% were exposed to typical anti psychotics while 22% were exposed to combination of both typical and atypical anti psychotic. Out of total patients, 78% were diagnosed as suffering from paranoid schizophrenia, 12% from undifferentiated schizophrenia, 3% from hebephrenic schizophrenia, 2% from catatonic schizophrenia and 5% from other types (Figure 4).

DISCUSSION

Schizophrenia has been described as a “life-shortening disease”. People with schizophrenia and other mental illnesses have high rates of preventable risk factors and physical co morbidity accounts for 60% of premature deaths.¹¹ Koran *et al* estimated that 45% of patients in California’s public mental-health system had physical disease.¹² A study by Koranyi *et al* of psychiatric clinic patients revealed that 43% of patients had physical illnesses.¹³ Hall *et al* found that 46% of patients admitted had an unrecognized physical illness that either caused or exacerbated their psychiatric illness.¹⁴ In our study we found 22% of medical co morbidity in schizophrenia patients. It is lower than that found in other studies. This disparity may be due to the fact that the present study setting was in rural area and low socio-economic strata, many people were not affording thorough medical investigations; bringing the percentage of medical co morbidity to lower levels.

A study by Holt and Pevler reported that diabetes occurred in 15% patients with schizophrenia lower as compared to present study.¹⁵

Table 1: Age and Gender wise distribution of the patients

Age (years)	Male (%)	Female (%)	Total (%)
< 20	4(4%)	3(3%)	7(7%)
21-40	30(30%)	33(33%)	63(63%)
41-60	11(11%)	15(15%)	26(26%)
61-80	2(2%)	2(2%)	4(4%)
Total	47(47%)	53(53%)	100(100%)
Mean	37.97	36.96	37.44
SD	11.22	12.08	11.64

Table 2: Semi structured details of the patients

Age of onset	No of patients	Percentage (%)	Mean ± SD
<20	26	26	29.24±13.07
21-40	58	58	
41-60	15	15	
61-80	1	1	
Duration of illness(yrs.)	No of patients	Percentage (%)	
<20	93	93	8.40±8.60
21-40	7	7	
Exposure to psychotropic medication	No of patients	Percentage (%)	
< 5 years	69	69	4.68±4.34
6-10 years	23	23	
11-15 years	5	5	
20-25 years	3	3	
Distribution of medical illness	No of patients	Percentage (%)	
Before	5	22.73	
After	17	77.27	
Effect of medical illness on schizophrenia	No of patients	Percentage (%)	
Worsen	6	27.27	
Does not worsen	16	72.73	

Table 3: Association of the clinical variables with medical co-morbidities

Medical Illness	n	Mean Age	Std. Deviation	Std. Error Mean	z-value	p-value
Yes	22	43.59	10.21	2.17	2.90	0.004
No	78	35.70	11.49	1.30		
Medical Illness	n	Duration of mental illness	Std. Deviation	Std. Error Mean	z-value	p-value
Yes	22	11.27	8.55	1.82	1.79	0.076
No	78	7.58	8.49	0.96		
Medical Illness	n	Exposure to psychotropic medication	Std. Deviation	Std. Error Mean	z-value	p-value
Yes	22	6.58	6.05	1.29	2.60	0.011
No	78	3.85	3.72	0.42		

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 behaviour); and all antipsychotic agents (atypical more than typical) increase the propensity to develop diabetes.^{16,17,18} 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, hyperlipidaemia, hyperglycaemia, insulin resistance and obesity); lifestyle factors (smoking, alcoholism, poor diet, and lack of exercise) contribute to increased risk of cardiac problems. Mortality due to ischaemic heart disease, cardiac arrhythmias and myocardial infarction is higher in people with mental illness.^{19,20,21,22} The present study reported prevalence of endocrinal abnormalities to be higher (31.82% especially diabetes mellitus type -2)

than the cardiovascular morbidity at 9.09% and the patients who had higher age were associated with increased risk of physical illness. 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 co morbidities.²³ The variation as compared to other studies can be accounted to the fact of difference in sample demographics like variations in setting, as our study was on rural population.

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. 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.²⁴ Risk of metabolic syndrome also found to be higher in patients being treated with atypical antipsychotics. Heiskanen *et al* (2003)

Table 4: Association of the variables with medical co-morbidities

	Medical Illness		Total	χ ² -value	p-value
	Yes	No			
Type of medication					
Atypical	14	53	67	0.49	0.78,NS
Typical	2	9	11		
Mixed	6	16	22		
ICD 10 classification of schizophrenia					
Paranoid	17	61	78	0.86	0.93
Undifferentiated	3	9	12		
Catatonic	0	2	2		
Hebephrenic	1	2	3		
Other	1	4	5		
H/O Substance Abuse					
Yes	7	11	18	3.87	0.046
No	15	67	82		
Family H/O mental illness					
Yes	5	25	30	0.71	0.39
No	17	53	70		

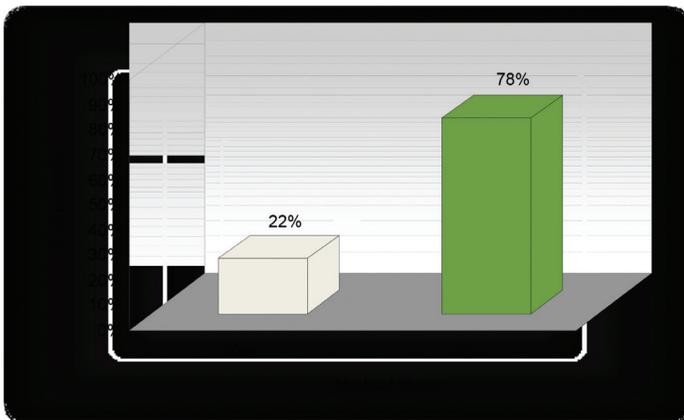


Figure 1: Distribution according to presence of medical illness.

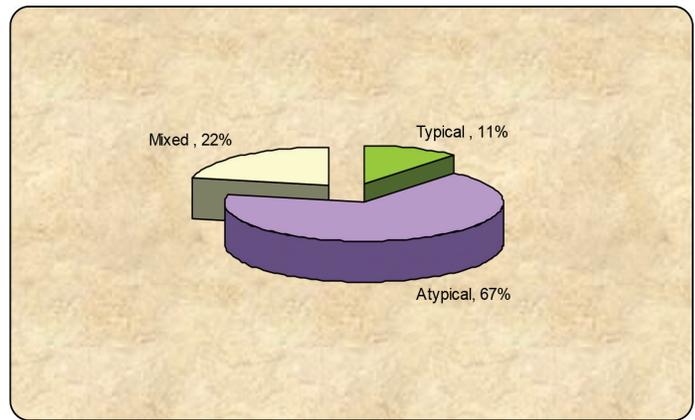


Figure 3: Distribution according to type of medication.

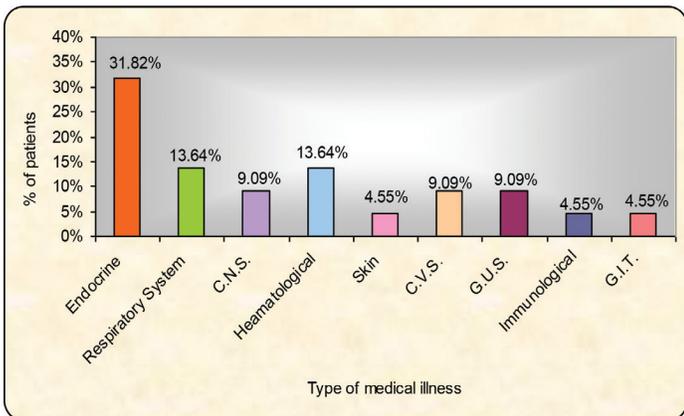


Figure 2: Distribution of mental illness according to medical co-morbidities.

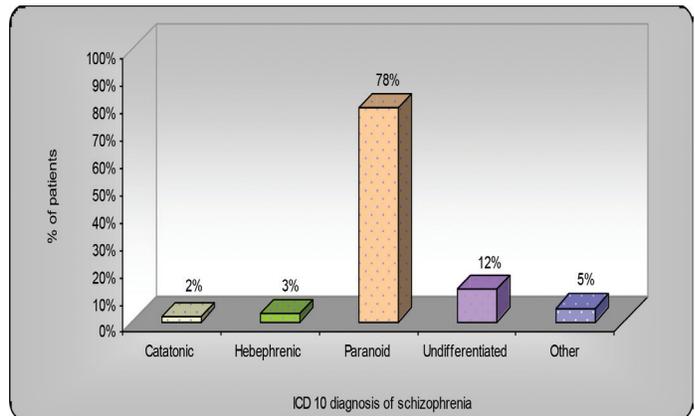


Figure 4: Distribution according to I.C.D. 10 diagnosis of schizophrenia.

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.²⁶ The above findings are consistent with the results reported in present study that patients who were exposed to psychotropic medications for longer periods of time, were more at risk of developing medical illness (majority of our patients i.e. 67% were being treated with atypical antipsychotics).

High alcohol use in schizophrenia is associated with more severe psychiatric symptoms and more disturbed behavior.²⁷ Poor medication compliance, higher rates of re hospitalization and poor treatment response has been associated with comorbid drug abuse in schizophrenia.^{28,29} Smoking rates is found to be higher in schizophrenia subjects than in normal population.³⁰ The present study also found that history of substance abuse in schizophrenia increased the risk of developing medical co-morbidities. This finding is in accordance with above mentioned studies.

Literature is limited for medical co-morbidity seen in different subtypes of schizophrenia as described in ICD-10. This study also did not find any difference in subtypes of schizophrenia and prevalence of medical co-morbidity. Similarly literature is very limited on prevalence of medical comorbidity in schizophrenia and its correlation with family history of mental illness. The present study found that having a family history of mental illness in patients with schizophrenia does not increase the likelihood of development of physical illness.

CONCLUSION

The prevalence of medical co-morbidities was found to be lower than that in previous literature. As shown by this study schizophrenia patients reported co-morbid diabetes mellitus, C.O.P.D, hypertension, anaemia among many others. More the exposure to psychotropic medications in term of duration increased the chances of developing medical illness. Sometimes the physical illnesses 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 co-morbid disorders. Further research is needed to provide more insight into the risk factors and treatment modalities.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

ABBREVIATION USED

ICD: International Classification of Diseases; **HIV:** Human immunodeficiency virus; **AIDS:** Acquired immune deficiency syndrome; **SPSS:** Statistical Package for the Social Sciences; **COPD:** Chronic Obstructive Pulmonary Disease.

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