



## Physical comorbidity in schizophrenia & its correlates

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**The presence of common physical comorbidities, their demographic and clinical correlates and impact on functioning was assessed in 100 patients with schizophrenia. The patients had a mean age of 35.12±10.7 yr with mean duration of illness of 8.3±0.58 years. Seventy per cent were detected to have a comorbid physical condition. Common conditions included hypertension (21%), diabetes mellitus (15%) and anaemia (12%). Increasing age, being female, being married, longer duration of illness and longer duration of treatment were associated with higher risk of having a comorbid physical illness. Further studies need to be done with a large sample to confirm these findings.**

**Key words** Diabetes mellitus - hypertension - physical comorbidity - schizophrenia - tuberculosis

Schizophrenia afflicts approximately one per cent of the population worldwide<sup>1</sup> 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<sup>2</sup>, physical comorbidities such as cardiovascular, respiratory, neurological, infectious and sexually transmitted diseases remain cause for concern<sup>3</sup>. Comorbid physical illnesses are one of the potential reasons for reduced life expectancy in schizophrenia<sup>4,5</sup>. Various risk factors associated with lifestyle and treatment such as obesity, smoking, hypertension, dyslipidaemia, hyperglycaemia and neuroleptic medications add to the risk for developing physical illnesses<sup>3,5-7</sup>. 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<sup>8</sup>. 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<sup>3,5,9</sup>. This cross-sectional study was undertaken from March to August 2013 in the department of Psychiatry, All India Institute of Medical Sciences, New Delhi, India, to assess the presence of common physical comorbidities in patients with schizophrenia, their clinical and socio-demographic correlates and impact on functioning. All patients attending the walk-in clinic with a diagnosis of schizophrenia on four days a week were screened for inclusion criteria for the study. To be included, the patients needed to meet the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition (DSM IV)<sup>10</sup> criteria of schizophrenia, and be above 18 yr with duration of illness of more than two years. Female patients with pregnancy were excluded. Patients and their caregivers were informed in detail about the purpose of the study. Written

informed consent was taken from the patient and/ or caregiver. The study was approved by the Institute Ethics Committee.

Socio-demographic and clinical details such as duration of illness, duration of treatment and past and family history of psychiatric illness were recorded. The severity of schizophrenia was assessed using the Positive and Negative Syndrome Scale (PANSS)<sup>11</sup>. The current status of functioning was assessed using the Global Assessment of Functioning (GAF)<sup>10</sup> and Social and Occupational Functioning Assessment Scale (SOFAS)<sup>10</sup>. All assessments were conducted on the first day of inclusion. Physical illness checklist, prepared for the study, based on earlier studies on physical comorbidity in schizophrenia<sup>3,5,6</sup>, was used to screen for physical illnesses in the patient and the family. Detailed physical examination was conducted, and laboratory investigations (haemogram, liver and renal function tests, fasting blood sugar and lipid profile), X-ray chest and electrocardiography were conducted on the next day. Patients detected to have physical illness were referred to the concerned speciality in the hospital. Data were analyzed using SPSS (version 20) for Microsoft software (IBM, Armonk, NY, USA). Percentage and frequency was calculated for nominal and ordinal variables, and mean and standard deviation was calculated for continuous variables. Independent sample t test, Mann-Whitney test and Chi-square test were used for comparison.

One hundred patients (55 males and 45 females) were included in the study. The mean age was  $35.12 \pm 10.7$  yr (range 18 to 72 yr), and mean duration of illness was  $8.3 \pm 7.8$  yr (range 2-30 yr) with mean duration of treatment of 7.8 yr (range 1 month-30 yr). Most (86%) patients were on 2<sup>nd</sup> generation antipsychotic and 12 were on a 1<sup>st</sup> generation antipsychotic. One patient was on both 1<sup>st</sup> as well as 2<sup>nd</sup> generation antipsychotics, and one was maintaining well without any antipsychotic. In 40 per cent patients, comorbid substance abuse in the form of tobacco (40%) and alcohol (13%) was present. The mean total score ( $\pm$ SD) on PANSS was  $66.89 \pm 11.46$ . The mean scores on the positive, negative and general psychopathology scales were  $14.6 \pm 6.12$ ,  $22.67 \pm 7.98$  and  $29.56 \pm 6.44$ , respectively. The mean score on GAF was  $61.7 \pm 15.68$  (range 20-90). The mean score on SOFAS was  $61.54 \pm 15.12$  (range 30-90).

In 70 per cent patients, comorbid physical illnesses were detected on history and physical assessment. Common comorbidities included hypertension (21%), diabetes mellitus (15%), anaemia (12%), tuberculosis (7%), obesity (6%) and menstrual disturbances (5%).

Less frequent physical illnesses included thyroid disorder (4%), epilepsy (3%), cerebrovascular accident (2%), coronary artery disease (CAD) (2%), deafness (2%), liver disease (2%), other gastrointestinal illnesses (2%) and dementia (1%). The mean body mass index score of participants was  $24.4 \pm 3.8$  kg/m<sup>2</sup> ranging from 16.5 to 39.5. Thirty two per cent suffered from only one comorbid physical illness, whereas 21 and 11 per cent had two and three comorbid illnesses, respectively. Those with current physical illness were significantly older than those without physical illness ( $P=0.001$ ). Current physical illnesses were significantly more commonly seen in females ( $P=0.016$ ) and in the married ( $P=0.004$ ) individuals. Participants with a comorbid physical illness tended to have a longer duration of illness [median duration 8.0 (2-21) vs 5.0 (2-30) years,  $P=0.016$ ] as well as longer duration of treatment [median duration 7.5 (0.1-20) vs 4.5 (2-30) years,  $P=0.024$ ]. There was no difference in the level of functioning between the participants with or without physical comorbidity as assessed on SOFAS and GAF (Table).

Although 70 per cent of patients suffered from a comorbid physical condition, an average number of physical comorbidities was low at 1.34 (range=0-5), which was lower than that reported in an earlier study<sup>12</sup>. Patients with physical illnesses tended to be older, married and female and had a longer duration of illness. Age has been identified as a risk factor in an earlier study also<sup>12</sup>. Similarly, a longer duration of illness and duration on treatment were significantly associated with higher risk to develop physical illnesses. Long duration of exposure to antipsychotic treatment, especially the 2<sup>nd</sup> generation antipsychotics, is a known risk factor for the common physical comorbidities<sup>5</sup>. Lifestyle illnesses such as diabetes mellitus, hypertension and CAD have common risk factors which are accentuated by 2<sup>nd</sup> generation antipsychotics and sedentary lifestyle<sup>5</sup>. Fifty five patients suffered from lifestyle illnesses, and among them, 43 were on 2<sup>nd</sup> generation antipsychotics. No significant difference was observed between the patients on 1<sup>st</sup> and 2<sup>nd</sup> generation antipsychotics probably due to limited sample size in our study.

The presence of physical comorbidity for individual illnesses such as hypertension, diabetes mellitus, anaemia, obesity and CAD was similar to an earlier nationwide study on hospitalized patients from Spain on physical comorbidity in patients with schizophrenia<sup>13</sup> though lower than general estimates reported in another study<sup>5</sup>.

**Table.** Association of socio-demographic and clinical variables with current physical illnesses (n=100)

Variables	Physical comorbidity		P
	Present (n=70)	Absent (n=30)	
Age, yr, mean±SD	37.4±10.5	29.8±9.6	0.001
Gender			
Male	33	22	0.016
Female	37	8	
Marital status			
Married	45	10	0.004
Others	25	20	
Total duration of illness (yr), median (range)	8 (2-21)	5 (2-30)	0.016
Total duration of treatment (yr), median (range)	7.5 (0.1-20)	4.5 (2-30)	0.024
PANSS, mean±SD scores			
Total	67.5±10.9	65.4±12.4	0.351
Positive scale	14.1±5.9	15.8±6.5	0.209
Negative scale	23.5±8.1	20.6±7.4	0.087
GP scale	29.8±6.6	28.9±6.0	0.606
GAF, mean±SD scores	60.2±14.9	64.1±16.4	0.243
SOFAS, mean±SD scores	59.9±14.5	64.0±16.3	0.230
Current treatment (%)			
1 <sup>st</sup> generation antipsychotics	10	2	0.34
2 <sup>nd</sup> generation antipsychotics	58	28	
Others	2	0	
Past treatment history (%)			
1 <sup>st</sup> generation antipsychotics	1	0	0.55
2 <sup>nd</sup> generation antipsychotics	42	21	
Both	27	9	

PANSS, Positive and Negative Syndrome Scale; GP, general psychopathology; GAF, Global Assessment of Functioning; SOFAS, Social and Occupational Functioning Assessment Scale; SD, standard deviation

There was no significant difference in the level of functioning as measured on GAF and SOFAS between the patients with or without physical comorbidity. In one of the previous studies assessing psychosocial functioning in patients of schizophrenia with comorbid physical illnesses<sup>12</sup>, physical comorbidity was found to have only a limited effect on psychosocial functioning.

Though our study had a limitation of cross-sectional design, limited sample size, 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 multicentre nationwide studies with a larger sample and an expanded battery of investigations to reach to a valid conclusion.

**Conflicts of Interest:** None.

### References

1. Freedman R. Schizophrenia. *N Engl J Med* 2003; 349 : 1738-49.
2. Thirhalli J, Venkatesh BK, Kishorekumar KV, Arunachala U, Venkatasubramanian G, Subbakrishna DK, *et al.* Prospective comparison of course of disability in antipsychotic-treated and untreated schizophrenia patients. *Acta Psychiatr Scand* 2009; 119 : 209-17.
3. Leucht S, Burkard T, Henderson J, Maj M, Sartorius N. Physical illness and schizophrenia: A review of the literature. *Acta Psychiatr Scand* 2007; 116 : 317-33.
4. 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 : 1123-31.
5. DE Hert M, Correll CU, Bobes J, Cetkovich-Bakmas M, Cohen D, Asai I, *et al.* Physical illness in patients with severe

- mental disorders. I. Prevalence, impact of medications and disparities in health care. *World Psychiatry* 2011; 10 : 52-77.
6. Jeste DV, Gladsjo JA, Lindamer LA, Lacro JP. Medical comorbidity in schizophrenia. *Schizophr Bull* 1996; 22 : 413-30.
  7. De Hert M, Cohen D, Bobes J, Cetkovich-Bakmas M, Leucht S, Ndeti DM, *et al.* Physical illness in patients with severe mental disorders. II. Barriers to care, monitoring and treatment guidelines, plus recommendations at the system and individual level. *World Psychiatry* 2011; 10 : 138-51.
  8. Carney CP, Jones L, Woolson RF. Medical comorbidity in women and men with schizophrenia: A population-based controlled study. *J Gen Intern Med* 2006; 21 : 1133-7.
  9. Lambert TJ, Velakoulis D, Pantelis C. Medical comorbidity in schizophrenia. *Med J Aust* 2003; 178 (Suppl) : S67-70.
  10. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders: DSM-IV-TR*. 4<sup>th</sup> ed. Washington DC, USA: American Psychiatric Association; 2000.
  11. Kay SR, Fiszbein A, Opler LA. The positive and negative syndrome scale (PANSS) for schizophrenia. *Schizophr Bull* 1987; 13 : 261-76.
  12. Chwastiak LA, Rosenheck RA, McEvoy JP, Keefe RS, Swartz MS, Lieberman JA. Interrelationships of psychiatric symptom severity, medical comorbidity, and functioning in schizophrenia. *Psychiatr Serv* 2006; 57 : 1102-9.
  13. Bouza C, López-Cuadrado T, Amate JM. Physical disease in schizophrenia: A population-based analysis in Spain. *BMC Public Health* 2010; 10 : 745.

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