

Prevalence of Physical Comorbidities among Long-Term Psychiatric Inpatients: A Single Centre Study from South India

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ABSTRACT

Background: Physical comorbidities are the most common causes of early mortality among patients with mental disorders. Prevention and early treatment of physical comorbidities would lead to better outcomes. Hence, the aim of the study was to estimate the prevalence of physical health disorders present as comorbidities among long-term stay psychiatric inpatients and to compare the difference in the physical comorbidities among male and female patients.

Materials and Methods: The study was conducted at Institute of Mental Health, Madras Medical College, Chennai. It was a descriptive study combining data from clinical files and nursing records related to the physical health of the long-term inpatients. The clinical records of long-term inpatients, defined as the duration of stay in the care facility for more than 5 continuous years between 1st January and 30th June, 2019 were assessed.

Results: The estimated prevalence was 74.2% (95% CI: 69.5-78.6) for at least one physical disorder comorbidity and 38.8% (95% CI: 33.8-43.9) had more than one physical comorbidities. Female in-patients have 2.7 times higher risk than males to have diabetes mellitus, hypertension and thyroid disorders. They also have 0.92 times higher risk than males to have anaemia.

Conclusion: There is a high prevalence of physical comorbidities among long term psychiatric inpatients. Systems for the early detection and better clinical management of these physical comorbidities are essential in any long-term psychiatric facility.

Keywords: mental illness, physical disorders, comorbidities, inpatients, chronic, diabetes, hypertension

Running Title: Physical comorbidities among long-term psychiatric inpatients

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How to Cite this Article: Narmadha V, Akshaya A, Poornachandrika P, Vijaya Raghavan. Prevalence of physical comorbidities among long-term psychiatric inpatients: A single centre study from South India. Indian Journal of Mental Health and NeuroSciences. 2020;4(1): pp 3-9

INTRODUCTION

It remains a challenge to maintain physical health in the presence of severe mental illness, globally.^{1,2} This might be more pronounced among patients with psychiatric illness in long-term care facilities due to the various factors including lack of regular monitoring, reduced physical health promotion activities and inadequate self-report by the patients.³

While physical health issues are prevalent in the general population as well, the impact on people with severe mental illness are significantly greater.⁴ Moreover, it has established that patients with severe mental disorders have an age-adjusted higher mortality when compared with the general population; the life span of these patients is nearly 15-20 years less than the normal population.^{5,6,7} The major cause of excess and early mortality among patients with severe mental disorders is due to physical disorders such as cardiovascular diseases, respiratory diseases and infections.⁴

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Various biological, psychological and social risk factors, through their interplay, lead to these poor physical health and physical health disorders among patients with severe mental disorders. For psychiatric in-patients, and in particular for long-term psychiatric in-patients, the challenge of maintaining physical health often relates to various factors, including inadequate monitoring of their physical problems, inadequate self-report by the patients themselves of physical symptoms due to severe psychopathology or cognitive impairment, pre-existing genetic vulnerability and adverse effects of the antipsychotic medications.^{8,9}

Previous studies from the western parts of the world have examined the prevalence of physical comorbidities among long-term stay patients. In a study, the prevalence of physical morbidity in elderly psychiatric patients was observed to be nearly 75%.¹⁰ Similarly, Fisher et al., found that 84% of long-stay psychiatric inpatients had any medical condition with high prevalence of obesity (31%), serious respiratory problems (24%), hypertension (17%), cardiovascular problems (17%) and diabetes mellitus (14%).¹¹ The common comorbid medical conditions are found to be heart failure, vitamin D deficiency, falls, diabetes mellitus, blood pressure, anaemia, clinical nutrition, pressure ulcers, clostridium difficile infection, and insomnia.¹² A substantial number of patients suffered from more than one medical condition, highlighting the multi-morbidity status among patients with severe mental illness.

Though physical disorder comorbidities among patients with mental disorders have been studied in India, most of the studies were conducted at the outpatient department with few studies done with inpatients. But, to our knowledge, no study from India has examined the physical health comorbidities among patients with mental disorders as long-term in-patients in a large psychiatric institution. Hence, the aim of the study was to estimate the prevalence of physical health disorders present as comorbidities among patients with mental illness with a long-term stay as in-patients and to compare the difference in the physical comorbidities among male and female patients.

MATERIALS AND METHODS

Study setting

The study was conducted at Institute of Mental Health, Madras Medical College, Chennai. Institute of Mental Health (IMH) is one of the oldest and largest mental

health institutions in South India with 1500 beds, rendering specialist psychiatric services to a large geographical catchment area, including Tamilnadu, Andhra Pradesh and Puducherry. Other than general and specialist psychiatric outpatient and acute inpatient services, IMH also provides long-term stay for patients with severe mental illness who are destitute, from other parts of the country who are not able to be reunited with their family members and with severe psychopathology. To note, historically, IMH has long been functioning as an asylum for the care of patients with severe mental illness. Institutional ethical committee approval was obtained before the start of the study.

Study design

The study was a descriptive study combining data from the clinical file, regular nursing records and other statistics related to the physical health of the long-term inpatients in Institute of Mental Health.

Study participants

For the purpose of the study, the long-term stay in the institution was defined as for five or more years continuously, though previous studies had a lesser time limit.¹¹ The case records of long-term inpatients in Institute of Mental Health between 1 January and 30 June 2019, were included in the study after checking for the inclusion and exclusion criteria. Inclusion criteria were: 1. Persons with mental illness in the psychiatric inpatient facility; 2. Both gender; 3. Duration of stay of the inpatient care continuously for more than 5 years. Exclusion criteria were: 1. Patients with criminal status; 2. Case records of the patients which were incomplete or needed information not available.

Data collection and management

Semi-structured proforma was developed to capture the relevant data pertaining to the demographic, clinical, anthropometric and physical health issues variables was prepared, pretested and finalized with suitable modifications. Researcher (VN1), with the help of the nursing staff, identified and sorted the case records based on the inclusion and exclusion criteria. Case records with incomplete data were excluded. The data on all physical health problems were recorded onto study-specific data sheets. Individual patients' physical-health data – recorded from a number of different sources – was integrated with their demographic and clinical data.

Statistical analysis

The statistical analysis was done using SPSS 16.0. Discrete variables were represented as frequencies and percentages, while the continuous variables were represented as mean and standard deviation. The prevalence estimates were calculated using OpenEpi.¹³ Comparison between the groups were done using chi-square test for discrete variables and t-test for continuous variables. Odds ratio was calculated with 95% CI to examine the risk of various disorders between male and female patients. Statistical significance was set at $p < 0.05$.

RESULTS*Socio-demographic and clinical profile of the study participants:*

Socio-demographic profile of the study participants is described in Table 1. The mean age of the study participants was 52.2 ± 11.7 years with 171 males and 182 females. 53% of the sample had a diagnosis of severe mental disorder and 46% of the sample had mental retardation diagnosis. The average duration of stay in the care facility was 17.3 years.

Table 1: Demographic and clinical characteristics of the study participants (N = 353)

Variable	Mean \pm SD; n (%)
Age	52.2 \pm 11.7
Gender	
Male	171 (48.4)
Female	182 (51.6)
Duration of stay	17.3 \pm 10.7
Locality	
Tamil Nadu	154 (43.6)
Other state	199 (56.4)
Diagnosis	
Severe mental disorders	187 (53)
Mental retardation	166 (47)
BMI	
Total	20.9 \pm 4.9
Male	19.2 \pm 3.8
Female	22.4 \pm 5.2

Prevalence of physical disorder comorbidities among the study participants and comparison between gender:

Table 2 depicts the prevalence of physical disorder comorbidities among the long-term stay patients and the comparison of the prevalence among males and females. The estimated prevalence was 74.2% (95% CI: 69.5-78.6) for at least one physical disorder comorbidity and 38.8% (95% CI: 33.8-43.9) had more than one physical comorbidity. The most common physical comorbidities were diabetes mellitus, seizure disorder and anaemia. Less common comorbidities seen in the patients were COPD, varicose vein, hydrocele, CSOM, hernia, uterine prolapse and benign breast lesions.

Table 2. Prevalence of physical health comorbidities among the study participants and comparison between gender

Variable	Total N (%) (N = 353)	Male N (%) (N = 171)	Female N (%) (N = 182)	P	Odds ratio (95% CI)
Physical Comorbidity					
No	91 (25.8) 95% CI: 21.4-30.5				
At least one	262 (74.2) 95% CI: 69.5-78.6				
Two and above	137 (38.8) 95% CI: 33.8-43.9				
Diabetes mellitus					
Yes	131 (37.1%)	43 (25.1%)	88 (48.4%)	0.00*	2.7 (1.7 to 4.3)
No	222 (62.9%)	128 (74.9%)	94(51.6%)		
Hypertension					
Yes	51 (14.4%)	16 (9.4%)	35(19.2%)	0.01*	2.3 (1.2 to 4.3)
No	302 (85.6%)	155 (90.6%)	147 (80.8%)		
Seizure disorder					
Yes	74 (21%)	40 (23.4%)	34 (18.7%)	0.29	0.75(0.45 to 1.2)
No	279 (79%)	131 (76.6%)	148 (81.3%)		
Thyroid disorders					
Yes	35 (9.9%)	1 (0.6%)	34 (18.7%)	0.00*	39.05 (5.2 to 288.7)
No	318 (90.1%)	170 (99.4%)	148 (81.3%)		
Fracture					
Yes	38 (10.8%)	15 (8.8%)	23 (12.6%)	0.15	1.5 (0.75 to 2.9)
No	315 (89.2%)	156 (87.4%)	159(87.4%)		
Anaemia					
Yes	122 (34.6%)	52 (30.4%)	70 (38.5%)	0.17	0.920.65 to 1.1)
No	231 (65.4%)	119 (69.6%)	112 (61.5%)		

* p<0.05

Results indicate that female in-patients had 2.7 (95% CI: 1.7-4.3; p<0.001) times higher risk of diabetes mellitus and 2.3 (95% CI: 1.2-4.3; p= 0.01) times higher risk for hypertension when compared with males. Thyroid disorders are significantly higher in females than males (95% CI: 39.05 (5.2 to 288.7); p<0.001).

DISCUSSION

The aim of the study was to estimate the prevalence of physical disorders as comorbidities among patients with severe mental disorders in long-term stay in a tertiary care institution and the differences among gender.

The results indicate that nearly 75% of the patients with long-stay had at least one physical disorder comorbidity along with severe mental illness. This is similar with the findings from other studies which had wide variations.

While some studies have observed the prevalence to be higher than 70%,^{9,11,14} others have reported lower estimates.^{15,16,17} This difference in the estimated prevalence of physical comorbidities among long-term stay patients with psychiatric patients in various studies could be due to the differences in the age composition of the study participants, general population prevalence of physical disorders in the study region and preventative measures put in place by the facilities to reduce physical comorbidities.

Similarly, the high prevalence of nearly 39% of the participants having more than one physical comorbidity is similar with other studies. Various reasons could contribute to this multi-morbidity of physical and mental disorders. From the biological perspective, evidence from the genome-wide association studies (GWAS) has highlighted the fact that many genes implicated in the physical disorders such as metabolic syndrome, diabetes and cardiovascular diseases are also found to play roles in the pathogenesis or course of mental disorders. This shared genetic vulnerability could lead to the emergence of both physical and mental disorders concurrently. For example, leptin gene has been implicated in metabolic diseases like obesity and diabetes mellitus and its role has also been studied in mood disorder, neurodegenerative disorder and psychosis.^{18,19} Also psychosocial factors such as behavioural risk factors among patients with severe mental disorders play a role in the high prevalence of physical disorders in them. Important behavioural risk factors observed in patients with severe mental illness are smoking, sedentary life, poor nutrition and lack periodic physical health assessments.^{20,21,22,23}

The comparison of the physical disorders by gender among patients with severe mental illness had shown that important risk factors of cardiovascular diseases such as body mass index (BMI), diabetes and hypertension were significantly more among the females than males, by nearly 2.5-3.5 times. This increased risk for females could be due to multiple reasons. For instance, studies have shown that antipsychotic drugs administered to females have an impact on their prolactin levels, which is a multifunctional hormone involved in regulating insulin sensitivity and blood glucose stability. It also helps in regulating metabolism and immune regulation. A study shows a shift from risperidone to olanzapine in females lead to significant decrease in prolactin levels.²⁴

Body weight has been shown to change in any direction in patients with severe mental illness. Although patients on long-term antipsychotic treatment have mostly been demonstrated to gain weight, the opposite has also been found, indicating the need for personal follow-up of patients. Obesity among psychiatric inpatients has been ascribed to psychiatric settings that contribute to obesity through increased energy intake and reduced energy expenditure.

The present study indicates a high prevalence of hypertension and diabetes and high multi-morbidity among patients with mental illness who are in a long-term stay with mental health facility. Physical multi-

morbidity is commonly seen in patients with severe mental illness,^{25,26,27} which are all individual risk factors to cardiovascular disorders. Since this population is at high risk, there is an urgent need to optimize care management of physical illness in patients with severe mental illness in long-stay facilities. At present, the main challenge is to achieve coordinated care from different medical specialists so that an integrated mental and physical health care system becomes available. Access to and quality of health care is insufficient as reflected by low rates of screening, monitoring and treatment of cardiometabolic risk factors in this category of patients.²⁸ It opens up areas for further research on association of physical illness and mental illness, its impact on the clinical and functional outcomes and quality of life among patients with severe mental illness in long-term stay facilities.

Major limitations of the study are: 1. Single centre study though such large centres providing care for long-term stay for patients with mental illness are few in India; 2. A relatively smaller sample size to estimate the prevalence of different comorbidities; 3. Collection of physical health data from the clinical files and nurse's reports; 4. Other physical comorbidities such as infection, falls and aggression among long term psychiatric patient are not included.

CONCLUSION

High prevalence of physical comorbidity/multimorbidity is observed among long-stay patients with mental illness in psychiatric facilities. As these physical comorbidities are risk factors for cardiovascular disorders leading to high mortality and morbidity, it is imperative that systems to detect and prevent these risk factors early will have a positive impact on the patients with mental illness.

Acknowledgement: We like to thank the institution for providing us the permission to access the case files of the long-stay patients and the nursing staff for their time and energy in helping us with identification and sorting of the case files.

Source of funding: This research has not received specific financial grant from any funding agency in the public, commercial or not-for-profit sectors

Conflict of interest: The authors have declared no conflict of interest with respect to the research, authorship, and/or publication of this article.

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