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Original Research Article

Medical Comorbidity in Inpatients with Psychiatric Disorders

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ABSTRACT

Background: Comorbid Medical in Psychiatric patients is under-recognized, underdiagnosed, under-evaluated and undertreated. Psychiatric patients with co-occurring medical disorders are found to have severe symptoms, earlier age of onset, inadequate response to drugs, poor recovery, decreased quality of life and unfavourable course and outcome.
Aims: 1. To evaluate the frequency and nature of medical comorbidity in inpatients with psychiatric disorders.
2. To study the relationship between medical comorbidity and socio-demographic factors and the clinical variables of the psychiatric disorders.
Method/ Materials: In-patients with psychiatric disorders were evaluated for the presence of medical comorbidity and its presence was compared with socio-demographic details, clinical variables and with the psychiatric disorder. Results obtained were analyzed with IBM SPSS statistics 21 using Pearson's Chi-square test or Fisher's Exact T test.
Results: 152 (50.7 %) patients had comorbid medical disorder. Most common medical comorbidity was diabetes mellitus (n=55, 36.18%) followed by hypertension (n=30, 19.73%). Sixty eight (22.66%) patients had more than one comorbid medical disorders. Age, Marital Status, Socio-economic status, Total duration of the disorder, number of past episodes, Course of the disorder and Body mass index were found to have statistically significant relation with presence of medical disorder. Bipolar affective disorders was the only disorder with a statistically significant relation to the presence of comorbid medical disorder (N=85, 59.4%). Mood disorders were found to have highly significant relation to the occurrence of medical disorders.
Conclusion: Medical comorbidity is common among patients with psychiatric disorder. Early diagnosis and treatment will reduce significant morbidity and mortality rate.

Key words: Medical disorders, Comorbidity, Psychiatric disorders, in-patients, mood disorder.

INTRODUCTION

Comorbid Medical, Surgical and Psychiatric disorders are increasingly recognized in patient populations. One of the modern challenges faced in the clinical and academic practice is comorbidity and multi-comorbidity. Most of these comorbid disorders are under-recognized, under diagnosed, under-evaluated and under-treated. [1,2]

There are multiple definitions defining the concept of comorbidity. The

concept of comorbidity was introduced in medicine in 1970 by Feinstein.[3] He defined it as 'any distinct additional entity that has existed or may occur during the clinical course of a patient who has the index disease under study'. It is debatable as to which entity is to be considered as the Index disease. This definition includes life time and concurrent disorders as comorbidity. Goldberg reserved comorbidity for coexisting physical and mental disorders only.[4] Multi-comorbidity is defined as the presence of multiple diseases in a patient in addition to the index disorder.[3] The existing multiple definitions have only minor differences.[1,2,5,6] Comorbidity and multi-comorbidity are classified based on various relationships among the comorbid disorders. Few of the classifications are: etiological and non-etiological, primary and secondary, concurrent (co-occurring, simultaneous) and successive (sequential), causal and random, unidirectional and bidirectional, complicating and non-complicating, trans-syndromal and trans-nosological, diagnostic and prognostic, homotypic and heterotypic, concordant and discordant, organic and non-organic, and medical and psychiatric comorbidity.[1,2]

Studies report that fifty percent of psychiatric patients have medical disorders.[7,8] Lifetime and concurrent comorbid psychiatric and medical are common in patients with psychiatric disorders as indicated by clinical and epidemiological studies. At least one comorbid medical or psychiatric disorder is common in majority of patients with psychiatric and many have multiple comorbidities. Psychiatric disorders with co-occurring medical disorders are found to have severe symptoms, earlier age of onset, inadequate response to drugs, poor recovery, decreased quality of life and unfavourable course and outcome.[9-12]

A major health concern is the increased prevalence of medical comorbidity,decrease in life expectancy and increase in premature death rates are usually associated with severe psychiatric disorders.[11-14] The medical disorders can either the cause or the consequences of the psychiatric syndromes, adverse effects of the psychiatric medicines or coexistent incidental medical disorders. Ischemic heart disease is a major medical contributor to the excess mortality in this population.[15] Heart disease (21%) and suicide (18%) are the most common causes of death as reported by Miller and colleagues. They also found high incidence of mortality in these patients.[16] The risk of diabetes, dyslipidemia, hypertension, and obesity are two to three times higher in patients with severe mental illness (SMI). There is increased risk of death from a chronic medical condition, such as cardiovascular disease, diabetes, chronic obstructive pulmonary disease, and hepatitis C.[17] A study reported significant association between 16 mental disorders and 10 physical conditions.[18] A comprehensive database search found physical comorbid conditions more common among readmitted patients than single admission patients and their association with readmission varied according to the nature of mental disorders, characteristics of study population, applied concept of comorbidity, and study protocol.[19] Thyroid dysfunction is more common in patients with schizophrenia-spectrum disorders and mood disorders than other psychiatric disorders.[20]

Published guidelines from the United Kingdom (National Institute for Clinical Excellence 2006) recognized the impact of physical comorbidity in Schizophrenia and Bipolar Mood Disorders and as well as the paucity of high quality research in this field. A number of recent studies estimated a high prevalence of coronary heart disease and metabolic disorders in patients with schizophrenia and non-affective psychosis.[21]

There are reports of significant medical comorbidity in schizophrenia that includes common medical diseases that occurs very frequently and also certain uncommon diseases. Physical comorbidity accounts for 60% of premature deaths not

related to suicide. Between 46-80% of inpatients and 20-43% of outpatients with schizophrenia have comorbid medical diseases. Communicable diseases such as HIV/AIDS, hepatitis C and tuberculosis are common in schizophrenia. Obesity with concomitant metabolic syndrome and diabetes mellitus, Hypertension, Hyperlipidaemia, cardiac arrhythmias, malignant neoplasms, and Osteoporosis are also frequently found. Rare genetic or idiopathic disorders such as Metachromatic Leucodystrophy, Intermittent Porphyria, Celiac Disease and irritable bowel syndrome are also reported to occur in Schizophrenia.[22-24]

Consistent evidence spanning many decades, different countries and various practice settings indicates that patients with schizophrenia have shortened life expectancy.[24] This evidence has a rich heritage dating back to the 19th century. Today a large body of literature describes a significantly higher mortality rate in patients with mental disorders in general and schizophrenia in particular when compared to that of the general population. Leucht and colleagues in a review of 44 202 papers from MEDLINE data base in 2007 reported that to a large extent the papers are specific to schizophrenia. They also reported that 86% of the papers are from the industrialized countries.[25] A meta-analysis of 18 recent studies estimated a crude mortality rate of 189 deaths / 10000 population per year in patients with Schizophrenia. Mortality rate in males is significantly higher than that of females with Schizophrenia. The higher mortality rate in males is attributed to excess of suicides and accidents. Unnatural causes of death apart from the leading causes of death in schizophrenia are similar to that of the general population.[22]

Between 46-80 percent of inpatients and 20-43 percent of outpatients with schizophrenia are found to have concurrent medical diseases.[26] The papers reported that there are at least 23 categories of medical diseases that are comorbid with schizophrenia. These medical disorders included diseases that cause excess mortality such as Diabetes Mellitus, Cardiovascular Diseases, Infectious diseases, Cancer and Pulmonary diseases as well as diseases that are risk factors for other diseases like obesity, hypertension, dyslipidemia, insulin resistant hyperglycemia and metabolic syndrome. Many of the risk factors are attributed to the second generation antipsychotics and antidepressants.[21,27,28]

Recent studies have reported significant medical comorbidity in mood disorders. The medical comorbidities reported include brain tumor, head trauma, Darier's disease, asthma, COPD, obesity, dyslipidemia, diabetes mellitus, hypothyroidism, polycystic ovarian syndrome, renal failure and skin rashes.[29] In an outpatient sample of patients with bipolar disorder the most common systemic illnesses found are Endocrine and Metabolic Diseases (13.6%) followed by diseases of the Circulatory System (13.0%), the Nervous System and Sense Organs (10.7%). Significant specific diseases reported are cardiovascular diseases/hypertension (10.7%), COPD/asthma (6.1%), diabetes (4.3%), HIV infection (2.8%), and hepatitis C infection (1.9%). A greater severity of illness is found in patients with increasing numbers of comorbid conditions but there is no difference seen for the time to recovery.[30] Studies have also found increased frequency of arthritis, benign prostatic hypertrophy, malignancies, migraine, pancreatitis, epilepsy, stroke, multiple sclerosis, autoimmune disorders, rheumatoid arthritis and communicable diseases like, HIV, hepatitis C in patients with bipolar disorder.[31-36] In a Swedish study mortality is twofold higher in bipolar disorder than in general population. Cardiovascular diseases, diabetes mellitus, COPD, influenza, pneumonia and unintentional injuries are the most common causes of premature deaths. The study reported death in bipolar disorder with medical comorbidity to be on an average 8.5

to 9 years earlier than the general population.[37]

Available research data on medical comorbidity in anxiety disorders are not substantial enough to draw definite conclusions. The reported medical disorders associated with anxiety disorders include migraine, rheumatoid arthritis, peptic ulcer disease, irritable bowel syndrome, coronary heart disease, hyperthyroidism, diabetes, asthma, chronic obstructive pulmonary disease, cancer and chronic pain.[38,39]

There are only a few reported studies on medical comorbidity in psychiatric patients in India. The aim of this study is to evaluate the frequency and nature of medical comorbidity in inpatients with psychiatric disorders and to study the relationship between medical comorbidity and socio-demographic factors and the clinical variables of the psychiatric disorders.

MATERIALS AND METHODS

The present investigation was conducted in the department of psychiatry in Father Muller Medical College since July 2009. Father Muller Medical College Hospital is a multispecialty general teaching tertiary care hospital in Mangalore, India. All psychiatric patients admitted to the general and family psychiatry wards under Psychiatry Unit-B, in the Father Muller Mental Health Center constituted the population for the investigation. The data collection was done during January 2011 to May 2015. Three hundred consecutive inpatients that satisfied the inclusion and exclusion criteria were selected as the sample for the present study. Adult psychiatric inpatients between 18 years and 65 years of age were included in the study. Patients with Organic Mental Disorders, Substance Use Disorders (except Nicotine use disorder) and Mental Retardation were excluded from the study. This study was approved by Father Muller Institutional Ethics Committee (FMMC/IEC/867/2012). The design and nature of the clinical study was explained to the patients and to significant relatives of patients and informed consent was obtained.

All the patients were subjected to a thorough clinical examination which included physical and mental status examination. All patients were further assessed using the Mini Plus version 5.0.0[40] and the final diagnosis was made according to International Classification of Mental and Behavioural Disorders Tenth revision (ICD-10). When indicated extended neurological examination was carried out to rule out neurobehavioral disorders. The socio-demographic data was collected and recorded in the specially designed proforma. The socio-economic class was assessed using the Socio Economic Status Schedule.[41] The clinical psychiatric data was recorded in the proforma. All patients were examined and investigated within the first week of hospitalisation. For patients who were not cooperative for detailed clinical examination due to their psychopathology, the examination was repeated after remission of psychiatric symptoms.

Samples for routine laboratory investigations were sent. This included samples for complete blood count, random blood sugar, fasting lipid profile and renal, liver and thyroid function tests. ECG was taken for all the patients. Other investigations such as TMT, Echocardio-graphy, CT scan Brain, MRI Brain, EEG and others suggested by consultants were carried out when required.

The diagnosis of medical diseases was confirmed by consultants from general medicine, surgery, neurology, endocrinology and other concerned specialties. For this investigation medical comorbidity has been operationally defined as any concurrent medical disease existing along with the index disorder (psychiatric disorder) irrespective of the extent and nature of the relation to the index disorder. The results obtained were analyzed with IBM SPSS statistics 21 using Pearson's Chi-square test and Fisher's Exact T test where ever necessary. A p value of 0.05 was

considered as Significant (Sig) and p value of 0.00 was considered highly significant (HS).

RESULT

Socio-demographic variables

Majority of the patients belonged to 18-30 years age group (39.7%), were males (62%), belonged to Hindu religion (59%), backward caste (64%), had completed high school (30%), were married (47.7%), were not employed (46%), residing in rural area (73.7%) and from a nuclear family (81.3%) with the average family income of Rs 5000 to Rs 10000. The patients were found to be of category III of the Socio Economic Status Schedule with the score of 21-35 (89.3%).

Psychiatric disorders

Majority of the patients were diagnosed with bipolar affective disorder (n=143, 47.7%). Sixty two (20.7%) patients were diagnosed as unspecified non- organic psychosis and 13.3% (n=40) patients were found to be suffering from Schizophrenia. Sixteen patients had depressive disorder. Thirty seven individuals had comorbid psychiatric disorder. Nicotine dependence syndrome was the most common (n=25, 67.5%) followed by delusional disorder and obsessive compulsive disorder.

Medical comorbidity

Investigations revealed 152 (50.7 %) patients had comorbid medical disorder. Most common medical comorbidity was diabetes mellitus (n=55, 36.18%) followed by hypertension (n=30, 19.73%). Other common disorders were dyslipidemia (25, 16.44%), thyroid disorders (15, 9.2%), gastrointestinal disorders (15, 9.2%), and respiratory disorders. Figure 1represents the medical comorbidity diagnosed in the patients. Sixty eight (22.66%) patients had more than one comorbid medical disorders. Thirty eight patients had two, twenty five had three and five patients had more than three comorbid medical disorders.

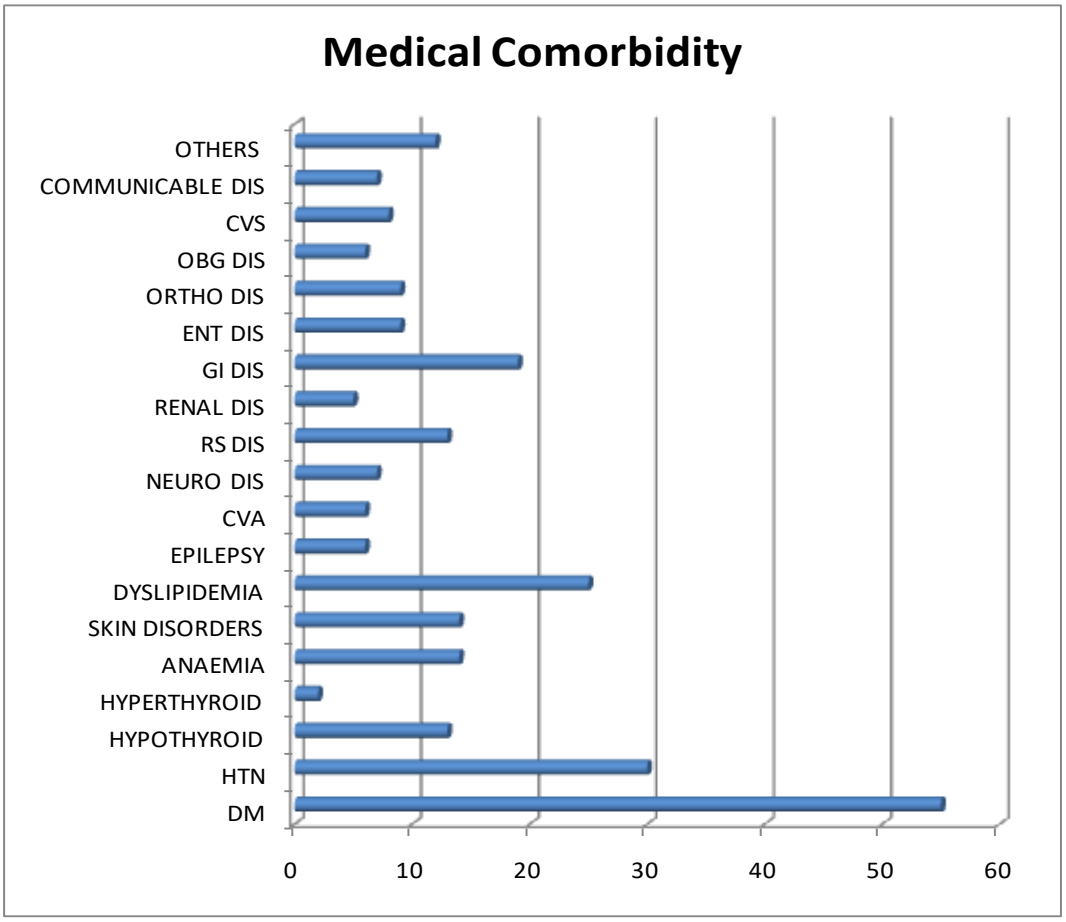

FIGURE 1: MEDICAL COMORBIDITY IN PSYCHIATRIC INPATIENTS.

Relation between medical comorbidity and socio-demographic factors

Table 1 shows the relation between socio-demographic factors with the presence of medical comorbidity. Age was found to have highly significant relation with the presence of medical comorbidity, with increased frequency with increasing age. Marital status was found to be significant with divorced and widow/ widower having more comorbid medical disorders. The presence of medical disorders was highest among SESS category II (LSES) and was found to be significant. There was no significance found between others variables with the occurrence of medical disorders.

TABLE 1: SOCIO- DEMOGRAPHIC FACTORS AND MEDICAL COMORBIDITY

Socio-demographic variables		Medical Comorbidity		Total (%)	Significance
		Absent (%)	Present (%)		
Age	18-30 yrs	78 (65.5)	41 (34.5)	119 (39.7)	X^2: 31.621
	31-40 yrs	45 (51.1)	43 (48.9)	88 (29.3)	P: 0.000
	41-50 yrs	13 (29.5)	31 (70.5)	44 (14.7)	HS
	51-64 yrs	12 (24.5)	37 (75.5)	49 (16.3)	
Gender	Male	90 (48.4)	96 (51.6)	186 (62)	X^2: 0.175
	Female	58 (50.9)	56 (49.1)	114 (38)	P: 0.675 NS
Religion	Hindu	92 (52)	85 (48)	117 (59)	X^2: 3.742
	Muslim	34 (52.3)	31 (47.7)	65 (21.7)	P: 0.154
	Christian	22 (37.9)	36 (62.1)	58 (19.3)	NS
Caste	Dominant	46 (44.2)	58 (55.8)	104 (34.7)	Fisher's exact test: 5.118
					P: 0.062
	Backward	98 (51)	94 (49)	19 2(64)	NS
	Scheduled	4 (100)	0 (0)	4 (1.3)	
Education	Illiterate	5(31.3)	11(68.8)	16(5.3)	Fisher's exact test: 9.369
	Primary school	21(38.9)	33(61.1)	54(18)	P: 0.220
	Middle school pass	17(44.7)	21(55.3)	38(12.7)	NS
	High school	53(58.9)	37(41.1)	90(30)	
	Plus 2/ pre degree	23 (51.1)	22(48.9)	45(15)	
	Degree	25 (52.1)	23(47.9)	48(16)	
	Post graduate	1 (25)	3(75)	4(1.3)	
	Professional degree/ higher education	3 (60)	2(40)	5(1.7)	
Marital status	Single	78(60)	52 (40)	130 (43.3)	Fisher's exact test: 12.345
	Married	60 (42)	83 (58)	143 (47.7)	P: 0.015
	Separated	6 (37.5)	10 (62.5)	16 (5.3)	Sig
	Divorced	1 (25)	3 (75)	4 (1.3)	
	Widow/ widower	2 (33.3)	4 (66.7)	6 (2)	
	Others	1 (100)	0 (0)	1 (0.3)	
Occupation	Unskilled labourer	40 (52.6)	36 (47.4)	76 (25.3)	Fisher's exact test: 5.915
	Skilled labourer	14 (41.2)	20 (58.8)	34 (11.3)	P: 0.567
	Government employee	5 (71.4)	2 (28.6)	7 (2.3)	NS
	Private employee	15 (53.6)	13 (46.4)	28 (9.3)	
	Self-employment	4 (33.3)	8 (66.7)	12 (4)	
	Business	0 (0)	2 (100)	2(0.7)	
	Professional	1 (33.3)	2 (66.7)	3 (1)	
	Others	69 (50)	69 (50)	138(46)	
Location of residence	Urban	37 (46.8)	42 (53.2)	79 (26.3)	X^2: 0.268
	Rural	111(50.2)	110(49.8)	221 (73.7)	P: 0.605
					NS
Type of Family	Nuclear	120 (49.2)	124(50.8)	244 (81.3)	Fisher's exact test: 1.061
	Joint	24 (49)	25 (51)	49 (16.3)	P: 0.980
	Extended	3 (50)	3 (50)	6 (2)	NS
	Others	1 (100)	0 (0)	1 (0.3)	
Avg Monthly income	Below Rs. 5000	20 (57.1)	15 (42.9)	35 (11.7)	X^2: 1.372
	Rs. 5000-10000	96(49.5)	98 (50.5)	194 (64.7)	P: 0.504
	Rs. 10000 and above	32 (45.1)	39 (54.9)	71 (23.7)	NS
Socio- economic status	SESS category II	4 (19)	17 (81)	21 (7)	X^2: 8.948
	SESS category III	137 (51.1)	131(48.9)	268 (89.3)	P: 0.008
	SESS category IV	7 (63.6)	4 (36.4)	11 (3.7)	Sig

Relation between medical comorbidity with the clinical variables of the psychiatric disorders

TABLE 2: PSYCHIATRIC CLINICAL VARIABLES AND MEDICAL COMORBIDITY

Psychiatric clinical variable		Medical Comorbidity		Total	Significance
		Absent (%)	Present (%)	(%)	P value
Age of onset of psychiatric disorder	<18 yrs	19 (12.8)	17 (11.2)	36 (12)	Fisher's exact test: 9.02
	18- 30 yrs	93 (62.8)	82 (53.9)	175 (58.3)	P: 0.062
	31- 40 yrs	28 (18.9)	29 (19.1)	57 (19)	NS
	41- 50yrs	7 (4.7)	18 (11.8)	25 (8.3)	
	51- 64yrs	1 (0.7)	6 (3.9)	7 (2.3)	
Total duration of disorder	< 1 yr	27 (61.4)	17 (38.6)	44 (14.7)	X^2: 20.084
	1-5 yrs	53 (63.1)	31 (36.9)	84 (28)	P: 0.001
	5-10 yrs	34 (48.6)	36 (51.4)	70 (23.3)	Sig
	10- 20yrs	22 (32.4)	46 (67.6)	68 (22.7)	
	>20 yrs	9 (32.1)	19 (67.9)	28 (9.3)	
	Indefinite	3 (50)	3 (50)	6 (2)	
Number of past episodes	0	78 (52.7)	55 (36.2)	133 (44.3)	X^2: 12.168
	1 - <5	47 (31.8)	57 (37.5)	104 (34.7)	P: 0.016
	5-10	8 (5.4)	14 (9.2)	22 (7.3)	Sig
	>10	2 (1.4)	10 (6.6)	12 (4)	
	Indefinite	13 (8.8)	16 (10.5)	29 (9.7)	
Course	Episodic with full recovery	60 (40.5)	87 (57.2)	147 (49)	X^2: 10.21
	Episodic with partial recovery	10 (6.8)	11 (7.2)	21 (7)	P: 0.017
	Continuous	58 (39.2)	44 (28.9)	102 (34)	Sig
	Indefinite	20 (13.5)	10 (6.6)	30 (10)	
Period of current hospitalisation	<7days	22 (14.9)	24 (15.8)	46 (15.3)	X^2: 0.736
	7-30days	100 (67.6)	96 (63.2)	196 (65.3)	P: 0.693
	>30days	26 (17.6)	32 (21.1)	58 (19.3)	NS
Period of total hospitalisation	1 month & below	73 (49.3)	55 (36.2)	128 (42.7)	Fisher's exact test: 8.814
	>1month - <6 month	56 (37.8)	73 (48)	129 (43)	P: 0.062
	6month - <1 year	8 (5.4)	16 (10.5)	24 (8)	NS
	1 year & above	3 (2)	4 (2.6)	7 (2.3)	
	Indefinite	8 (5.4)	4 (2.6)	12 (4)	
Psychotic symptoms	Present	88 (59.5)	91 (59.9)	179 (59.7)	X^2,P: 0.942 NS
Delusions	Present	77 (52)	76 (50)	153 (51)	X^2,P: 0.725
Hallucinations	Present	44 (29.7)	38 (25)	82 (27.3)	X^2,P: 0.358
FRSS	Present	16 (10.8)	13(8.6)	29(9.7)	X^2,P: 0.508
Current treatment	Mood Stabilizers	72(48.6)	86(56.6)	158(52.7)	X^2,NS
	Antipsychotics	138(93.2)	144(94.7)	282(94)	X^2,NS
	Antidepressants	14(9.5)	16(10.5)	30(10)	X^2,NS
	Others	106(71.6)	125(82.2)	231(77)	X^2,P: 0.029, Sig
	MS & AP	70(47.3)	83(54.6)	153(51)	X^2,NS
Long term treatment	Prophylaxis	61(41.2)	76(50)	137(45.7)	X^2: 2.332
	Maintenance	87(58.8)	76(50)	163(54.3)	P: 0.127 NS
Drug compliance	Regular	36(24.3)	32(21.1)	68(22.7)	X^2: 1.184
	Irregular	100(67.6)	111(73)	211(70.3)	P: 0.553
	Indefinite	12(8.1)	9(5.9)	21(7)	NS
Outcome	Good	98 (66.2)	93(61.2)	191(63.7)	X^2: 0.821
	Poor	50(33.8)	59(38.8)	109(36.3)	P: 0.365, NS
Family history	Present	68(45.9)	82(53.9)	150(50)	X^2: 1.92
	Absent	80(54.1)	70(46.1)	150(50)	P: 0.166 NS
Pre-morbid personality	Well adjusted	128(86.5)	139(91.4)	267(89)	X^2: 1.885
	Abnormal	20(13.5)	13(8.6)	33(11)	P: 0.17 NS
Body Mass Index	Underweight	30(65.2)	16(34.8)	46(15.3)	X^2: 23.26
	Normal	89(55.6)	71(44.4)	160(53.3)	P: 0.00
	Overweight	28(34.6)	53(65.4)	81(27)	HS
	Obese	1 (7.7)	12(92.3)	13 (4.3)	

Table 2 depicts the relationship between various clinical variables of psychiatric disorder with the occurrence of medical disorders. Total duration of psychiatric disorder was found to have significant relation with the presence of medical comorbidity. More the total duration of the psychiatric disorder (more than 10years), there was higher risk of the occurrence of medical disorder. There was significant

relation found with the number of past episodes to the presence of medical disorder. More episodes (10 and above) were found to have more medical comorbidity. Higher frequency of medical disorder was present in patients with multiple episodes with full recovery and was statistically significant. Increased body mass index was found to be associated with increase in the presence of comorbid disorder. Other variables were not found to have any significant relation with the presence of comorbid medical disorder. Current treatment (mood stabilizers, antipsychotics and antidepressants) were not found to have any relation to the medical disorders. But use of other medicines (sedatives) were found to have significant relation (X^2 value: 4.771, p: 0.029) with the presence of medical comorbidity.

Relation between the psychiatric disorders with medical comorbidity

TABLE 3: PSYCHIATRIC DISORDER AND MEDICAL COMORBIDITY

Psychiatric diagnosis (ICD 10 code)	Medical comorbidity		Total (%)	Significance P value
	Absent (%)	Present (%)		
F20	21 (52.5)	19 (47.5)	40 (13.3)	Fisher's exact test: 19.503 P: .029 Sig
F21	1 (100)	0 (0)	1 (0.3)	
F22	3 (60)	2 (40)	5 (1.7)	
F23	10 (71.4)	4 (28.6)	14(4.7)	
F25	1 (100)	0 (0)	1(0.3)	
F29	35 (56.5)	27 (43.5)	62(20.7)	
F30	4 (50)	4 (50.0)	8(2.7)	
F31	58 (40.6)	85 (59.4)	143(47.7)	
F32	3 (30)	7 (70)	10(3.3)	
F33	3 (50)	3 (50)	6(2.0)	
F42	6 (100)	0 (0)	6(2.0)	
F43	3 (75)	1(25)	4(1.3)	
F2 (Psychotic disorders)	71 (57.7)	52(42.3)	123 (41)	Fisher's exact test: 15.132 P: .000 HS
F3 (Mood disorders)	68 (40.7)	99(59.3)	167(55.7)	
F4	9 (90)	1((10)	10(3.3)	

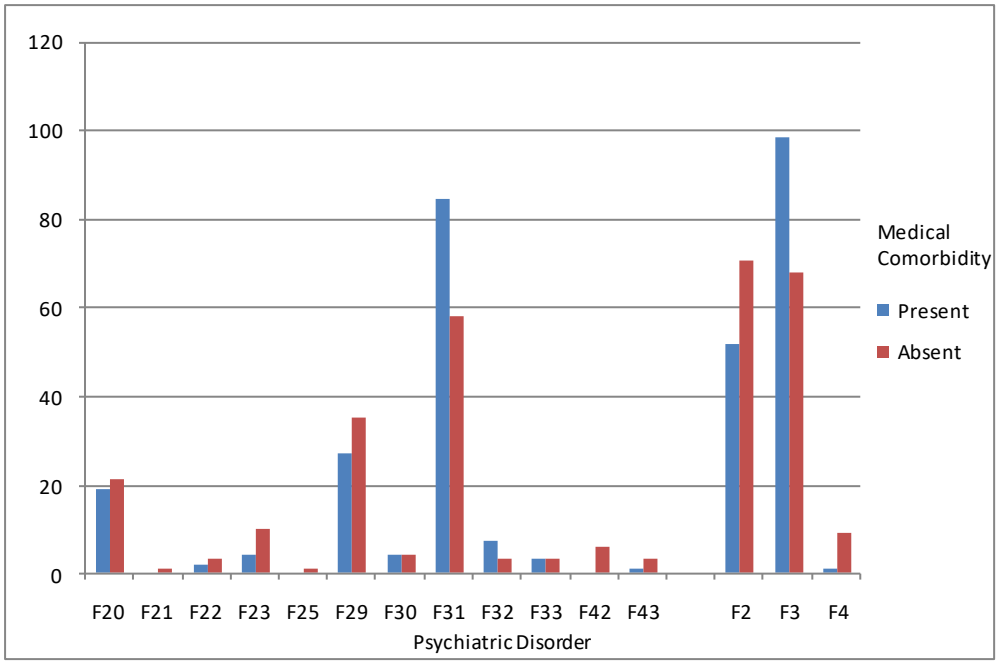

FIGURE 2: PSYCHIATRIC DISORDER AND MEDICAL COMORBIDITY

Table 3 and figure 2 depicts the relation of the psychiatric disorders in patients with the presence of medical disorders. Bipolar affective disorder was the only disorder with a statistically significant relation to the presence of comorbid medical disorder

(N=85, 59.4%). Mood disorders were found to have highly significant relation to the occurrence of medical disorders. Medical comorbidity in other disorders was found to be less frequent. Mood disorders were found to have significant relation (n=99, 59.3%, fisher's exact test: 15.132, p: 0.000) with the presence of multiple medical disorder or multi-comorbidity (2 and more medical disorders) in the patients.

DISCUSSION

The results of the present investigation indicate that concurrent medical comorbidity is frequent in inpatients with psychiatric disorders. 50.7% of inpatients have at-least one medical co-morbidity and 22.6% have more than one comorbid medical diseases. Diabetes mellitus (36.18%), hypertension (19.73%), dyslipidemia (16.44%) and thyroid disorders (9.2%) are the most frequent medical diseases in the patients. Earlier studies report that there is excess mortality and medical comorbidity in inpatients and outpatients with major psychiatric disorders.[8,16,30,42] The results of the present study are in concordance with that of the earlier studies. Prior studies have found endocrine disorders and cardiovascular disorders to be more common in patients with psychiatric disorders which his in concordance with the findings of the present study but the frequency of occurrence in our investigation is much higher.[8,17,30] Unlike some studies which report significant increase in frequency of asthma, migraine headaches and communicable diseases there is a glaring limitation in the frequency of such diseases in our sample.[32]

Among the socio-demographic factors, increasing age is found to have highly significant relation with presence of medical disorders. It is also found that medical comorbidity is more frequent in inpatients who are divorced or widow/ widower and also in patients who belong to lower socio-economic status (category II). Prior studies have found increasing age related to medical comorbidity.[30] Reports of few studies have shown no relation to socio-demographic variable.[8]

Longer total duration of psychiatric disorder (more than 10 years), higher number of past episodes (more than 10) and episodes with full recovery in psychiatric inpatients, are found to have significant relation with the presence of comorbid medical disorder. The authors failed to come across prior reports of relation of medical comorbidity to such clinical variables. Medical comorbidity in the patients does not increase the period of hospitalization. There are reports for and against this finding.[30,40] In the present study, current or long term treatment do not have any significant relation with the medical condition but the use of other drugs (mainly sedatives) is found to be frequent in inpatients with medical disorders. Earlier investigations report that the medical comorbidity may be related to psychiatric medicines.[21,28] Compliance to the psychiatric medicines, outcome of the psychiatric disorder, family history and patient's pre-morbid personality are not related to the presence of medical disorder. Higher body mass index is associated with increased chance of having a medical disorder.

Fifty two (42.3%) of psychotic disorder, 99 (59.3%) and 1(10%) of anxiety disorder patients are found to have medical comorbidity. Mood disorders in general and bipolar affective disorders in particular are found to be significantly related to presence of comorbid medical disorder. The findings of the present investigation do not agree with the very high prevalence of medical comorbidity in outpatients and inpatients with schizophrenia.[23,25,26] Prior studies report increased frequency of medical comorbidity in bipolar disorder.[16,22,26,29,34] and mood disorder but this study is unique in finding highly significant relation of mood disorder with medical disorder.

Strengths and Limitations

The present investigation is an observational, descriptive, cross sectional

clinical study. The present study has certain merits and limitations. This investigation is perhaps one of the few published studies to compare most of the clinical variables of the psychiatric disorder to the presence of comorbid medical disorder in India. Use of a standardized structured scale for diagnosis of psychiatric disorder by trained clinicians and large sample size are the other strengths of this study. Although selection bias is avoided the sample is not representative of the general population. The assessment is not blind and hence assessment bias is possible. The relationships of medical comorbidity and the medications prior to the first contact to the hospital are not investigated. The outpatients with psychiatric disorder are not included in the present investigation.

CONCLUSION

The present study reveals over half of patients with psychiatric disorders have a risk of comorbid medical and surgical disorders. This signifies the need of early detection and treatment of comorbid medical and surgical disorders to reduce significant morbidity and mortality rate in patients with psychiatric disorders. Future studies with better methodology are required to draw definite conclusions. Larger sample of outpatients, inpatients and community samples with larger number of schizophrenia, depressive disorders, anxiety disorder and bipolar disorder patients for adequate comparisons for frequency of medical comorbidity are required. Concurrent investigations in multiple centers to generalize the findings to the population are required.

Ethics Statement: This study was performed in accordance with the Declaration of Helsinki. This study was approved by Father Muller Institutional Ethics Committee - approval: FMMC/IEC/867/2012.

Declaration of Interest: Nil

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