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Physical comorbidity in persons with severe mental illness in Bangladesh

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Abstract

Background: Most of the studies in different parts of the world indicate a significant portion of people suffering from mental disorders have physical comorbidities which in turn impair management process. Premature mortality and disability could be reduced if there were a greater focus on comorbidity. There is almost no nationwide data about the prevalence and pattern of the problem in Bangladesh.

Objectives: The study was conducted to investigate the prevalence and types of physical comorbidity including substance use among persons with severe mental illness (SMI).

Methods: A hospital-based cross-sectional study was conducted among 2200 samples with severe mental illness (SMI) in 2 specialized psychiatry hospitals, psychiatry department of a medical university (Bangabhandhu Sheikh Mujib Medical University) and an army hospital (Combined Military Hospital), psychiatry department of 8 medical college hospitals throughout the country from September 2017 to June 2018. Persons with severe mental illnesses for 10 years and above in Inpatient Department (IPD) and Outpatient Department (OPD) of the study sites were included in the study. Severe Mental Illnesses (SMI) included major depressive disorder, schizophrenia, schizoaffective disorder, bipolar disorder and organic psychotic disorders diagnosed by research psychiatrists following Diagnostic and Statistical Manual of Mental Disorders (DSM-5) criteria of diagnosis. Physical comorbidities were diagnosed by history, physical examination, relevant investigations and consultation with the consultant of the respective discipline. Pretested questionnaire for socio-demographic and clinical variables and DSM 5 for diagnosis of mental illnesses were used in the survey. Local coordinators (psychiatrists), research psychiatrists, research officers,a statistician, medicine specialists and other specialists as required were recruited from the study sites. Two coordination meetings with involvement of all were held. MS Excel 2003 and SPSS version 18 were used for data entry and data analysis respectively.

Results: Among estimated 2200 samples from different sites of the study, 1648 respondents provided complete information. Among them 93.57% were 18 years or older, 45.63% female and 54.36% male. Overall, 42.0 % of the respondents with severe mental illness (SMI) had physical comorbidity where diabetes mellitus (28.47%) was the most common comorbidity followed by hypertension (26.45%),obesity (6.06%), respiratory tract diseases (4.91%), dyslipidemia (4.04%), diseases of the thyroid gland (3.46%), diseases of the blood-mostly anemia (3.32%), urinary tract infection (2.89%), diseases of the digestive system (2.60%), diseases of the musculoskeletal system (2.45%)and ischemic heart disease (2.31%). Other physical comorbidities included infectious and parasitic diseases (2.16%), diseases of the skin (1.73%), diseases of the genitourinary system (1.44%), epilepsy (0.86%), chronic kidney disease (0.86%) and underweight (0.72%). As additional findings, 7.77% of the respondents with severe mental illness had comorbid substance related and addictive disorders. Among the abusing substances, cannabis (63.28%) was the most frequently used drug followed by amphetamine (18.75%), alcohol (14.06%) and other types of drugs (3.90%).

Conclusions: Physical comorbidities including using substances are common among patients with severe mental illness in Bangladesh which could result in adverse outcomes. Treatment of coexisting physical and mental disorders are required for proper management of patients with severe mental illnesses. Approach of integrative medicine involving different disciplines need to be taken for managing such patients.

Declaration of interest: *Financing Authority*-Non-Communicable Disease Control (NCDC) wing of Directorate General of Health Services (DGHS) under Ministry of Health & Family Welfare (MOH&FW), Government of People's Republic of Bangladesh; conducted by National Institute of Mental Health, Dhaka, Bangladesh.

Keywords: Comorbidity; physical comorbidity; mental disorder

Introduction

When two disorders or illnesses occur in the same person, simultaneously or sequentially, they are described as comorbid. Mental illness is one of the major public health concerns all over the world where low and middle-income countries encounter higher burden with minimum resources.[1,2] This burden of mental illnesses can be increasingly threatening as persons with psychological illnesses face different sorts of hindrance while seeking health care for other diseases also. Two or more medical conditions existing simultaneously regardless of their causal relationship can be defined as comorbidity.[3] Overlapping of medical conditions with psychiatric conditions put a greater challenge to the healthcare system by creating additional costs.[4] Such challenges are even higher with severe types of mental illnesses which are more likely to be associated with physical conditions and substance use. According to National Institute of Mental Health, USA, 'Severe Mental Illness' can be defined as a mental, behavioral, or emotional disorder resulting in serious functional impairment, which substantially interferes with or limits one or more major life activities. "Severe Mental Illness" is a widely used expression that includes diagnosis, disability, and duration.[5,6] Diagnosis of SMI encompasses major mental disorders, such as nonorganic psychosis, severe bipolar disorder, or personality disorders. Disability indicates physical or mental inability to meet age appropriate role requirements, such as functioning in school, work, relationships, and self-care. Severe Mental Illness (SMI), including schizophrenia, bipolar disorder, schizoaffective disorder and major depressive disorder affects more than 4% of the adult population.[7] Studies also showed that persons with SMI have an excess mortality rate, being two or three times as high as that in the general population[8,9] which has widened in recent decades,[10,11] even in countries where the quality of the healthcare system is generally acknowledged to be good.[10] While these diseases are prevalent in the general population, the impact of individuals with SMI in the society is significantly greater.[12] Persons with schizophrenia have mortality rates 2 to 2.5 times higher than the general population.[13] Patients suffering from bipolar mood disorder have high mortality rates ranging from 35% higher to twice higher than the general population.[14,15] Those who are with depression have about 1.8 times higher mortality rates which is not limited to severe cases or to suicide.[16] A study in India revealed that about 31% of psychiatric patients were living with coexisting physical illnesses and cardiovascular system (33.3%) was mostly involved in those cases followed by metabolic or endocrine diseases (27%).[17] The recent "National Mental Health Survey of Bangladesh 2018-19" expressed that about 16.8% of Bangladeshis are suffering from different types of mental illnesses and

among them 92.3% do not seek medical attention.[18] The prevalence rate of depressive disorders, schizophrenia spectrum disorders and bipolar and related disorders were 6.7%, 1.0% and 0.4% respectively.[18]

In Bangladesh mental illnesses are treated in tertiary care specialized hospitals and also in general teaching hospitals.[19] The physical health of persons with severe mental illnesses are not only ignored by them but also by the health system.[13] The person with severe mental illness is usually neglected by the society most of the time and this is likely to be more when he or she is burdened with additional comorbid disorders. Any management option is incomplete without addressing the comorbidity. Premature mortality and disability could be reduced if there was a greater focus on comorbidity. Little attention has been given to the issue of comorbidity among patients with SMI. Currently, some small scale research showed only the comorbid mental illnesses in chronic or non-communicable diseases. Bangladesh is an emerging country in all socioeconomic contexts. Health should not stay backward in this glorious journey. To develop effective and sustainable health care delivery model, mental and physical illnesses must be focused together with utmost priority. To achieve sustainable development goals (SDGs) aimed by the government, good health and wellbeing of people should be ensured. So to provide effective, holistic and cost effective services to the persons with severe mental illness, it is necessary to determine the prevalence and types of physical comorbidity in persons with severe mental illness in Bangladesh.

Objectives

The objective of the study was to estimate the prevalence and types of physical comorbidity among individuals diagnosed with severe mental illnesses. In addition, presence of substance related and addictive disorders among individuals with severe mental illnesses were also looked for.

Methods

National Institute of Mental Health (NIMH),Dhaka carried out the hospital based survey in collaboration with Non Communicable Disease Control (NCDC) wing of Directorate General of Health Services (DGHS) under Ministry of Health & Family Welfare (MOH&FW) of the Government of the People's Republic of Bangladesh during the period of September 2017 to June 2018. A hospital based cross-sectional study was conducted in inpatient and outpatient departments of 2 specialized psychiatry hospitals (National Institute of Mental Health, Dhaka and Mental Hospital, Pabna), psychiatry department of a medical university and an army hospital (Bangabhandhu Sheikh Mujib Medical University and Combined Military Hospital, Dhaka), psychiatry departments of 8 medical colleges (Dhaka Medical College, Sir Salimullah Medical College, Sylhet MAG Osmani Medical College, Shahid Ziaur Rahman Medical College, Bagura, Sher-E-Bangla Medical College, Barisal, Khulna Medical College, Chittagong Medical College and Rangpur Medical College throughout the country from September 2017 to June 2018. This hospital based study was cross-sectional in nature and was conducted in both Dhaka and outside of Dhaka in Bangladesh. During the study period, persons with severe mental illnesses for 10 years and above attending in Inpatient Department (IPD) and Outpatient Department (OPD) of the study sites were included in the study. Severe mental illnesses included major depressive disorder, schizophrenia, schizoaffective disorder, bipolar disorders and organic psychotic disorders diagnosed by the research psychiatrist of the respective site of the survey. Patients or attendants of the patients refusing to participate in the study were excluded from the study.

Sample size estimation

As there was no previous representative study in Bangladesh, we considered the prevalence of physical comorbidities in the neighboring country India, where 31% of psychiatric patients had physical illnesses.[17] Assuming that this figure was applicable for this study we applied it along with other statistics given below in the following formula. We calculated the sample size for the study as follows.

$$n = \frac{z^2\, p(1-p)}{d^2} = 2052$$

where

z= 1.96 (Standard normal variant value for 95% confidence)

p=0.31 (Expected prevalence or proportion of the disorder)

1-p= 0.69
d= 0.02

The sample size calculation indicated 2052 samples should be adequate. However, considering the chance of missing data we considered approaching 2200 patients visiting the institutions. Special investigations were supposed to be required to do in 50% of sample cases as the possibility of physical comorbidity was around 50% as revealed in different studies.

Research instruments used in the study

i. Questionnaire for socio-demographic and clinical variables.
ii. Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) criteria for diag nosis of the severe mental illnesses.[20]
iii. BMI chart, height and weight machine, BP measurement instrument, peak flow meter etc.

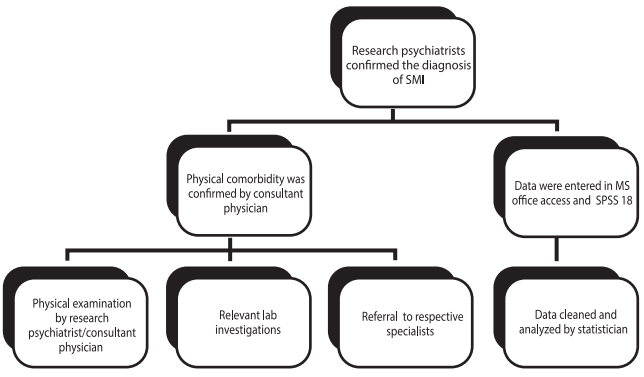
Questionnaire for socio-demographic and clinical variables: A customized questionnaire containing gender, age, educational level, monthly family income, employment status, types of family, number of family members and other informations were used to collect data. Questions for clinical variables included questions on whether patients were currently getting treatment or not, treatment was regular or not, fits were controlled or not, etc. Other treatment data were also recorded.

Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5):[20] DSM-5 criteria for diagnosis were used to diagnose people with severe mental illnesses. For diagnosis of mental disorders DSM-5 was used because it serves as the principal authority for psychiatric diagnoses all over the world.

BMI chart, height, weight, BP measurement, Peak flow meter: Body height was measured in centimeters using a calibrated non-stretchable tape positioned on a wall with the participant standing with their back against the wall. Body weight was measured in kilograms using a calibrated analogue weight machine. All measurements were carried out by appropriately trained clinical staffs. BMI was calculated according to the formula, BMI=weight (kg)/height squared (m^2). Blood pressure was measured using sphygmomanometer and peak flow meter was used to measure the air flow in lungs. Before starting the data collection, a pre testing of questionnaires was done in two sites outside the study area and after that the final questionnaires were developed.

Data collection techniques and procedure in the field: During the study period consecutive persons with severe mental illnesses were diagnosed and recruited. In the first stage, diagnoses of severe mental illnesses were done following DSM-5 criteria[20] of diagnosis by respective research psychiatrist in consultation with local coordinator who was also a senior psychiatrist. Before confirmation of diagnosis, informed written consent of the samples or their guardians were taken. Then the research officers collected socio-demographic and related clinical data of the diagnosed cases. In the second stage, thorough physical examination of the patients was done by research psychiatrists to look for possible comorbid physical illnesses. Routine physical investigations were also done for all patients. Special investigations were conducted for diagnoses of comorbid disorders. Finally, cases were referred to respective medical consultant for confirmation of diagnoses of physical illnesses as required. Local coordinators in all the sites of the study supervised the activities in their respective areas.

Figure 1: Stepwise approach to the respondents



Data processing and statistical analysis

Data were checked for consistencies as well as for

completeness. Data collected from each respondent was checked to ensure the completeness of its contents. Data were entered and encoded into the data entry program MS excel 2003. Then data were transferred to computer program SPSS version 18 to analyze and summarize data. Statistical analysis were done by the statistician employed for the purpose using frequencies and percentages for categorical data and by applying other statistical tests as required. Computer, secretarial and administrative facilities were available at National Institute of Mental Health, Dhaka.

Ethical consideration

Ethical clearance was taken from Bangladesh Medical Research Council (BMRC). Permission was also taken from the authorities /departments of respective institutes or medical colleges. Research objectives and procedure of the study were explained to every study individual and their guardians before starting of the interview. Informed written consent from patient or guardian as required was obtained before interview. Bengali version of assent and consent forms were read out and then signed by child respondent, in the assent form and their parents or guardians of the adult patients in the consent form. All respondents had the liberty to leave the study at any stage. They were also free to refuse to answer any question. Confidentiality was maintained at every stage of data collection for every individual. Each questionnaire was identified by a code number. The final report did not contain the names of the respondents. Every endeavor was made to limit harmful effect of the study either on the family or on the individual. Illiterate respondents or guardians were asked to put their thumb impression. Interviews were conducted at times and locations suitable for the study individuals and privacy was maintained during assessment.

Results

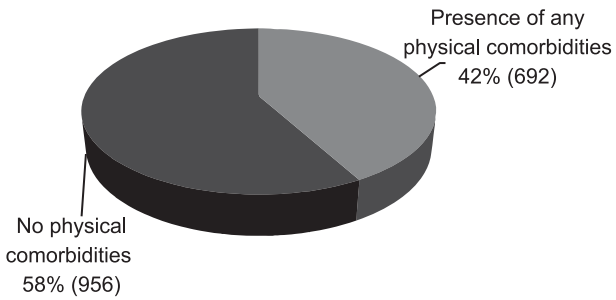
Among estimated 2200 samples aged 10 years or above were approached for data collection from different sites of the study. Among them 1648 respondents provided complete information. Others either did not meet the selection criteria or did not respond. Nonresponse was mainly due to refusal of the respondents to give interview and absence of the respondents during full interview and assessment. Majority of the respondents were 18 years and above (93.57%), male (54.36%) respondents were more than female (45.63%) and respondents from nuclear family (65.84%) exceeded respondents from extended family (34.16%) (Table 1).

Table 1. Socio-demographic and clinical characteristics of respondents with SMI (N=1648)

Characteristic		Frequency	Percentage (%)
Age	<18 years	106	6.43
	>18 years	1542	93.57
Sex	Female	752	45.63
	Male	896	54.36
Family types	Extended	563	34.16
	Nuclear	1085	65.84
Education	Illiterate	202	12.25
	Sign own name	125	7.58
	Primary	458	27.80
	Secondary	452	27.43
	Higher Secondary	191	11.58
	Graduates	128	7.76
	Masters	81	4.92
	Others	11	0.66
Premorbid Occupation	Unemployed	154	9.34
	Business	96	5.82
	Farmer	98	5.94
	Service	259	15.71
	Housewife	436	26.45
	Domestic worker	28	1.70
	Day labor	157	9.52
	Student	327	19.85
	Others	87	5.28
Marital Status	Married	890	54.00
	Unmarried	582	35.31
	Living separated	56	3.40
	Divorced	91	61.48
	Others	29	1.76
Known physical illness	Yes	485	29.42
	No	1163	70.57
Family history of chronic physical illness	Yes	491	29.80
	No	1157	70.20

Among patients with SMI, around three-fifth of them (956, 58%) had no physical comorbidities and rest (692, 42%) of the patients had some extent of physical comorbidities (Figure 2).

Figure 2. Physical co morbidities among persons with major mental disorders (N=1648)



Respondents from the age group 41 to 48 years (8.98%) had the highest proportion of physical comorbidity followed by age group of 49 to 56 years (8.0%). Respondents from the age group of 18 years or less (1.57%) reported the lowest proportion of physical comorbidity (Table 2).

Table 2. Distribution of respondents with physical comorbidities depending on age group (n=692)

Age (year)	Frequency (%)	Proportion of respondents with any physical comorbidity
<18	106 (6.43)	26 (1.57)
18-25	274 (16.63)	54 (3.28)
26-32	366 (22.20)	104 (6.31)
33-40	321 (19.48)	129 (7.82)
41-48	249 (15.10)	148 (8.98)
49-56	184 (11.16)	132(8.00)
57-64	92 (5.58)	58(3.51)
≥ 65	56 (3.34)	41 (2.49)

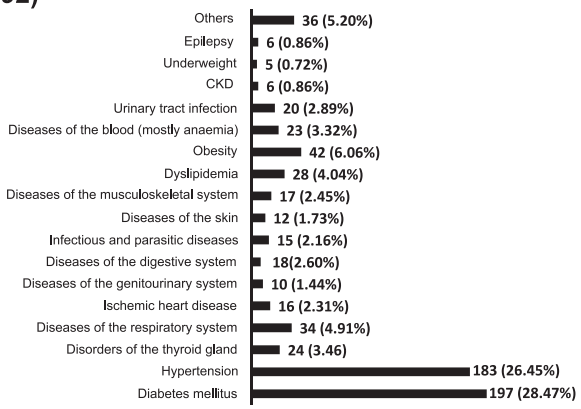
Statistically significant association was found between age and physical comorbidities ($p<0.01$) where older psychiatric patients with SMI tended to have more physical comorbidities than the younger patients (age category redefined as <41 years and >48 years (Table 3).

Table 3. Distribution of total respondents depending on age groups and physical comorbidities (N=1648)

Age (year)	Frequency (%)	Physical comorbidities in corresponding age group (%)
<18	106 (6.43)	24.52
18-25	274 (16.63)	19.70
26-32	366 (22.20)	28.41
33-40	321 (19.48)	40.18
41-48	249 (15.10)	59.43
49-56	184 (11.16)	71.74
57-64	92 (5.58)	63.01
≥ 65	56 (3.34)	73.21

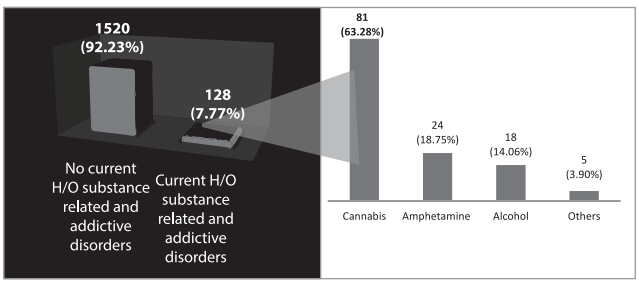
Figure 3 shows that among the patients of SMI with physical comorbidities (n=692), more than 50% were suffering from diabetes mellitus (197, 28.47%) and hypertension (183, 26.45%). There were 42 (6.06%) obese patients and very small number of patients (0.72%) were underweight.

Figure 3: Types and proportion of physical co morbidities among patients with severe mental illness (n=692)



Overall, 7.77% patients with SMI had substance related and addictive disorders. Of them, more than three-fifth (63.28%) had history of cannabis intake followed by amphetamine (18.75%) and alcohol (14.06%) (Figure 3).

Figure 4: Presence of substance related and addictive disorders among persons with severe mental illness (n=128)



Discussion

Mind and body are inseparable and both are important components of health. This bidirectional relationship leads to great deal of overlap between physical and mental disorders. Psychiatric patients with comorbid physical disorders are usually chronically ill and

inadequately responding to treatments who are often referred to as high-cost utilizers, inadequate responders, and treatment refractory. It has been also seen that longevity of patients with mental disorders is usually less[8,9] which is mainly due to comorbid physical disorders and not due to mental disorder itself. Psychiatrists tend to diagnose only mental illnesses and give very little attention to comorbid physical illness of patients with mental illness. It was observed that physical examination was performed less frequently in psychiatric inpatients and outpatients. Existence of comorbid substance use among psychiatric patients is not also uncommon. Reduced healthy life expectancy due to the high burden of both mental and physical illnesses, is a major public health concern all over the world.[21]

The present study was conducted to explore the prevalence and types of physical comorbidity including substance use in persons with severe mental illnesses in Bangladesh. A total of 1648 participants with SMI from different institutions all over the country completed total interview and assessment. Overall, 42% of all respondents with SMI in this study had some extent of physical comorbidities. Comorbidities found in patients with SMI are not much different from other studies in this regard. Many physical illnesses occur with greater frequency in patients with SMI. Diabetes mellitus (DM) and hypertension were the highest prevalent physical comorbidities comprising of 28.47% and 26.45% respectively. Consistent with the findings of the previous researches, the present study supports that people with diabetes and hypertension are more likely to suffer from severe mental disorders.[22,23,24,25] Similarly, cross-sectional studies looking at the prevalence of physical health conditions in mental health population have reported higher prevalence rates of such types of illnesses (67-68%).[26,27,28] Various other studies have also drawn attention to the comorbidity of chronic physical diseases and mental disorders.[29]

Over the past two decades the prevalence of comorbid mental and physical disorders has increased dramatically, reaching epidemic problems in many countries.[4] Numerous studies worldwide have reported disproportionate medical comorbidities and premature death among people with SMI.[30] The lifetime prevalence of any physical disorder among patients with SMI has been reported to be 46.4%, while the life time prevalence of 2 and 3 physical disorders were found to be 27.7% and 17.3%, respectively.[31] In a study in India, it was reported that 31% of the patients in outpatient department of psychiatry hospitals were having coexisting physical illnesses and the main system involved was cardiovascular (33.3%) in which hypertension was the most common diagnosis followed by endocrine (27%), in which diabetes mellitus and hypothyroidism were the most common diagnoses.[17] Common physical diseases among patients with SMI reported in this survey were diabetes mellitus, hypertension, obesity and diseases of respiratory tract. About 28.47% of patients were suffering from diabetes mellitus. The prevalence of DM was also found 2 to 3 times higher among patients with schizophrenia, bipolar disorder and schizoaffective disorder than the general population[32,33] and it was 1.2 to 2.6 times higher in people with depression.[34] Increased risk of DM in patients with SMI may be explained by multiple factors including genetics, life style and treatment factors. Atypical antipsychotics, diet and physical inactivity are among the important issues related to DM in these patients. Hypertension is a form of major cardiovascular diseases (CVD) and it was found among 26.45% of patients with SMI in the current study. Evidence supports that patients with bipolar disorder, schizophrenia and major depressive disorder are at significantly higher risk of cardiovascular morbidity and mortality than the general population.[35,36] It was also seen that CVD was the commonest cause of death in patients with SMI.[35,37] The etiology of the excess CVD may be multifactorial and it may include genetic, lifestyle and treatment factors.[38] This group of patients are likely to be obese also and the prevalence of obesity among SMI patients was 6.05% in this survey. Obesity and SMI overlap at a clinically significant level.[39] Study findings suggest that people with SMI are at increased risk of overweight than people in general even in the early phase of illness.[40,41]

Obesity is a part of metabolic syndrome and rate of metabolic syndrome in patients with bipolar disorder and schizoaffective disorder have been found to be 22-30%[42] and 42% respectively.[43] For several decades, respiratory tract diseases such as pneumonia and tuberculosis accounted for majority of deaths in people with SMI who lived in institutions.[35]

Respiratory diseases are still more prevalent among people with SMI.[9] About 4.91% of the respondents in this survey had diseases of the respiratory system. Coexistence of respiratory tract, urinary tract and parasitic infections found associated in this survey were may be due to poor self care of the patients with SMI. There were many other physical comorbidities among patients with SMI in this study and they were dyslipidemia, diseases of the thyroid gland, diseases of the blood-mostly anemia, ischemic heart disease, diseases of the genitourinary system, diseases of the digestive system, infectious and parasitic diseases, diseases of the skin, diseases of the musculoskeletal system, urinary tract infection, chronic kidney disease, underweight, epilepsy and some other diseases. Studies found strong relationships between comorbidity and higher rates of suicide,[44,45] suicidal ideation,[46] greater symptom severity[47,48] and poorer quality of life and social support.[46] Patients diagnosed with multiple disorders also tend to have a poorer prognosis, less responsive to intervention and generally exert a greater demand on the health care sector.[44,45,48] Several studies have attributed medical comorbidities among psychiatric patients as responsible for the premature death observed in this population.[49,50] Although these health disparities have been well studied and addressed in the western world, gaps in information on this issue still exist in the developing world, particularly in Bangladesh.

As additional findings, 7.77% patients with SMI had substance related and addictive disorders. Of them, more than three-fifth (63.28%) had history of cannabis intake followed by amphetamine (18.75%) and alcohol (14.06%). A study on substance use in Bangladesh in 2018 conducted by National Institute of Mental Health, Dhaka revealed that 3.30% of the adult population of the country were using substances and cannabis (42.70%) was the commonest abusing substance followed by alcohol (27.50%), inhalant (20.4%), amphetamine (15.20%) and opioid (5.40%).[51] Patients with SMI usually lack insight and many of them are likely to have premorbid personality disorders, both of which make them vulnerable to mental illness. Substance use among patients with SMI may be primary or secondary in nature. Differentiating diagnosis of mental illness and substance use is important for both management and follow up. Thorough physical examination and investigations are essential part of management of substance use which may be selective in case of mental illness.

Among the study population, 93.57% were 18 years or older; 45.63% were female, 54.36% were male; 27.8% studied up to class five and 68.54% population came from nuclear family. Respondents from the age group 41 to 48 years (8.98%) had the highest proportion of physical comorbidity followed by age group 49 to 56 years (8.0%). Statistically significant association was found between age and physical comorbidities ($p<0.01$) where older psychiatric patients with SMI had more physical comorbidities than the younger patients. Respondents from the age group 18 years or less (1.57%) reported the lowest proportion of physical comorbidity. Physical diseases like diabetes mellitus, hypertension, dyslipidemia, ischemic heart disease and chronic kidney disease are usually the diseases for older age group and coexistence of these physical diseases in older patients having SMI create additional burden for management and ultimately lead to poorer prognoses. Male female difference in this study may be explained by the dominance of males in getting mental health services on priority especially for the hospital set up in Bangladesh. Females may have been ignored from the services that are usually provided to males. No significant association was found between physical comorbidity and severe mental illness in terms of sex, family type, education, occupation and marital status. Basically, the cooccurrence of physical and mental disorder depends on several different factors including geographical region, sex, race, social class and many more factors. Although the present study did not find any significant difference between physical and mental disease cooccurrence in terms of sex but other studies showed sex differences in terms of physical and mental comorbidity.[52,53] The discrepant result with previous studies suggests the need for more researches using more specific measures of mental illness to fully understand sex and comorbidity. The results of different studies around the globe suggest that patients of SMI may develop several physical disorders which could result in adverse outcomes.[54,55,56] The findings of this study also support that people with severe mental illness may develop several chronic physical problems which could result in adverse outcomes[57,58,59] that could vary based on various factors such as their history of substance use and other socio-demographic status.

Managing physical disorders in patients with SMI and substance use disorder would entail shared responsibility among psychiatrists, substance use specialists, primary care physicians, and other health professionals.[60] Clinicians managing severe mental disorders should screen for physical disorders and provide treatment or go for referral. Such integrated care can enhance a patient's overall wellbeing and can prevent any additional problem. Premature death and disability can also be reduced with greater focus on comorbidity.[21] Attention to these physical disorders at the individual level and health care system level will improve outcomes of this group of population. Side effects of psychotropic medications, modifiable life style factors, prevention of substance abuse and access to appropriate health care remain addressable for patients with SMI. Efforts are required to convince decision makers, educators, clinicians, and community workers that comorbidity is one of the most urgent challenges to the quality of health care in the twenty first century that must be recognized and dealt with without delay. Though it was a first large scale study to find the prevalence of comorbid physical problems among the patients with severe mental illness we must acknowledge few limitations of the study. The cross-sectional study conducted in hospital settings prevents claiming it as the overall prevalence of comorbidity among patients with SMI in the whole community of Bangladesh. Diagnosis of SMI was done by research psychiatrists following DSM-5 criteria of diagnosis. The subjective variation in diagnosis and physical examination need to be considered also.

Implication of the study

Thus it is important that a psychiatrist should not miss the coexisting physical illness in the patient that may present with mental disorder. In the same way, physician needs to be cautious that some physical illness may be a reflection of an underlying mental illness. The occurrence of mental physical comorbidity has public health significance specially in Bangladesh. The national health strategy focuses on mental health and intends to develop programs to improve the delivery of mental health services that revolve around community-based care in Bangladesh. Exploring the prevalence of medical comorbidities in people with severe mental illness and how these are being addressed are necessary to build strategies within the primary health care system to close the care gaps. Result of the survey is intended to be a guide for all healthcare professionals to work with the group of patients suffering from severe mental illness having multiple comorbid disorders. Holistic evaluation looking at the whole patient is required for proper management Integrated treatment plans that focus on all the treatment needs of the patient may be developed based on the survey result.

Conclusions

The study findings suggest that physical comorbidity among patients with SMI is one of the most urgent challenges to the quality of mental health care in the twenty first century that must be recognized and dealt with without delay. The health system and mental health policy makers should consider the physical comorbidities of the patient suffering from mental health problems and there should be adequate facilities to address this issue in every mental health setting. We need to consider an integrated care program for each patient at every government healthcare facility. Recommendations based on the study findings are i. psychiatrists should not miss the physical comorbidities in the patients that may present with a mental illness and medical professionals dealing with physical illness should also be vigilant that physical problems may be reflection of mental illness or there may be coexisting mental illness ii. physical and psychiatric assessment of persons with substance use must be given due importance iii. appropriate management of comorbidity at the individual and public health level will require a significant reorientation of medical students, medical professionals and reorganization of health services iv. health services will have to be adjusted to the fact that most of the people who come to seek help are likely to suffer from more than one illness v. researchers will have to give more attention to the commonalities in the pathogenesis of mental and physical disorders and to the development and assessment of strategies for the treatment of co morbid conditions and vi. psychiatry hospitals need to have other departments specially medicine and its allied subjects with laboratory facilities.

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