ORIGINAL ARTICLE

Psychiatric morbidity in individuals with permanent orthopedic disability

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ABSTRACT

Background: Individuals with permanent orthopedic disability present with a number of physical and mental health issues. Psychiatric illnesses have been seen more frequently among people with disabilities as compared to normal population. **Aim:** To study psychiatric morbidity among people with permanent orthopedic disability. **Materials and Methods:** This cross-sectional, observational, hospital-based study was conducted at the department of psychiatry of a tertiary care hospital attached to a medical college during January 01, 2018, to December 31, 2018. The study included subjects over the age of 18 years comprising two groups: Group A (n = 50) including consecutive subjects with orthopedic disability and Group B (n = 50) including normal age- and sex-matched controls. Permission was obtained from the institutional ethics committee before the start of the study. Prior informed consent was obtained from all subjects. Sociodemographic variables were recorded, and psychiatric morbidity was screened on Mini International Neuropsychiatric Interview. **Results:** 62% (n = 31) of subjects in Group A had psychiatric morbidity as compared to Group B (22%, n = 11). Maximum psychiatric morbidity noted among subjects with disability was generalized anxiety disorder (22%, n = 11), followed by major depressive disorder (20%, n = 10) and alcohol dependence (18%, n = 9). Substance dependence was more in Group A (34%, n = 17) as compared to Group B (18%, n = 9). The most common substance dependence was for alcohol (18%, n = 9), followed by opioids (8%, n = 4) and tobacco (6%, n = 3). **Conclusion:** Psychiatric morbidity including substance dependence is more common among people with orthopedic disability as compared to normal control subjects.

Keywords: Alcohol dependence, generalized anxiety disorder, major depressive disorder, permanent orthopedic disability, psychiatric morbidity, substance dependence

In India, individual disability constitutes a large section of population. They are educationally and economically disadvantaged, marginalized, oppressed, stigmatized, and possibly been denied rights to self-assertion, identity, and development. According to Indian census of 2001, over 21 million people were suffering from various types of disabilities and they comprised up of 2.1% of total population.Among them, 12.6 million were male and 9.3 million were female.[1] Subsequently, the 2011 census reported an increase in disabled persons, i.e. 2.21% of the total population (1.5 crore males and 1.18 crore females). Out of which, 20% were orthopedically disabled.[2] Disability means difficulty in ability and implies deprivation or loss of power. The World Health Organization International Classification of Functioning and Disability describes it as a multidimensional concept at four levels, i.e. body function, bodily activity, participation in society, and environmental factors, which act as either facilitators or barriers.[3-6]

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Due to decreased self-esteem, physical limitation, stereotypic social and personal attitude, and environmental barriers, persons with disabilities (PWD) are prone to psychiatric illnesses, e.g. depression and anxiety.[7,8] According to the annual study, about 17 million disabled persons in the US suffered from depression.[9,10] Similarly, an Indian study also showed that PWD had comorbid psychiatric illness, e.g. depression and anxiety.[11] Another study for PWD showed 2.86% with mild mood disturbance, whereas 37.14% severely depressed and 14.29% had extreme depression.[12] Substance use disorder (SUD) was commonly reported among PWD. The household survey in the US showed high lifetime prevalence of illicit substance, and alcohol was the most commonly abused substance.[13] Similarly, studies on traumatic amputees reported high prevalence of alcohol dependence.[14] It has been observed that PWD experienced severe lifetime trauma and posttraumatic stress disorder (PTSD).[15] A few studies reported diagnosis of PTSD among 41.7% of soldiers with amputation of either limb or spinal injury, whereas delayed PTSD was reported among them even after 5 years of trauma.[16] Many researchers have only focused on physical aspect of orthopedically disabled nature and ignored psychological and emotional aspects, which have the potential to hinder full functional recovery or participation in activities of daily living (ADL). The present study is an attempt to assess psychiatric morbidity among such individuals with permanent orthopedic disability.

MATERIALS AND METHODS

This cross-sectional, observational, hospital-based study was conducted in the psychiatry department of a tertiary care hospital attached to a medical college from January 01, 2018, to December 31, 2018. Nonexperimental research design was adopted. The study was approved by the institutional ethics committee. Written informed consent was obtained from all subjects of the study. Confidentiality was maintained.

Table 1: Sociodemographic characteristics of subjects with permanent orthopedic disability and matched controls

Sociodemographic characteristics	Permanent orthopedic disability (*n*=50) Number of subjects, *n* (%)	Control subjects (*n*=50) Number of subjects, *n* (%)
Age (years)		
18-40	32 (64)	31 (62)
40-60	18 (36)	19 (38)
Gender		
Male	39 (78)	36 (72)
Female	11 (22)	14 (28)
Education		
Illiterate	6 (12)	9 (18)
Primary	12 (24)	7 (14)
Matriculation	11 (22)	6 (12)
High secondary	11 (22)	17 (34)
Graduate	9 (18)	7 (14)
Postgraduate	1 (2)	4 (8)
Occupation		
Skilled agricultural/fishery workers	12 (24)	18 (36)
Unemployed	11 (22)	4 (8)
Students	8 (16)	7 (14)
Skilled workers/shop/market sales workers	5 (10)	5 (10)
Elementary workers	5 (10)	5 (10)
Clerks	5 (10)	4 (8)
Housewife	4 (8)	7 (14)
Income (Rs.)		
<6326	5 (10)	4 (8)
6327-18,952	14 (28)	23 (24)
18,953-31,590	9 (18)	5 (10)
Nil	22 (44)	18 (36)
Locality		
Rural	32 (64)	36 (72)
Urban	18 (36)	14 (28)

Sample

The study included Groups A and B with 50 subjects each. Group A consisted of 50 consecutive patients with orthopedic disability from the department of orthopedics. Group B comprised age- and gender-matched normal subjects. Both were in the age group of 18–65 years. Orthopedically disabled patients were assessed and diagnosed by the senior consultant of the orthopedics department.

Inclusion criteria for Group A

All orthopedically challenged individuals having the permanent locomotor disability and were in the age group of 18–65 years.

Inclusion criteria for Group B

Age and sex matched individuals not suffering from any permanent physical disability.

Exclusion criteria for both groups

- Minors (below 18 years of age)
- People with intellectual disability disorder
- Medically unstable or under the influence of alcohol
- People who were suffering from acute temporary disability and/or minor injuries (the prognosis of which promised them near full recovery or deficit caused by the same was too negligible to cause any impact on their psychosocial life)
- People who did not consent or unwilling for the study
- Pregnant females.

Tools

Sociodemographic proforma

This self-made pro forma was used to record identification data and other sociodemographic variables.

Mini International Neuropsychiatric Interview

It is a short, structured diagnostic interview developed by an international group of psychiatrists and clinicians used to diagnose psychiatric disorders. Diagnosis is confirmed by ICD-10. The Mini International Neuropsychiatric Interview (MINI) has been demonstrated to have well to very good validity, reliability (inter rater and test–retest), and sensitivity and specificity indices. It has relatively brief administration time (15–20 min) and easy to use.[17]

Methodology

Sociodemographic variables were recorded and psychiatric morbidity was screened on MINI. Psychiatric diagnosis was confirmed by two senior consultants of the psychiatry department and as per the International Classification of Diseases-10th edition-Clinical Description and Diagnostic Guidelines (ICD-10-CDDG).

Statistical analyses

The data were statistically analyzed using SPSS-21 (IBM, Chicago, USA). Chi-square test was used in the study to analyze the data.

RESULTS

A total of 100 subjects were consecutively enrolled and divided into two groups of 50 each, Group A (permanent orthopedic disability) and Group B (age- and gender-matched controls). Table 1 shows the sociodemographic parameters of subjects. Disability-related parameters of subjects with permanent orthopedic disability are given in Table 2.

Table 2: Disability related parameters of subjects with permanent orthopedic disability

Parameter	Number of subjects, *n* (%)
Cause of disability	
Infectious	22 (44)
Accidental	15 (30)
Congenital	9 (18)
Idiopathic	2 (4)
Metabolism	1 (2)
Iatrogenic	1 (2)
Type of disability	
Postpolio residual paralysis	21 (42)
B/L ankle deformity due to infection	1 (2)
Traumatic amputation	14 (28)
Diabetic foot below knee amputation	1 (2)
Congenital genu valgum, ankylosis	1 (2)
Congenital dislocation of hip with untreated ankylosis	1 (2)
Congenital untreated kyphoscoliosis	3 (6)
Congenital phocomelia	2 (4)
Neglected congenital meningocele	1 (2)
Congenital talipusequinovarus	1 (2)
Other disabilities	4 (8)
Body part involved	
Lower limb	38 (76)
Upper limb	11 (22)
Spine	1 (2)
Duration of disability (years)	
2-20	18 (36)
21-40	27 (54)
41-50	4 (8)
>50	1 (2)
Percentage of disability	
40-50	5 (10)
51-70	28 (56)
>70	14 (28)
Not available	3 (6)

Psychiatric morbidity was statistically significantly more in Group A 62% ($n = 31$) as compared to Group B 22% ($n = 11$) ($\chi^2 = 6.629$; $P = 0.010$**) Highly significant [Table 3]. Distribution of dual diagnosis (psychiatric illness and SUD) in orthopedically disabled subjects and matched control group is given in Table 4.

DISCUSSION

In India, the prevalence of orthopedic disability has significantly increased over the past few years.[1,6] Previous studies have reported high prevalence of psychiatric morbidity, among such individuals.[7,18] In the present study, 64% ($n = 32$) of the subjects with disability were in the age group of 18–40 years. It implies that orthopedic disability starts early in life, hampers considerable period of their lifespan, and decreases socioeconomic productivity.

Majority of subjects with orthopedic disability in Group A ($n = 39$, 78%) were male as compared to Group B ($n = 36$, 72%). Similar findings were reported earlier.[19] It may be due to higher incidence of road traffic accidents among males as they show more risky driving behavior than females.[19,20] Our study showed significantly higher number of unemployment in Group A (22%) as compared to Group B (8%). This was consistent with an

Table 3: Distribution of subjects with permanent orthopedic disability and matched controls according to the presence of psychiatric morbidity

Psychiatric morbidity as per ICD-10	Group A Subjects (n=50), n (%)	Group B Subjects (n=50), n (%)	χ^2	P
F10.2 (alcohol dependence)	9 (18)	6 (12)	6.629	0.010*
F11.2 (opioid dependence)	4 (8)	3 (6)		
F12.2 (cannabis dependence)	1 (2)	0		
F17.2 (tobacco dependence)	3 (6)	0		
Total substance dependence	17 (34)	9 (18)		
F31.1 (bipolar mood disorder current episode mania without psychotic symptoms	2 (4)	0		
F32.1 (major depressive disorder)	10 (20)	1 (2)		
F41.1 (generalized anxiety disorder)	11 (22)	1 (2)		
F43.1 (posttraumatic stress disorder)	2 (4)	0		
Other psychiatric disorders	25 (50)	2 (4)		
Overall psychiatric morbidity (substance dependence and other psychiatric disorders)	31 (62)	11 (22)		
No psychiatric morbidity	19 (38)	39 (78)		

*P<0.05 significant; **P<0.01 highly significant. ICD-10 – International classification of diseases 10th revision

Table 4: Distribution of subjects with permanent orthopedic disability and matched controls according to dual diagnosis (psychiatric morbidity and substance use disorder)

Psychiatric illness as per ICD 10	Group A (n=50), n (%)	Group B (n=50), n (%)	χ^2	P
F31.1 (bipolar mood disorder current episode mania without psychotic symptoms	2 (4)	0	6.629	0.010*
F32.1 (major depressive disorder)	6 (12)	2 (4)		
F32.1 (major depressive disorder) + F10.2 (alcohol dependence)	2 (4)	0		
F32.1 (major depressive disorder) + F10.2 (alcohol dependence) + F11.2 (opioid dependence)	1 (2)	0		
F32.1 (major depressive disorder) + F10.2 (alcohol dependence) + F17.2 (tobacco dependence)	1 (2)	0		
F41.1 (generalized anxiety disorder)	9 (18)	2 (4)		
F41.1 (generalized anxiety disorder) + F10.2 (alcohol dependence)	1 (2)	0		
F41.1 (generalized anxiety disorder) + F17.2 (tobacco dependence)	1 (2)	0		
F43.1 (posttraumatic stress disorder)	2 (4)	0		
F10.2 (alcohol dependence)	1 (2)	5 (10)		
F11.2 (opioid dependence)	1 (2)	1 (2)		
F10.2 (alcohol dependence) + F11.2 (opioid dependence)	2 (4)	1 (2)		
F10.2 (alcohol dependence) + F12.2 (cannabis dependence)	1 (2)	0		
F17.2 (tobacco dependence)	1 (2)	0		
Total psychiatric morbidity	31 (62)	11 (22)		
No psychiatric morbidity	19 (38)	39 (78)		

*P<0.05 significant; **P<0.01 highly significant. ICD-10 – International classification of diseases 10th revision

earlier study, where 74% of subjects were unemployed.[21] The unemployment among orthopedically disabled persons could be due to their physical limitations.

Majority of subjects in Group A (64%) and Group B (72%) were residing in rural areas and could be due to catchment area of our hospital. Similar finding was reported by an Indian study in which 90% of subjects were from rural area.[22] In Group A, the most common orthopedic disability was post-polio residual paralysis (PPRP) (42%), followed by traumatic amputation (28%). It is consistent with a review article where PPRP constituted 27.8%. Even though polio got eradicated from India in 2014, patients of PPRP are still surviving with locomotor disabilities.[23] High percentage of disability due to amputation in our study was in consonance with a previous study that reported 14.97% of traumatic amputees with locomotor disability.[24]

In the present study, psychiatric morbidity was higher in Group A (62%) as compared to Group B (22%). The most common psychiatric illness in Group A was generalized anxiety disorder (GAD) (22%), followed by major depressive disorder (MDD) (20%), alcohol dependence (18%), opioid dependence (8%), tobacco dependence (6%), PTSD (4%), and bipolar mood disorder (4%). These findings are consistent with a previous study in which psychiatric morbidity was 84% among amputees; MDD (63%) was the most common followed by GAD (10%) and PTSD (4%).[25] Another study also reported 66% psychiatric morbidity, but the most common illness was adjustment disorder (40%) followed by MDD (20%) and PTSD (6%).[26] The higher prevalence of overall psychiatric morbidity could be due to loss of physical and social function, dependency on family members for ADL, low self-esteem, unemployment, etc.[25-28]

The percentage distribution of substance dependence was more in Group A (34%) as compared to Group B (18%). Among subjects in Group A, 18% were dependent on alcohol, 8% on opioids, 6% on tobacco, and 2% on cannabis. These findings were similar to earlier studies where alcohol was the most commonly abused substance among amputees[14] and limb fracture patients.[29] The high prevalence of substance dependence among PWD can be due to multiple factors such as feeling of inadequacy, high prevalence of psychiatric illnesses, e.g. MDD and GAD, lack of education, inadequate job opportunities, social isolation, and physical pain.

Limitations

The small sample size of the study was due to time limited nature of the study. This was a hospital-based cross-sectional study conducted on orthopedically challenged individuals coming to orthopedics outpatient department of a hospital in 2018. All the variables were assessed cross-sectionally in one meeting; hence, the answers to cause-and-effect relationship between the variables cannot be ascertained.

CONCLUSION

Psychiatric morbidity is significantly higher among subjects with permanent disability as compared to healthy controls. Maximum psychiatric morbidity noted among subjects with disability was GAD, followed by MDD and alcohol dependence. The most common substance dependence was for alcohol, followed by opioids and tobacco. Overall substance dependence was significantly higher among subjects with orthopedic disability as compared to healthy controls.

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Conflicts of interest

There are no conflicts of interest.

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