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CORRELATION OF PSYCHIATRIC MORBIDITIES WITH SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE PERSONS WITH LOCOMOTOR DISABILITY.

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Abstract:

- **Background:** More than a billion people are estimated to live with some form of disability, or about 15% of the world's population. Inability to work as a productive member of the society bears a huge psychological stress among persons with disability.
- **Aims:** The aim of the study was to find out the prevalence of psychiatric morbidities in persons with locomotor disability with relation to their socio-demographic variables.
- **Methods:** 100 persons who fulfilled the criteria of Loco motor disability were included in the study. Psychiatric evaluation was done as per ICD-10.The severity of morbidity was assessed using rating scales (HAM-D, HAM-D, BPRS).The severity of loco motor disability was measured as per disability guidelines of Govt. of India. Statistical analysis was done using simple statistical analysis like Chi square test, t- test , p value for significance and correlation coefficient.
- **Results:** Out of 100 patients 76% were found to have psychiatric illness. . Depressive Episodes was the most common psychiatric illness found in 41% of patients. Female gender was associated with significant psychiatric morbidity($p<0.05$). Patients with disability percentage > 70% found to have greater psychiatric morbidity than its counterpart of 40 - 70%. ($P < 0.002$)

Introduction:

As defined by the World Health Organization, "disability is an umbrella term covering impairments, activity limitations and participation restrictions. Impairment is a problem in body functions or structure, and activity limitation is a difficulty endorsed by an individual in executing a task or action. Disability is a complex phenomenon reflecting any narration between features of a person's body and features of the society in which he or she lives". (Disabilities, World Health Organization, 2012.)

According to 2010 Global Population Estimates greater than a billion people are estimated to live with some sort of disability, i.e about 15% of the world population

Inability to work as a productive member of the society bears a huge psychological stress among persons with disability. A person who was an active member of the society may feel dejected and

unable to tender his responsibilities. To ensure proper rehabilitation of social, occupational and mental area, it is required to know and intervene before development any psychological complications. For the disabled people, the exclusion from physical environments reminds them that they are different and can make them feel that they do not belong where non-disabled people spend their lives. (Morris et al. 1991 and Reeve et al. 2006). Persons with disabilities are suffers multiple deprivations and limited access to basic services, including education, employment, rehabilitation facilities etc. Social stigma imparts a role in jeopardizing their normal social and economic life. To work towards an inclusive, barrier-free society, raising awareness and policy actions, we need to have comprehensive, dependable statistics on persons with disability and their socio-economic conditions. (Disability at a Glance, 2015 by UNESCAP)

In the years, much attention has been paid to the support needs of mental health service users and disabled people with physical impairments. Although, the support needs of individuals who fall into both these categories have been overlooked by providers, practitioners, researchers and organizations of service users and disabled people. Therefore we have insufficient knowledge about how to best support persons with physical impairments who use or might use mental health services. (Begum, 2000).

The aim of the study is to assess correlation of psychiatric morbidities with socio-demographic variables in persons with locomotor disability.

Materials and Method:

The present study was conducted in the department of Psychiatry, Institute of medical sciences, Banaras Hindu University, Varanasi from November 2014 to August 2016.The patients was collected from the OPD of department of Orthopedics and Physiotherapy center of S.S Hospital, IMS, BHU, Varanasi.

Informed consent was taken from all the cases, explaining the nature of the study.

The sample of the study consisted of 100 patients who fulfilled the criteria for the definition of locomotor disability as provided by the government of India and were included randomly from the OPD of department of Orthopedics and Department of psychiatry and Physiotherapy center of S.S Hospital, IMS, BHU, Varanasi.

- **INCLUSION CRITERIA:**

1)Informed consent from the patient under study.
2)Age group more than 21year to less than 50 yr.

- **EXCLUSION CRITERIA:**

1)Refuse to provide informed consent.
2)Age group more than 50 year or less than 21 year .
3)Past history of psychiatric illness.
4)Any other significant co-morbid medical illness except that lead to the disability.

Methods:

1)All subjects were interviewed according to a semi structured proform which included sociodemographic details ,history of present illness, history of medical illness and past history of psychiatric illness, family history of psychiatric illness, personalhistory, premorbidpersonality, Physical and mental status examination. The socioeconomic class were assessed by Kuppuswamy's socioeconomic scale.
2)The patients were assessed for psychiatric morbidities as per the ICD 10 criteria.
3)The severity of psychiatric illness was assessed according to the following scales.
a)Hamilton Anxiety Rating Scale.
b)Hamilton Rating scale for Depression.

c)Brief psychiatric Rating Scale.

4)The severity of physical disability was measured as per DisabilityGuidelines, Government of India.

5)Statistical analysis

Simple statistical analysis using Chi Square test,T test,P value for significance and correlation coefficient was be used for analysis. The patients were examined for psychiatric comorbidities as per ICD 10 guidelines and severity was measured using relevant rating scales.

Observation and Results:

The following were the observation of the study. Among the study population of 100, 75 were male 25 female. We had 33 persons each among 21 to 30 years and 31 to 40 years age group,34 from 41 to 50 years. 11 were illiterate and 89 literate. Occupation wise 23 were student ,15 persons each were businessman and domestic worker,30 were employees.56 of them were unmarried,44 married. We had 50 persons from joint family and 50 from nuclear family. Most(41) of the persons were from upper lower class family an maximum(58) from rural background. 72 patients were having disability percentage between 40%-70% and 28 beyond 70%. Among the individual causes of disability we had Polio (26),Amputation (15), Arthritis(22), Stroke Paralysis (10), Spinal Cord Injury(12) and Others (15).

Table 1: Age distribution in the study group vs. psychiatric morbidity

s.no.	Age group (in years)		Psychiatric morbidity		N=100 P>0.05
			Absent	Present	
1	21-30	N	7	26	33
		%	21.22	78.78	100
2	31-40	N	9	24	33
		%	27.27	72.72	100
3	41-50	N	8	26	34
		%	23.52	76.47	100
	Total		24	76	100

Psychiatric morbidity was higher in age group 21 to 30 years, followed by 41to 50 years of age group.76 patients out of the 100 were found to have suffering from psychiatric morbidity.

Table 2: Sex distribution vs. psychiatric illness in locomotor disability.

s.no.	Age group (in years)		Psychiatric morbidity		N=100 P=0.006
			Absent	Present	
1	Male	N	23	52	75
		%	30.66	69.33	100
2	female	N	1	24	25
		%	4	96	100
	Total		24	76	100

Table 2 suggests that out of the 75 males 52(69.33%) were found to be suffering from psychiatric morbidity. Among females out of the 25 females 24(96%) had psychiatric morbidity. This observation was found to be statistically significant with Pearson's chi-square test with a P value of =0.006.It can be inferred from the results that women are more affected than males with locomotor disability.

Table 3: Education level of patient vs. psychiatric illness in locomotor disability

Sl no	Education		Psychiatric morbidity		N=100 P>0.05
			Absent	Present	
1	Illiterate	n	2	9	11
		%	18.18	81.81	100
2	Primary	n	5	12	17
		%	29.41	70.58	100
3	Secondary	n	5	21	26
		%	19.23	80.76	100
4	Beyond secondary	n	12	34	46
		%	26.08	73.91	100
Total			24	76	100

While most of the patients in the study was graduate(46%) and psychiatric morbidity was 73.91%, psychiatric morbidity was higher among the illiterate (81.81%) group followed by secondary group(80.73%) and least found to be in the Primary educated group (70.58%). But this observation failed to reach statistical significance.

Table 4: Occupation vs. psychiatric morbidity.

Sl no	Occupation		Psychiatric morbidity		N=100 P>0.05
			Absent	present	
1	Domestic	N	0	15	15
		%	0	100	100
2	Unskilled	N	5	12	17
		%	29.41	70.58	100
3	Student	N	8	15	23
		%	34.78	65.21	100
4	Business	N	4	11	15
		%	26.66	73.33	100
5	Employees	N	7	23	30
		%	23.33	76.66	100
Total			24	76	100

All the females in domestic occupation group were found to have psychiatric morbidity. Higher number of psychiatric morbidity was found in all occupational group.

Table 5: Marital status in the study group vs. psychiatric illness

s.no.	Marital status		Psychiatric morbidity		N=100 P>0.05
			Absent	Present	
1	Married	n	12	32	44
		%	27.27	72.72	100
2	Unmarried	n	12	44	56
		%	21.42	78.57	100
	Total		24	76	100

32patients out of 44 in the married group had psychiatric morbidity(72.72%) whereas 44 patients out of 56 in the unmarried group were found to be suffering from psychiatric morbidity(78.57%).

Table 6: Type of family in the study group vs. psychiatric illness

s.no.	Type of family		Psychiatric morbidity		N=100 P>0.05
			Absent	Present	
1	Nuclear	n	11	39	50
		%	22	78	100
2	Joint	n	13	37	50
		%	26	74	100
	Total		24	76	100

Psychiatric morbidity was observed in 78% of the nuclear and 74 % of the joint family.

Table 7: Socioeconomic status of the patient vs. psychiatric morbidity

Sl no	Socioeconomic status		Psychiatric morbidity		N=100 P>0.05
			Absent	present	
1	Upper(I)	n	0	1	1
		%	0	100	100
2	Upper middle(II)	n	7	12	19
		%	36.84	63.15	100
3	Lower middle(III)	n	9	30	39
		%	23.07	76.92	100
4	Upper lower(IV)	n	8	33	41
		%	19.51	80.48	100
5	Lower (V)	n	0	0	0
		%	0	0	100
Total			24	76	100

This study observed that most of the population was from Upper Lower class(41%) followed by Lower Middle class(39%)with presence of psychiatric morbidity 80.48% and 76.92% respectively. There was no significance difference in the distribution of psychiatric morbidity with respect to socioeconomic status.

Table 8: DomicileVs. psychiatric morbidity.

s.no.	Domicile		Psychiatric morbidity		N=100 P>0.0.5
			Absent	Present	
1	Rural	n	12	46	58
		%	20.68	79.31	100
2	Semi urban	n	2	14	16
		%	12.50	87.50	100
3	Urban	n	10	16	26
		%	38.46	61.53	100
	Total		24	76	100

Table no 8 depicts that while 58% patient hailed from rural area had a psychiatric morbidity of 79.31%.while 26% urban patients had morbidity of 61.53%.Among the semi urban population it was found to be 87.50%.This was however not found to be statistically significant.

Table 9: Disability percentage vs. psychiatric morbidity.

s.no.	Disability percentage		Psychiatric morbidity		N=100 P=0.002
			Absent	Present	
1	40-70	n	23	49	72
		%	31.94	68.05	100
2	>70	n	1	27	28
		%	0.03	96.42	100
	Total		24	76	100

68.05% patients of disability percentage between 40 to 70 were found to have psychiatric morbidity. Whereas 96.42% patients of disability percentage >70 were suffering from psychiatric morbidity. The differences was statistically significantwith P value 0.002.

Table 10: Causes of disability vs. psychiatric morbidity

Sl no	Locomotor disability causes		Psychiatric morbidity		N=100 P=0.047
			Absent	Present	
1	Polio	n	11	15	26
		%	42.30	57.69	100
2	Amputation	n	0	15	15
		%	0	100	100
3	Arthritis	n	4	18	22
		%	18.18	81.81	100
4	Stroke Paralysis	n	2	8	10
		%	20.00	80.00	100
5	Spinal Cord Injury	n	2	10	12
			16.66	83.33	100
6	Others	n	5	10	15
		%	33.33	66.66	100
Total			24	76	100

Among the various groups, polio group had least morbidity(57.69%) while amputation was associated with highest psychiatric morbidity(100%). There seems to be a positive correlation between the causes of disability and presence of psychiatric morbidity as it reached the statistical significance with P value 0.047.

Table 11: Prevalence of psychiatric morbidities.

Sl no	Psychiatric morbidities	Study group (N=100)	
		n	%
1	Nil	24	24.0
2	Depressive Episode	41	41.0
3	Generalized Anxiety Disorder	28	28.0
4	PTSD	5	5.0
5	Others	2	2.0
Table		100	100.0

In this study more than three forth(76%) patients with locomotor disability were found to have psychiatric morbidities. The common psychiatric morbidities found in the study were Depressive Episodes(F32) 41%followed by, Generalized anxiety disorder(F41.1)28%, Post-traumatic stress

disorder(F43.1) 5%and others 2%(Unspecified Nonorganic Psychosis[F29] and Other Bipolar Disorder[F31.8] 1% each).
Among the depressives 56 % were moderately depressed,39.1% were severely depressed and 4.8% were mildly depressed. The mean Hamilton's depression score among the depressives were 16.83+_4.985 and had moderate depression. The mean Hamilton's Anxiety score among the generalized anxiety disorder patients were 19.94+_2.548 and had moderate anxiety symptoms

Discussion:
In this study the patients included ranged between 21 to 50 years with a mean age of 37.73 years. Majority of the patients(34%)were from the 41 to 50 years age group, although there was no significant variation in the distribution of age within the patient population. In this study the age group 21 to 30 years had slight increase in psychiatric morbidity(78.78 %) comparative to 72.72 % in 31 to 40 years and 76.47 % in 41 to 50 years respectively. The study by Land et al in 2010 found that the incidence of any psychiatric disorder declined with age. The incidence of psychiatric disorder was significantly higher in the younger age categories of persons with arthritis compared to those without arthritis in the same age categories. But another study on arthritis did not find any such correlation(Isik et al 2007).In a study by Malik et al 2012 on amputated patients similar results were found. This same finding has been observed in our study that younger age group(21– 30 years) are most affected regardless of cause of their disability. They had more symptoms and decreased coping skills to address their disability.

The study group contained 75% males and 25% females. In our study 96% of the female population were found to have psychiatric morbidity compared to 69.33% males who have psychiatric morbidity. The study by Darnal et al in 2005 was a cross-sectional survey design conducted with 1538 amputees found that female sex is significantly associated with higher morbidity. Women with arthritis were prone to have any psychiatric diagnosis more than men reported in some studies(Lok et al al,2010).The same finding has been observed in our study and this correlation reached statistical significance with P value of 0.006.However some studies(Migliorini et al 2008)did not find any significance among gender and some even conferred opposite results(Schönenberg et al 2014).Overall quality of life found to be poorer than male in female polio survivors(Babatunde et al 2012).

Most of the patients in the study was graduate (46%) and psychiatric morbidity in that group was 73.91% whereas 81.81% of illiterate patients who consisted of 11% of the total population had psychiatric morbidity ,it is higher than the other groups. This might be due to the fact that educated people are more sensitive towards their physical ailments and have knowledge of their physical illness. A longitudinal study by Andrea et al in 2012 among 100 arthritis patient in Netherlands shows that lower education level significantly predicted anxiety at the 3 and 5 year follow-up and depressed moodonly at the 5 year follow-up. They have reported that low educational level is associated with depression and anxiety in RA cases. Darnall et al (2006) reported that Persons with more than 12 years of education appeared to be buffered from depressive relative to those with less education. Similar is reported in a study from Nigeria where amputated patients, the more educated the more likely to get a job and receive social support whereas less educated patients have more psychiatric problems(Mosaku et al 2009).In this respect our observation was similar to the above studies.
With regard to occupation, domestic workers who consists of 15% of the group, mainly consists of females had highest morbidity(100%).Whereas students who constitute 23% had the least morbidity of 65.21%.The major occupational group employees (30%) found to have morbidity of 76.66%.In a study by Mok et al (2012) in china found that depression and anxiety were more profound in individuals with arthritis who were unemployed. It is again reiterated by an Indian study that due to amputation of limb people who have lost their current employment show higher

depressive symptomatology than the controls (Mazumdar and Roy,2010).This observation is similar to our study that individuals who had an employment had decreased morbidity. Another reason could be that female gender itself was found to have increased psychiatric morbidity which largely comprised of the domestic worker group. Students though did not had any actual employment had least morbidity may be due to strong support from home and lesser liability towards family.
Majority of the patients were from upper lower socioeconomic status. This may be due to the area catered by the hospital belong to this class and increased usage of hospital resources due to less financial expenses occurred. The upper classes prefer to visit to the private institutions.41% population in our study were from upper lower class and 80.48% among them was found to have psychiatric morbidity. Lower Middle class which consists of 39% had marginally lower rate of morbidity of 76.92%.A study by Mazumdar and Roy in 2010 at amputated population of Kolkata observed that individuals from higher to middle to lower socioeconomic group showed steadily decline in Beck Depression Inventory scale.Another study by Treharne et al (2005) also asserted that low socioeconomic status is related to poorer psychological outcome in Rheumatoid arthritis patients. Study also indicated that low economic condition had an association with higher depresssion in participants with a traumatic amputation, which was corroborative to the finding of the studies by Rybarczyk et al. Our study was in concordance with the fact that the higher the socioeconomic status the less is the psychiatric morbidity in terms of earlier problem recognition and help seeking.

In the study more patients were unmarried(56%) who have relatively greater psychiatric morbidity(78.57%) as compared to the married(44%) who were found to have 72.72%.A study by El-Meidany et al at Egypt in 2011 showed that regardless of gender, patients with arthritis who were married showed less depressive symptoms than the married with an odds ratio of 9.47.Darnall et al(2005). found that patients who were divorced or separated were twice as likely to suffer from depressive symptoms as those in a relationship. This is in concordance our study which showed that married people tend to have less psychiatric symptoms than the unmarried. Though it didn't reach any statistical significance, it may be due to the fact in this study sample of Indian population social support is not only provided by spouse but also family menbers,where it is found that patients from joint family tend to have lower psychiatric morbidity(74%) compared to nuclear family(78%).
Majority of the patients in this study were from the rural areas which could be understood from the area served by this hospital. Of the patients involved in the study, majority of the them were from rural areas(58%) compared to those from urban(26%) and semi-urban areas(16%).Psychiatric illness was found to be higher in the population from the semi-urban area(87.5%),followed by rural(79.31%) and lesser in urban area(61.53%).It may be due to the fact that,in semi-urban area, in one hand joint family support is lesser than the rural area as well as not well enough opportunity for an education or employment than the urban area.
The government of India has provided exhaustive guidelines to grade severity of locomotor disability. It can range from 0% to 100%.The higher the percentage the higher the disability. According to the contemporary rules the window of percentage between 40 to 70 % was decided for availing disability benefit in India in education and employment opportunities. Beyond 70% it was assumed that the person could not be able to accommodate oneself into any government institution. In this study a positive correlation was found between the higher the disability percentage greater the psychiatric comorbidity trend which wasstatistically significant(P value of 0.002).To our knowledge there is no article in standard journals which attempted to correlate this finding. We propose that due to dual jeopardy ,one is disability itself and second is lack of opportunity for education and employment from government may be behind this observation.
Among the common causes of disability included in this study was Polio(26%), amputation(15%), arthritis(22%), Stroke Paralysis(10%), Spinal Cord Injury (12%) and others(15% including cerebral palsy, malunited fractures, Congenital Talipes Equinovarusetc.). Polio had been found to bear least morbidity(57.69%) while amputation was associated with highest psychiatric morbidity (100%).

whereas stroke paralysis, arthritis and spinal cord injury patients had morbidity of 80%,81.8% and 83.3%respectively.A positive correlation between the causes of disability and presence of psychiatric morbidity was found and it reached the statistical significance(P value=0.047).In a study by Malik et al in Rohtak(2012) among 85 posttraumatic amputated patients 67.6% patients had psychiatric symptoms according to ICD-10. In a similar study conducted in Kashmir on amputated patients showed psychiatric morbidity to be 84%(Mansoor et al 2010).Our observation in similar with the previous studies with a higher percentage of morbidity, which may be due to small sample size and younger age ,lower socioeconomic status ,poor family support and coping skills. According to a study by Neilson et al(2006) with Danish cohort patients from 1977 to 1993,it was found that there is 40% increased risk of psychiatric hospitalization among polio patients. In our study polio group has the least psychiatric morbidity. This may be due to the fact that polio patients are more resilient, which mean ability to grow and develop in the face of hardship(Connor et al 2003,Shiri et al 2015) .

In this study of 100 locomotor disabled patients 76% were found to have a psychiatric morbidity, although not taking treatment for the illness. Depressive Episodes(F32) was the most common psychiatric illness found in 41% of patients.28% of the patients were found to have Generalized Anxiety disorder(F41.1) , 5% had Post Traumatic Stress Disorder (F43.1) and 2 patients were found to have Unspecified Nonorganic Psychosis(F29) and Other Bipolar Disorder(F31.8).In a systematic review by Suresh Bada Math and Srinivasraju in 2010 showed that in Indian population psychiatric morbidity vary from 0.97% to 37% depending upon the study design, but despite variations in the design of studies, available data from the Indian studies suggests that about 20% of the adult population in the community is affected with one or the other psychiatric disorder. So it can be inferred that among special population like in our study the locomotor disabled the psychiatric morbidity is three and a half time higher than the general population. To our knowledge there no other literature in a standard journal that attempted to correlate locomotor disability as a whole with psychiatric morbidity. On the other hand studies correlating with individual causes of locmotor disability (i.e.amputation ,paralysis) are plethorous.
Depression was more prevalent(45.45%) in the younger age group(21-30 years),(Malik et al 2012,Cheung et al 2003,Fisher et al 1998)PTSD more commonly found in middle age group(31-40 years) 9.09% and GAD(32.35%) in the elderly(41-50 years).This study is with similar results with Bernes et al (2005) which showed anxiety symptoms are more common in older age group and females with disability.
Depression was found to be more common in males(41.33%) compared to females(40%).GAD was prevalent in females(52%) in comparison with males(20%)(Bernes et al 2005).However in a study by El-Meidany et al in 2001 on arthritis patients showed that male outnumbered female in both anxiety and depression. Another study by Migloirini et al in 2008 on Spinal cord Injury patients showed females predominate in both anxiety and depression. Our study which consists of heterogeneous population of different causes of disability(i.e. Polio, amputation, spinal cord injury, arthritisetc.) may lead to this different point of view.

Summary and conclusion

In this study 96% of the female population were found to have psychiatric morbidity compared to 69.33% males who have psychiatric morbidity. This correlation reached statistical significance with P value of 0.006.It can be inferred from the results that women with locomotor disability have higher chances of psychiatric morbidity
Of the total population of locomotor disabled patient 76% were found to have psychiatric illness. Among this age group 41 to 50 years 76.47% had morbidity.Comparatively78.78% had morbidity in 21 to 30 years and 72.72 % in 31 to 40 years age group.
Disability percentage had been found to have greater impact on presence of psychiatric morbidity in this study. Patients who had a disability percentage greater than 70% found to have greater

psychiatric morbidity than its lesser percentage counterpart of 40 to 70%.This observation was found be statistically significant with a P value of 0.002.

Among the common causes of disability included in this study was Polio(26%), amputation(15%), arthritis(22%), Stroke Paralysis(10%), Spinal cord Injury (12%) and others(15% including cerebral palsy, malunited fractures, Congenital Talipes Equinovarusetc.).Polio had been found to bear least morbidity(57.69%) while amputation was associated with highest psychiatric morbidity(100%). A positive correlation between the causes of disability and presence of psychiatric morbidity was found andit reached the statistical significance with P value 0.047.

This study showed how the sociodemographic variables in persons with locomotor disability correlates with mental illness. More studies needed in this aspect to ensure proper socioeconomic intervention by the government of India.

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