Original Article

A Clinicoepidemiological Study of Psychiatric Co-Morbidity in Hansen's Disease

Ritu Rani, Gita R. Tegta, Ghanshyam K. Verma, Dinesh D. Sharma[1], Mudita Gupta, Ajeet Negi

Departments of Dermatology, Venereology and Leprosy and [1]Psychiatry, IGMC, Shimla, Himachal Pradesh, India

Abstract

Introduction: Leprosy is a chronic disease caused by mycobacterium leprae. Chronicity of the disease leads to various psychiatric co-morbidities, which are often undiagnosed and untreated. The main objectives of this study were to evaluate the frequency and nature of psychiatric co-morbidity in patients of Hansen's disease. **Materials and Methods:** Seventy confirmed cases of Hansen's disease between the ages of 18 and 60 years attending the department of dermatology of Indira Gandhi Medical College and Hospital, Shimla were evaluated for various manifestations of Hansen's disease and screened for psychiatric co-morbidity using GHQ-12 and diagnosed using ICD-10 checklist. Severity of depression and anxiety was assessed with HAM-D and HAM-A scales, respectively. **Results:** The prevalence of psychiatric co-morbidity was found in 27.14% of enrolled patients. Depression was most prevalent in (20%) mental disorder; followed by anxiety disorder (7.14%). Moderate depressive episode was the commonest seen in 11.42% patients whereas 5.71% patients had mild depression. Generalized anxiety disorder was seen in 1.42% whereas 5.71% patients had mixed anxiety disorder. Patients with higher education status, positive family history of leprosy, lepromatous leprosy, and hand deformities were significantly associated with higher psychiatric co-morbidity. **Conclusion:** Patients suffering from Hansen's disease have significantly high prevalence of psychiatric co-morbidity complicating the Hansen's disease. High index of suspicion is required to diagnose and treat it.

Keywords: *Co-morbidity, Hansen's Disease, psychiatric disorders*

Introduction

Leprosy is a chronic disease caused by *Mycobacterium leprae,* which mainly affects the peripheral nervous system and skin. It was Gerhard Henrik Armauer Hansen who discovered *Mycobacterium leprae* in Norway during the year 1873.[1] There has been a significant reduction in prevalence of the disease worldwide since the mid-1980s to elimination levels.[2] India has succeeded with the implementation of MDT in bringing the national prevalence down to less than 1/10,000 in December 2005 and even further down to 0.66/10,000 in 2016. Despite the reduction in the prevalence, the fact remains that India continues to account for 60% of new cases reported globally each year and is among the 22 "global priority countries" that contribute 95% of world numbers of leprosy warranting a sustained effort to bring the numbers down.[3] According to Global Leprosy Update 2019, a total of 202,185 new cases were detected during 2019 in India.[4]

It is well-established that people who suffer from chronic conditions have an increased risk of developing psychological distress. It is also well-known that leprosy patients frequently have secondary psychosocial consequences because of the chronic nature of the disease, disabilities, and the unsightly disfigurement. The stigma due to leprosy has been universal. Social attitudes and approaches toward leprosy and the leprosy patients have evolved over hundreds of years. The psychosocial issues that are commonly related to stigma are people's dignity, social status, employment opportunities, job security, displacement from their native place of residence, family relationships, and friendships.[5,6]

As a result of these problems, patients with Hansen's disease are associated with a high risk of developing psychiatric disorders.

The incidence of psychiatric disorders among various dermatological patients was estimated to be about 30–60% by Korabel *et al.*[7] and 25% by Picardi *et al.*[8] Verma

Address for correspondence:
Dr. Ghanshyam K. Verma, Department of Dermatology, Venereology and Leprosy, IGMC, Shimla, Himachal Pradesh, India.
E-mail: drshyamverma77@gmail.com

Access this article online

Website: www.idoj.in

DOI: 10.4103/idoj.IDOJ_141_21

Quick Response Code:

How to cite this article: Rani R, Tegta GR, Verma GK, Sharma DD, Gupta M, Negi A. A clinicoepidemiological study of psychiatric co-morbidity in Hansen's Disease. Indian Dermatol Online J 2021;12:847-51.

Received: 07-Mar-2021. **Revised:** 11-Apr-2021. **Accepted:** 07-Aug-2021. **Published:** 22-Nov-2021.

et al.[9] in 1994 conducted a study on 100 confirmed cases of leprosy and reported 76% of the patients having psychiatric illness. Of these, a large number of the patients (55%) were having neurotic depression and 21% had anxiety neurosis. Dharmendra *et al.* (1976),[10] John *et al.* (1983),[11] Mhaswade *et al.* (1983),[12] and Chauhan *et al.* (1983)[13] also reported that anxiety and depression were more commonly seen in leprosy patients.

Early detection and treatment of psychiatric disorders among patients with Hansen's disease is a powerful psychotherapeutic measure. The main focus of this research is to find out the frequency and nature of psychiatric co-morbidity in patients suffering from Hansen's disease, and to provide early psychotherapeutic measures to these patients.

Materials and Methods

The study was conducted at Indira Gandhi Medical College and Hospital, Shimla, Tertiary Care Centre of Himachal Pradesh, over a period of one year with effect from July 1, 2018 to June 30, 2019. It was a descriptive cross-sectional study. All patients with Hansen's disease including new cases, follow up cases, and released from treatment (RFT) cases attending skin OPD and IPD between the ages of 18 and 60 years were approached and included in the study, if they provided an informed consent. Patients with co-morbid dermatological diseases and chronic debilitating medical and surgical illness, RFT cases >10 years, and those not willing to participate in the study were excluded from the study.

A detailed history from the patient and/or a near relative was taken as per predesigned case history proformas. Evaluation for the psychiatric symptoms was done by using General Health Questionnaire (GHQ-12).[14] Diagnosis of psychiatric disorders was made according to The International Classification of Diseases, Tenth Edition (ICD-10).[15] If the patients were found to have depressive disorder or anxiety disorder, the severity of the same was assessed by using Hamilton Depression Rating Scale (HAM-D),[16] or Hamilton Anxiety Rating Scale (HAM-A),[17] respectively, in consultation with a consultant in Psychiatry Department of IGMC, Shimla.

For deriving results Epi, Info version 7.0 and SPSS version 20 were used. Categorical variables were expressed in terms of frequencies and proportions whereas continuous variables were expressed in terms of mean and standard deviation. For detecting risk factors bi/multivariate analysis was done. To find the difference between patients with or without psychiatric co-morbidities, parametric or nonparametric test of significance was used (Chi-square/ t-test). Probability value (p-value) <0.05 was taken as statistically significant.

Results

A total of 70 patients were enrolled in the study. Out of these, 45 (64.29%) were males and 25 (35.71%) were females with a male:female ratio of 1.8:1. Age of the patients ranged between 18 and 60 years with mean age of 39.51 ± 11.39 years. Twenty-three (32.86%) patients were in the age group of 31–40 years followed by 28.57% patients in the age group of 41–50 years, 22.86% patients in the age group of less than 30 years, and 5.71% patients in the age group of 50–60 years. Majority of the subjects, 82.86% patients, enrolled in the study were married followed by 14.29% patients who were unmarried. Modified Kuppuswamy's socioeconomic scale (SES) was used to define the socioeconomic class of the patients.[18] Out of a total 70 patients, 38.57% patients belonged to upper lower class whereas 31.43% patients belonged to lower middle class as per the SES. We had 44.29% patients who were uneducated followed by 21.43% patients who had primary school certificate. Of all the patients, only 4.29% patients were university degree holders. A maximum of patients (62.86%) belonged to Himachal Pradesh whereas 37.14% patients were immigrants from neighboring states of Uttar Pradesh, Bihar, Jharkhand, or Nepal. Around 42.86% were farmers, 28.57% were labourers, 11.43% were housewives, and only 4.29% were students.

There were 12.86% patients who had a family history of leprosy. Among all, 91.42% patients were on MDT-MB and 8.57% patients were on MDT-PB whereas 28.57% patients were RFT. We had 28.57% patients who had 1–2 years' duration of illness suggested by the history of onset of leprosy symptoms and signs followed by 25.71% patients who had less than 1 year' duration of illness. Only 7.14% patients had duration of illness more than 5 years.

There were 52.86% patients who were of LL spectrum of Hansen's disease followed by 30% patients who had BL type of Hansen's disease. Only 4.29% patients had tuberculoid leprosy whereas there was no patient of mid-borderline leprosy enrolled in the study. Also, 1.43% patients had pure neuritic leprosy involving multiple nerves.

We followed the WHO disability grading to define the patients with disabilities where grade 1 disability referred to the loss of sensation in hands and feet whereas grade 2 referred to visible damage or deformity. In this study 20% patients did not have any disability whereas Grade 1 disabilities were present in 52.86% patients and Grade 2 disabilities in 27.14% patients. Also, 75.71% patients had disabilities of hands and 2.86% had simultaneous involvement of feet and eyes. Type 1 reaction was seen in 8.57% patients whereas type 2 reaction in 24.29% patients.

The psychiatric co-morbidity was seen in 27.14% patients of whom mood disorders were the commonest, which were seen in 20% patients, followed by anxiety disorder in the remaining 7.14% patients. In mood disorder, moderate depressive episode was the commonest seen in 11.42% patients whereas 5.71% patients had mild depression. Out of 5 patients of anxiety disorder, one (1.42%) patient had

generalized anxiety disorder whereas 4 (5.71%) patients had mixed anxiety disorder. There were two patients who had severe depressive episode without psychotic symptoms. Both of these patients had suicidal tendencies [Table 1]. All patients having psychiatric co-morbidities were referred to the department of psychiatry for further management They were counselled and started on medications (selective serotonin reuptake inhibitors/benzodiazepines) depending upon the severity of psychiatric disorder and were advised regular follow-up.

There was a significant difference between leprosy patients with or without psychiatric co-morbidity in sociodemographic variables of family history of leprosy and higher education status (p-value = 0.009 and 0.004, respectively). However, there was no significant difference with regard to age, gender, marital status, socioeconomic status, area of residence, and occupation found ($P > 0.05$).

The patients of lepromatous pole spectrum of leprosy and the patients with hand deformities were significantly having higher psychiatric co-morbidity (p-value <0.05), [Tables 2 and 3 respectively]. No significant difference was found between the leprosy patients with psychiatric disorders and leprosy patients without psychiatric disorders with regard to the medication regimen, duration of illness, grade of deformity, and the leprosy reactions ($P > 0.05$).

Table 1: Type of psychiatric co-morbidity

Psychiatric disorders (*n*=70, %)	No. of leprosy patients *n*=70 (%)
Mood disorder (14, 20%)	
Mild depressive episode	4 (5.71%)
Moderate depressive episode	8 (11.42%)
Severe depressive episode without psychotic symptoms	2 (2.85%)
Severe depressive episode with psychotic symptoms	-
Dysthymia	-
Anxiety disorder (5, 7.14%)	
Generalized anxiety disorder	1 (1.42%)
Mixed anxiety and depressive disorder	4 (5.71%)
Panic disorder	-
Obsessive compulsive disorder	-

Discussion

Psychiatric disorders in leprosy patients may arise as a result of primary skin disease, perceived social stigma, and problems of unemployment or displacement from their areas of residence. The present study was carried out to determine the prevalence of psychiatric co-morbidity in patients of Hansen's disease and to find its correlation with various socio-demographic and clinical variables. A total of 70 patients were enrolled in the study and were evaluated for psychiatric co-morbidities. In the present study, 27.14% of the patients were found to have psychiatric co-morbidity. Among the patients with psychiatric co-morbidity, depressive disorder was the commonest (20%) followed by anxiety disorders (7.14%).

Increased prevalence of psychiatric disorders in leprosy patients has been documented in various studies. Erinfolami *et al.*[19] in 2009 reported 58% leprosy patients with psychiatric co-morbidities, out of which 35.2% had major depressive disorder whereas 21.6% had anxiety disorder. Furthermore, Jindal *et al.,*[20] Nagargoje *et al.,*[21], and Mahendra *et al.*[22] also reported higher incidence of psychiatric co-morbidity (55.6%, 83.75%, and 44%, respectively). The overall higher prevalence of psychiatric disorder among leprosy patients could be because of complications or consequences of a primary skin disease, in reaction to disfigurement, perceived social stigma or undesirable changes in lifestyle and living conditions, and high rates of unemployment and displacement from their areas of residence. The lower prevalence of psychiatric co-morbidity in our study as compared to the other studies could be as a result of difference in the population studied. In the present study, most of the patients were outpatients attending the dermatology clinic whereas in other studies the subjects lived in an isolated environment or a leprosy camp. Our patients faced less rejection as most of our patients had access to their immediate family who provided them social support as compared to people living in leprosy camps, in other studies, who did not have access to their family for a long period of time as a result of rejection.

Table 2: Psychiatric co-morbidity with spectrum of disease

Disease spectrum	Total no. of leprosy patients			No. of patients with psychiatric co-morbidity *n* (%)			Statistical analysis
	On treatment (*n*)	Released from treatment (RFT) (*n*)	Total *n* (%)	On treatment (*n*)	Released from treatment (RFT) (*n*)	Total *n* (%)	
Tuberculoid (TT)	3	-	3 (4.29%)	-	-	-	*P*=0.043
Borderline tuberculoid (BT)	4	4	8 (11.43%)	1	1	2 (25%)	
Mid-borderline (BB)	-	-	-	-	-	-	
Borderline lepromatous (BL)	12	9	21 (30%)	2	3	5 (23.81%)	
Lepromatous leprosy (LL)	15	22	37 (52.86%)	5	6	11 (29.73%)	
Pure neuritic Hansen	1	-	1 (1.43%)	1		1 (100%)	
Total			70			19	

Table 3: Psychiatric co-morbidity with anatomical site of deformity

Hands/Feet/Eye deformity	Total no. of leprosy patients *n* (%)	No. of patients with psychiatric co-morbidity *n* (%)	Statistical analysis
Hands	1 (1.43%)	1 (100%)	*P*=0.049
Feet	3 (4.29%)	-	
Eyes	-	-	
Hand and feet	50 (71.43%)	13 (26%)	
Eyes and hands	-	-	
Eyes and feet	-	-	
Hands, Feet, and eyes	2 (2.86%)	2 (100%)	

We used GHQ as a screening instrument and further the diagnostic instruments like HAM-D or HAM-A were used for patients who scored 12 and above in GHQ. The scoring in these tools depend on the active state of mental illness at the time of examination, which could further affect the results of the study.

The results of the present study indicate that psychiatric disorders in leprosy patients were more common in younger age group of 20–30 years (43.75%). The findings were comparable with the study done by Erinfolami *et al*.[19] where higher psychiatric co-morbidity was found in younger age group of 15–24 years (27.5%) and 25–34 years (33.3%). The reason for the more psychiatric manifestations in younger age group in our study could be attributed to the insecurity about the future, problem of unemployment, and associated social stigma due to the disease.

The psychiatric disorders were found to be more in males (28.89%) than in to females (24%), but no significant difference was observed. This finding was consistent with that of earlier study done by Rad *et al*.[23] where majority of the patients, 116 (64.4%) were males and 64 (35.6%) were females, and the psychiatric co-morbidity was found to be more in males. The possible reasons for the higher psychiatric co-morbidity in males in our study could be attributed to the fact that in our part of the country males bear greater responsibilities of the family and play a greater role in providing financial support. When they are affected with such a chronic illness, it results in a fear of loss of job or work due to deformities/disabilities. This could also be due to a decreased number of women with psychiatric issues attending the clinic.

The unmarried patients were more affected (50%) as compared to the married ones (22.41%), but the difference was not statistically significant. Mahendra *et al*.[22] in their study on leprosy patients also reported higher prevalence of co-morbid mental disorder among single subjects (47%) in comparison to married subjects (42.2%). The reason could be lack of social, physical, economical, and psychological support by the spouse or fear of not getting married due to the sufferings of Hansen's disease.

Patients with a family history of leprosy had significantly higher psychiatric impairment (66.67%) as compared to those who did not have any family member affected with leprosy (21.3%). The reason for the higher frequency of psychiatric co-morbidity was lack of social support in these patients. We found higher psychiatric co-morbidity in patients who were university degree holders. On the contrary, the findings of Kumar *et al*.[24] found that majority of leprosy patients are either uneducated or illiterate (74.4%) and had higher psychiatric co-morbidity (77.6%) as compared to well-educated population. Though the percentage of educated people in our study was less, the fact that the educated population may perceive more social stigma affecting their mental health cannot be denied. However, the small number of educated people may not define the exact significance of education with social stigma associated with the disease.

Psychiatric disorders were almost comparable in patients who had completed the medication course and those who were on MDT. Hence, the medication regimen was not significantly related to psychiatric morbidity ($P > 0.05$). The present study found that psychiatric disorders were more common (60%) in patients with longer duration of illness, which was more than 5 years. However, duration of illness was not significantly related to psychiatric morbidity (p-value = 0.256). This study revealed that the psychiatric disorders were more in patients with lepromatous category (29.73%) with a statistical significant difference. Mahendra *et al*.[22] also observed psychiatric co-morbidity in a much higher number of lepromatous leprosy patients (60.6%). The possible reasons for the increased frequency of psychiatric morbidity in lepromatous patients could be because of more deformity, increased risk of type 2 reactions, longer duration of treatment, steroids like prednisolone, which can cause psychosis.

The psychiatric disorders were more in patients with grade 2 deformities (42.11%) followed by grade 1 deformities (21.62%), though the difference was not significant. The study by Kumar *et al*.[24] on psychiatric disturbances among leprosy patients also found that the patients who have developed physical handicaps had a greater chance to get psychiatric disturbances (63.3%). Psychiatric impairment was seen in 50% patients with type 1 reaction and 41.18% patients with type 2 reaction. Though we did not find any significant correlation of the

lepra reactions with psychiatric impairment, the patients who were not in reaction had the least psychiatric involvement (19.15%). Whether the psychiatric impairment led to the increased incidence of reactions or it was the outcome of repeated reactions is not clear.

Considering the severity of psychiatric co-morbidities like anxiety, depression, and even psychotic episodes, every patient of leprosy should be assessed regularly at least with GHQ at the beginning and follow-up of leprosy management.

Limitations

The sample size was small. Follow-up of patients for a longer period is required, which was inadequate in our study in relation to the treatment of their co-morbidities and prognosis after treatment.

Conclusion

Here, we conclude that patients with Hansen's disease have significant psychiatric co-morbidity with depressive disorders being the common followed by anxiety disorders. Psychiatric co-morbidity not only adds to patient suffering but also adversely affects the prognosis and course of illness. Early detection and treatment of these mental disorders would be helpful. Hence, comprehensive treatment of Hansen's disease must involve psychiatric evaluation simultaneously and treatment if required.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Kannan RK. Gerhard Henrik Armauer Hansen – A legend. J Skin Sex Transm Dis 2019;1:87-90.
2. National Leprosy Eradication Programme (NLEP). Annual Report 2015 - 2016. New Delhi: Central Leprosy Division Directorate, General of Health Services, Ministry of Health and Family Welfare Government of India. Available from: http://www.nlep.nic.in/pdf/revised%20annual%20report%2031st%20March%202015-16.pdf. [Last accessed on 2021 Feb 20].
3. World Health Organization. Global leprosy update, 2016: Accelerating reduction of disease burden. Wkly Epidemiol Rec 2017;92:501–20.
4. World Health Organization. Global leprosy (Hansen disease) update, 2019: Time to step-up prevention initiatives. Wkly Epidemiol Rec 2020;95:417-40.
5. Kaur H, Ramesh V. Social problems of women leprosy patients: A study conducted at 2 urban leprosy centres in Delhi. Lepr Rev 1994;65:361-75.
6. Kaur H, Brakel VW. Dehabilitation of leprosy-affected people: A study on leprosy-affected beggars. Lepr Rev 2002;73:346-55.
7. Korabel H, Dudek D, Jaworek A, Wojas-Pelc A. Psychodermatology: Psychological and psychiatrical aspects of aspects of dermatology. Przegl Lek 2008; 65:244–8.
8. Picardi A, Abeni D, Melchi CF. Psychiatric morbidity in dermatological out patients: An issue to be recognized. Br J Dermatol 2000;143:983-91.
9. Verma KK, Gautam S. Psychiatric morbidity in displaced leprosy patients. Indian J Lepr 1994;66:339-43.
10. Dharmendra S. Leprosy in ancient India. Int J Lepr 1947;15:424-30.
11. John JK, Pannikar VK, Verghese A, Christian M. Social and personality factors in Dapsone patients. Lepr India 1983;55:100-6.
12. Mahaswade BC. Leprosy- A case of mental health care. Lepr India 1983;55:310-3.
13. Chauhan NS, Dhar U, Chauhan S. Frustation- anxiety behaviour as a function of leprosy patients's age and personality. Lepr India 1983;55:743-7.
14. Khan A, Shah IM, Khan F, Suhail S. Reliability and validity assessment of 12 items General Health Questionnaire (GHQ: 12) among Pakistani University Teachers. World Appl Sci J 2013;24:603-8.
15. World Health Organization. The ICD-10 classification of mental and behavioural disorders: Clinical descriptions and diagnostic guidelines. Geneva; 1992. Available from: http://www.who.int/classifications/icd/en/bluebook.pdf. [Last accessed on 2021 Feb 20].
16. Hamilton M. A Rating scale for depression. J Neural Neurosurg Psychiatry 1960;23:56-62.
17. Hamilton M. The assessment of anxiety states by rating. Br J Med Psychol 1959;32:50-5.
18. Saleem SM. Modified Kuppuswamy socioeconomic scale updated for the year 2020. Indian J Forensic Community Med 2020;7:1-3.
19. Erinfolami RA, Adeyemi DJ. A case control study of psychiatric morbidities among subjects with leprosy in Lagos, Nigeria. Int J Psychiatr Med 2009;39:89-99.
20. Jindal KC, Singh GP, Mohan V, Mahajan BB. Psychiatric morbidity among inmates of leprosy homes. Indian J Psychol Med 2013;35:335-40.
21. Nagargoje A, Mundhada GR, Deshmukh SB, Saboo AV. Psychiatric co-morbidity in persons with Hansen's disease. J Evid Based Med Healthc 2015;2:2872-81.
22. Mahendra N, Yaduvanshi R, Sharma CS, Ali R, Rathore PK, Kuchhal A. Psychiatric co-morbidity in patients of Hansen's disease. Int J Contemp Med Res 2018;5:1-5.
23. Rad F, Ghaderi E, Moradi G, Salimzadeh H. The study of disability status of live leprosy patients in Kurdistan province of Iran. Pak J Med Sci 2007;23:857-61.
24. Kumar JH, Verghese A. Psychiatric disturbances among leprosy patients: An epidemiological study. Indian J Lepr Other Mycobact Dis 1980;48:431-4.