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ORIGINAL ARTICLE

Prevalence of Mental Morbidities in a Tertiary Care Leprosarium in North India: A Cross-Sectional Study

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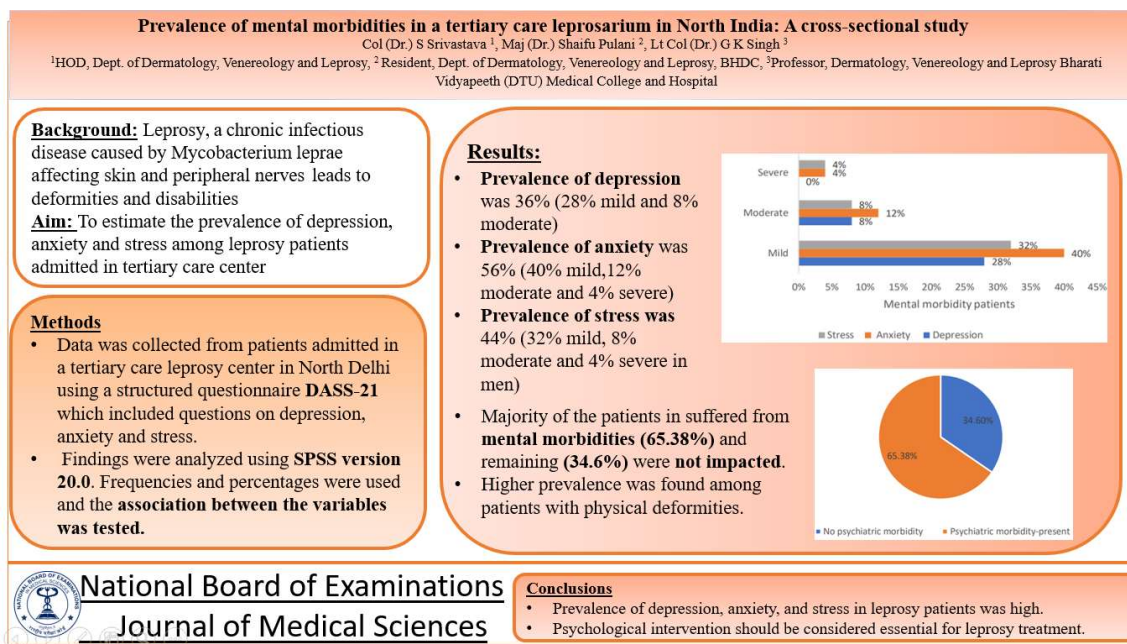
Abstract

Background: Leprosy is a chronic infectious disease causing substantial physical and mental morbidity. Every year around 200,000 new cases are reported globally. (WHO) Despite continuous efforts to eradicate leprosy, prevalence of the disease is still a concern especially in India. The treatment of leprosy has always focused on elimination of bacteria, correction of physical deformities and preventive aspects with little emphasis on its psychiatric implications. Therefore, it is imperative to understand the link between the disease and mental health of the patient. This study aims to estimate the prevalence of psychiatric morbidities among leprosy patients admitted in a tertiary care center in north India. **Methods:** Data was collected from patients admitted in a tertiary care leprosy center in North Delhi by using a well-structured questionnaire DASS-21 which included total of 21 questions, 7 questions each pertaining to depression, anxiety and stress. Findings were analyzed using SPSS version 20.0. Frequencies and percentages were used and the association between the variables was tested using the chi-square test. **Results:** Findings suggested that there is causal relationship between leprosy disease and mental health. Prevalence of depression, anxiety and stress was 28%, 56% and 44% respectively which significant. Of note, the prevalence was higher in adults aged between 25-35 years as compared to adults aged 35-45 years. Patients with physical deformities were found to higher prevalence of mental health issues such as depression (18%), anxiety (28%), Stress (24%). **Conclusion:** This study found that there was a significantly high prevalence of depression, anxiety, and stress among individuals affected by leprosy especially among those with physical deformities. Hence, appropriate psychological counselling must be considered as an essential part of therapeutic intervention for leprosy patients.

Keywords: Leprosy, Anxiety, Depression, Stress, DASS-21

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Graphical Abstract



Introduction

Leprosy is a chronic infectious disease caused by *Mycobacterium leprae* primarily involving peripheral nerves and skin leading to deformities and disabilities. The incubation period of the disease varies between 9 months to 20 years. Although global effort to meet the World Health Organization (WHO) goals of elimination has greatly decreased the burden of Leprosy in recent decades, however, around 200000 new cases are still reported globally every year.

Current WHO targets focus on decreasing the rate of new diagnoses with Grade 2 disability rates. In 2021-22, a total of 61,678 leprosy cases were under treatment with a prevalence rate of 0.45 per 10,000 population and a grade 2 disability rate of 1.36 per million population [1]. Recently, many new leprosy cases have been reported primarily from three countries—India, Brazil, and Indonesia [2].

Leprosy patients not only experience physical deformities but also a lot of psychological and emotional problems

affecting their mental health, social adaptability and quality of life (QoL). The main focus of leprosy has always been on treatment, deformity correction surgeries and preventive aspects, with less importance to addressing mental aspects and social stigmas.

Despite all efforts in decreasing the overall burden, Leprosy still continues to be a major cause of physical disabilities. The social stigma is immense leading to mental morbidities. Due to the rising cases of Leprosy in India and its impact on psychological health, it is crucial to understand the current scenario of mental health issues amongst the leprosy patients. Prior research has indicated that leprosy is significantly associated with psychological comorbidities, but there is still lack of awareness and intervention addressing the psychological aspects in a leprosy patient [3-6]. According to Bhatia et al (2006), leprosy affected persons had higher prevalence of psychiatric morbidity (44.4%) than healthy population. [7]

The aim of the study is to ascertain the prevalence of depression, anxiety and stress among leprosy patients admitted in tertiary care center, association of these symptoms with physical deformities/disabilities [8], therefore emphasizing the need of psychological counselling as a therapeutic intervention.

Methods

This cross-sectional study was conducted at a tertiary Leprosy care center in Delhi NCR from June to August 2024. This is a tertiary nodal center with a high caseload of patients with leprosy-associated disability. All the included patients in the study were diagnosed and managed as per WHO guidelines. The patients were classified as per WHO and Ridley Jopling classification. By taking the prevalence of leprosy-patients affected with mental/psychological disability as persons as 0.45, 5% absolute error, and 95% confidence interval, sample size of 43 was calculated which was rounded off to 50.

All the admitted adult patients who were confirmed cases of leprosy on treatment and without any previous co-morbidities were included in the study after an informed consent. Ethical approval was obtained from the Institutional Ethical Committee. A pre-

designed structured questionnaire that included questions to evaluate mental health of patients was used to collect data. Depression Anxiety Stress Scale (DASS) 21 which consists of three components: Depression, Anxiety, and Stress was the scale used for assessment [1,9]. Each component included seven questions, with a total of 21 questions (DASS 21, University of Bristol). Participants were asked to indicate how each statement applied to them in the past week, using a 4-point Likert scale (0-3).

Scores for each component were added and multiplied by 2 to obtain the final score, which was then used to grade the severity of depression, anxiety, and stress as mild, moderate, severe, or very severe. The data was entered into Microsoft Excel and analyzed using SPSS version 20.0. Frequencies and percentages were used and the association between the variables was tested using the chi-square test.

Results

Data was collected from 50 patients, all males as per admission policy in our hospital. The mean age among patients was 33.6 years. Figure 1 shows that out of all the included patients, 34.6% (n=50) experienced no psychiatric symptoms whereas 65.38% of them showed psychiatric manifestations.

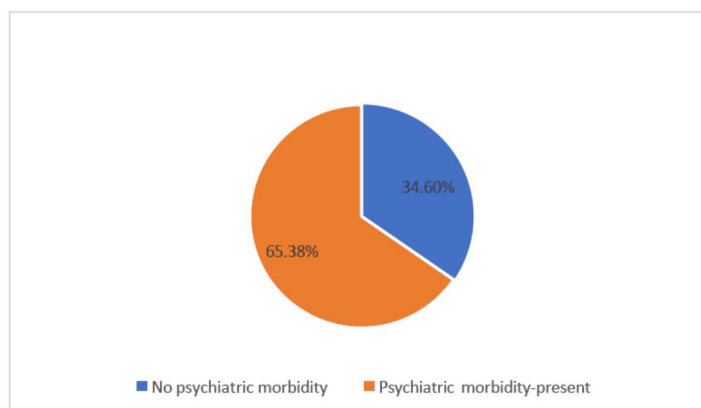


Figure 1. Percentage of population with and without psychiatric morbidity

Figure 2 shows that the prevalence of depression was 36% (28% mild and 8% moderate), the prevalence of anxiety was 56% (40% mild, 12% moderate and 4% severe), and that of stress was 44% (32% mild, 8% moderate and 4% severe).

Majority of the patients had mild forms of psychiatric morbidities.

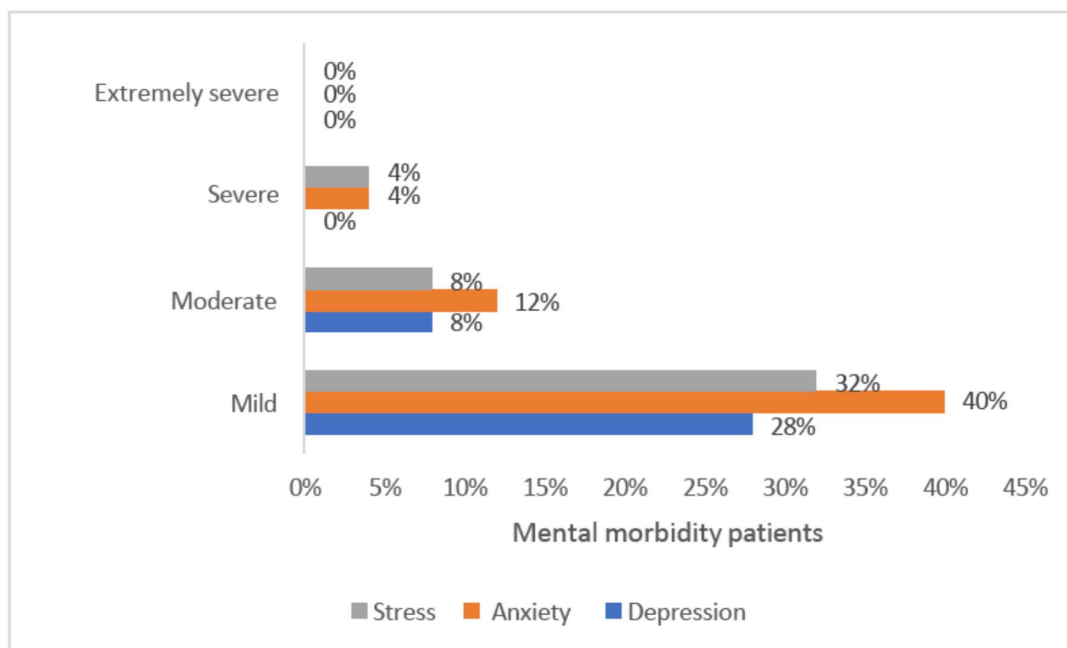


Figure 2: Percentage of population stratified by severity of mental morbidities (mild, moderate, severe and extremely severe)

Figure 3 shows the prevalence of psychological morbidities was high among age group of 25-35 years as compared to 36-45 years. In the age group of 25-35 years, the prevalence of depression was 24%, anxiety

36% and stress was 28% and amongst age group of 35-45 years, the prevalence of depression was 12%, anxiety 20% and stress 16%.

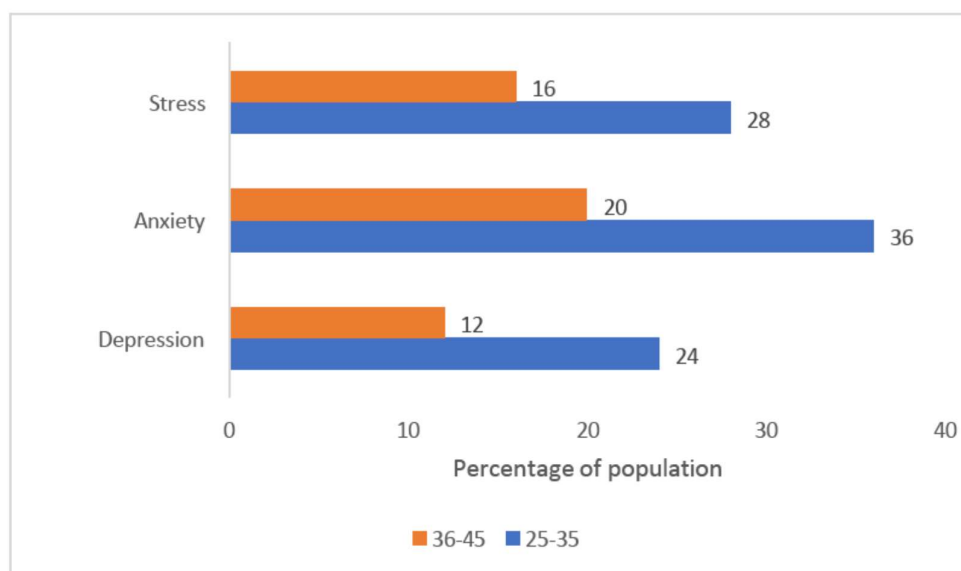


Figure 3. Percentage of patients suffering from mental morbidities stratified by age

All patients were cases of multibacillary leprosy as per WHO classification. All the patients had their family and friends' support. The patients were classified as per Ridley Jopling classification and the patients admitted with us belonged to Borderline tuberculoid, Borderline Lepromatous and lepromatous

leprosy along with Pure neuritic cases. It was found that prevalence of depression and stress was equal among borderline leprosy and lepromatous leprosy patients, low among borderline tuberculoid and pure neuritic cases. The prevalence of anxiety was highest among borderline lepromatous followed by lepromatous leprosy (Figure 4).

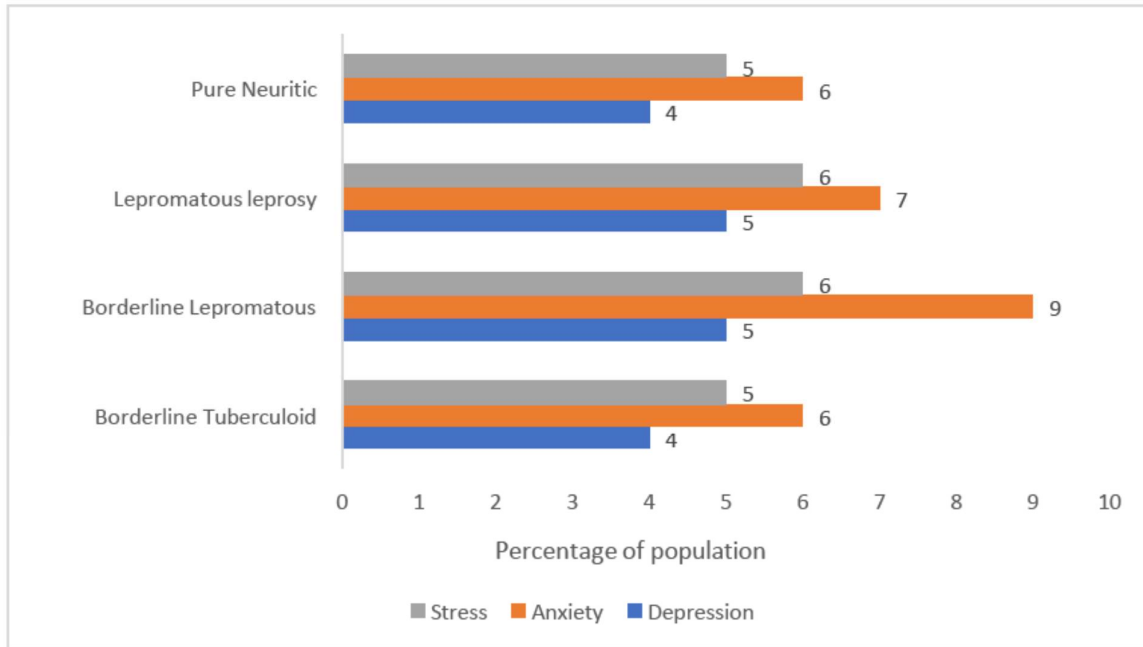


Figure 4. Percentage of population suffering from different classes of leprosy stratified by stress, depression and anxiety.

Figure 5 compares the prevalence of depression, stress and anxiety amongst patients with and without physical deformities/disabilities. It was found that incidence of all three psychological symptoms were more among the patients

with physical deformities (Depression 18%, anxiety 28% and stress 24%) and amongst patients without physical deformities, prevalence was 10% for depression, 12% for anxiety and 8% for stress.

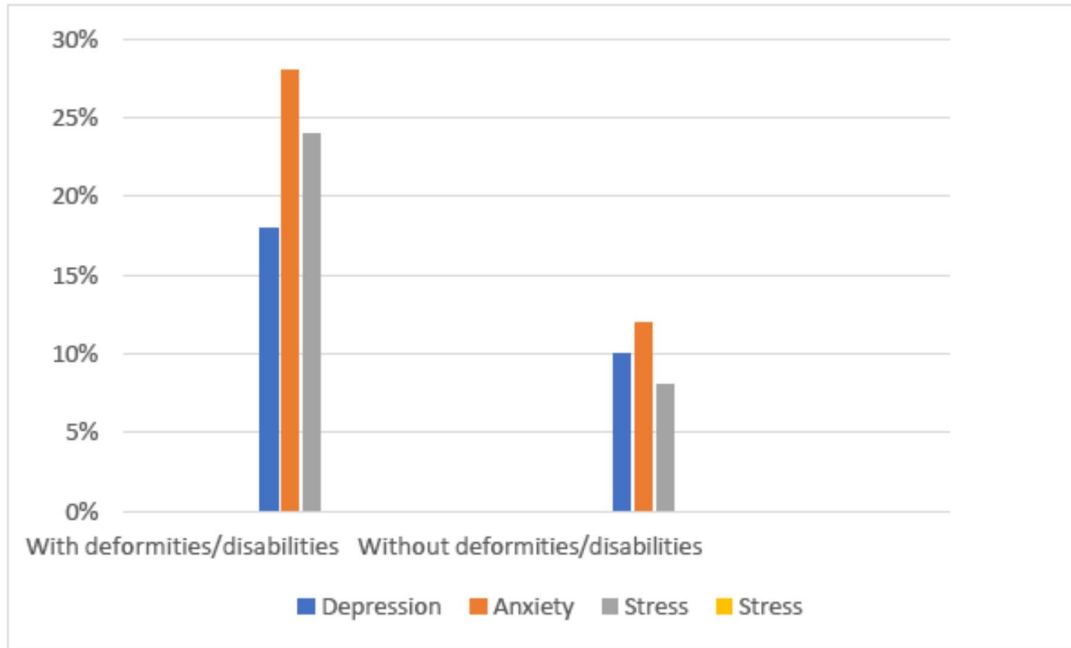


Figure 5. Percentage of mental morbidities amongst patients with and without physical deformities.

Discussion

Leprosy also labelled as Neglected Tropical Disease has existed since pre-biblical times. The stigma associated with the disease, despite effective treatment however still exists. Although, many efforts have been made in the past years to eradicate leprosy, but it continues to contribute a significant burden of disease in India.

The mental well-being in the leprosy patients remains woefully understudied subject. (10) Unlike support groups in chronic diseases like cancer, heart diseases, Diabetes, the psychiatric burden of leprosy patients has not received the attention it deserves.

Despite several evidence-based studies including the present one, demonstrating significant levels of psychiatric morbidity in patients of leprosy, the problem still remains unaddressed.

In this study we collected data from the adult admitted patients to understand the psychological impact of leprosy, free of factors such as poverty, malnutrition and illiteracy.

Majority of the patients in the present study suffered from either depression, anxiety or stress (65.38%) and remaining (34.6%) were not impacted with any psychological morbidity.

The present study indicates that leprosy-affected individuals have a higher prevalence of depression (36%), anxiety

(56%), and stress (44%) compared to the global and Indian prevalence of depression among the general population, which is 3.8% (11) and 5.25% (WHO 2023) [12] respectively. These figures are higher than that reported by Rani, Ritu et al where 20% of patients had depression and 7.14% had anxiety [13] but comparable to the study by Clarissa Iris et al, where 71% of leprosy patients had at least one psychiatric diagnosis [14].

Amongst patients with depression, 28% of patients had mild severity and 8% had depression of moderate severity. 40% had mild anxiety, 12% moderate and 4% severe. Out of the patients experiencing stress, 32% were of mild severity, 8% moderate and 4% severe. The patients with physical deformities/disabilities had high prevalence of these symptoms, 18% with depression, 28% had anxiety and 24% stress. Similar findings were observed by Dian Erisyawanty Batubara et al. [15].

Leprosy-affected individuals also experience feelings of fear and low self-esteem [16]. A higher prevalence of depression was reported by 53% [17], 42.5% [18], 24.6% [19] and prevalence of depression, anxiety and stress reported by Anusha V et al was 12.5%, 19% and 3% [1]. The prevalence of these mental health issues may be influenced by factors such as gender, age, socioeconomic status, religion, underlying co-morbidities and the presence of physical deformities/disabilities. It is essential to target all these psychiatric issues for providing a comprehensive treatment to leprosy patients. Mhasawade et al. demonstrated the positive outcome in mental morbidity of Leprosy patients by employing psychotherapy as a therapeutic tool from time of diagnosis till discharge from treatment [20]. Ima Rahmawati et al by using a simple tool like cognitive

behavioral therapy (CBT) managed to reduce level of depression severity in patients of leprosy. This can be incorporated in management protocol for treatment of leprosy [21].

Our observations suggest that there should be regular screening, psychological counselling, and support services for individuals affected by leprosy. Awareness programs at community, school, institutional and district levels should also be conducted to reduce social stigma associated with the disease. Healthcare professionals working at various levels should be adequately trained to identify these mental health issues so that an early diagnosis and prompt intervention can be done. Emphasis should also be laid upon to enhance family, friends and neighborhood support for affected individuals.

Limitations

The various limitations in current study which can induce bias are as follows:

- a) Only male patients were enrolled, thus having gender bias (since females and children are not admitted as per existing policy).
- b) Since the patients were admitted for supervised treatment, the outpatients were not included.
- c) Age: The age group of the subjects in the study ranged from 25-45 years, thus excluding children and elderly.
- d) All the patients included in the study were literate and employed. Since Leprosy is associated with poverty, this factor was not applicable to the present study.
- e) The duration of the study was small vis-à-vis the natural course of leprosy.
- f) Since the inpatient services include provision of well-balanced diet, the

study does not apply to undernourished patients

- g) This study only elicited the present mental health status of leprosy-affected persons who did not have any previous co-morbidities.
- h) This study was done in a single leprosy tertiary care center and was not carried out as a multi-centric study. Therefore, the findings of the study cannot be generalized to all the populations.

Conclusion

This study found that the prevalence of depression, anxiety, and stress among individuals affected by leprosy was significant in the patients who are not poor, unemployed, malnourished or destitute. The prevalence of depression was 36%, anxiety (56%) and stress (44%) which were significantly high indicating a high burden of psychological impact amongst leprosy patients particularly the patients with physical deformities or disabilities. It can be assumed that the Leprosy per se can impact the mental well-being of a patient. So, as per the findings of the study, we conclude that psychological intervention and counselling should be considered as an important aspect of leprosy treatment.

Statements and Declarations

Ethical Approval

It was obtained from Institutional Ethical Committee at the Institute

Informed Consent

It was obtained from all the patients

Conflict of Interest

The authors declares that they do not have conflict of interest.

Funding

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