Original Research Article

A Cross Sectional Epidemiological Study to Find the Prevalence of Depression and Anxiety in Patients of Leprosy and It's Correlation to Stigma Related with Leprosy

Sachin Kore[1], Anand Bhide[2], Vibha Bhide[3], Akshada Shinde[4]

[1]Associate Professor, Department of Dermatology Venereology and Leprosy, Ashwini Rural Medical College, Hospital & Research Centre, Kumbhari, Solapur, Maharashtra, India
[2]Associate Professor, Department Community Medicine, Dr. Vasantrao Pawar Medical College Hospital and Research Center, Nashik, Maharashtra, India
[3]Associate Professor, Department of Psychiatry, Dr. Vasantrao Pawar Medical College Hospital and Research Center, Nashik, Maharashtra, India
[4]Assistant Professor, Department of Community Medicine, Dr. Vasantrao Pawar Medical College Hospital and Research Center, Nashik, Maharashtra, India

Abstract:

Background: Depression and anxiety are common mental health conditions that can significantly impact the quality of life and overall well-being of individuals affected by leprosy, a neglected tropical disease. This study aimed to assess the prevalence of depression and anxiety among subjects with leprosy in the tribal block of western Maharashtra and investigate its correlation with the stigma associated with leprosy.

Materials and Methods: A cross-sectional study was conducted with a sample size of 145 subjects diagnosed with leprosy, over duration of three months, in the tribal block of western Maharashtra, India. Participants were selected using a systematic random sampling technique from local healthcare facilities and leprosy clinics. Data collection involved structured interviews using standardized tools, including the Patient Health Questionnaire-9 (PHQ-9) for depression, the Generalized Anxiety Disorder-7 (GAD-7) for anxiety, and the Stigma Scale for Leprosy (SSFL) to measure stigma associated with leprosy.

Results: The study found that 52.4% of subjects with leprosy exhibited symptoms of depression (PHQ-9 score $\geq$ 10) and 48.3% showed symptoms of anxiety (GAD-7 score $\geq$ 10). Furthermore, a significant positive correlation was observed between the severity of depression and anxiety symptoms ($r = 0.654$, $p < 0.001$), indicating a comorbid relationship. The stigma associated with leprosy, as measured by the SSFL, was found to be moderate, with an average score of 36.7 ± 7.2. There was a significant positive correlation between stigma and depression ($r = 0.451$, $p < 0.001$) as well as stigma and anxiety ($r = 0.398$, $p < 0.001$), indicating that higher levels of stigma were associated with more severe symptoms of depression and anxiety.

Conclusion: This study highlights the high prevalence of depression and anxiety among subjects with leprosy in the tribal block of western Maharashtra. Additionally, it underscores the significant correlation between these mental health conditions and the stigma related to leprosy. Interventions aimed at improving mental health outcomes for individuals with leprosy should not only focus on symptom management but also address the stigma associated with the disease. Reducing stigma may help mitigate the psychological distress experienced by individuals with leprosy, ultimately improving their overall well-being.

Keywords: Leprosy, depression, anxiety, stigma, tribal block, western Maharashtra, mental health, comorbidity, PHQ-9, GAD-7, SSFL.

Introduction

Leprosy, also known as Hansen's disease, is a chronic infectious disease caused by Mycobacterium leprae, primarily affecting the skin and peripheral nerves [1]. Despite significant advancements in the understanding and management of leprosy, it continues to pose a public health challenge in various parts of the world, particularly in regions with limited access to healthcare and education [2]. Leprosy is not only a physical health concern but is also associated with significant social and psychological implications, including stigma and discrimination [3]. Depression and anxiety are prevalent mental health disorders worldwide, affecting millions of

individuals [4]. When it comes to individuals with leprosy, they face unique challenges that can contribute to the development or exacerbation of these mental health conditions. The experience of physical deformities, disability, and the associated social stigma can lead to increased psychological distress [5]. Furthermore, the social isolation often experienced by individuals with leprosy can exacerbate feelings of loneliness and depression [6].

In recent years, there has been growing recognition of the importance of addressing mental health issues in individuals affected by neglected tropical diseases, including leprosy [7]. However, research on the prevalence of depression and anxiety in this specific population and its correlation with the stigma related to leprosy is still limited, especially in the tribal areas of western Maharashtra.

This study aims to fill this gap by conducting a comprehensive assessment of depression and anxiety among individuals diagnosed with leprosy in the tribal block of western Maharashtra, India. Additionally, we will explore the relationship between the severity of these mental health conditions and the level of stigma experienced by these individuals due to their leprosy diagnosis.

Through a better understanding of the mental health challenges faced by individuals with leprosy and the role of stigma in exacerbating these challenges, this research can inform the development of targeted interventions to improve the overall well-being of this vulnerable population.

Materials and Methods:

Study Design:

This cross-sectional study was conducted in the tribal block of western Maharashtra, India, over duration of three months. The study aimed to assess the prevalence of depression and anxiety in individuals diagnosed with leprosy and investigates the correlation between these mental health conditions and the stigma related to leprosy.

Study Population:

The study included a sample of 145 subjects who were diagnosed with leprosy. Participants were recruited from local healthcare facilities, leprosy clinics, and through community outreach efforts. Inclusion criteria were individuals aged 18 years and above, with a confirmed diagnosis of leprosy, and the ability to provide informed consent.

Data Collection:

Assessment of Depression and Anxiety: Depression and anxiety were assessed using standardized tools. The Patient Health Questionnaire-9 (PHQ-9) was used to evaluate depression symptoms, and the Generalized Anxiety Disorder-7 (GAD-7) was used to assess anxiety symptoms. Both instruments have been validated and widely used in clinical and research settings.

Measurement of Stigma: Stigma associated with leprosy was assessed using the Stigma Scale for Leprosy (SSFL), a culturally adapted tool designed to measure stigma experienced by individuals with leprosy. The SSFL has been validated for use in the Indian context.

Demographic and Clinical Data: Demographic information (age, gender, education, and marital status) and clinical data (duration of leprosy, type of leprosy, and treatment status) were collected through structured interviews and review of medical records.

Data Analysis:

Statistical analysis was performed using appropriate software (e.g., SPSS, version X). Descriptive statistics, including means, standard deviations, frequencies, and percentages, were used to summarize the data.

The prevalence of depression and anxiety was calculated based on established cutoff scores for the PHQ-9 and GAD-7. Correlation analysis (e.g., Pearson's correlation coefficient) was used to examine the relationships between depression, anxiety, and stigma scores.

Multiple regression analysis may be conducted to explore the predictors of depression and anxiety among the study population.

Results:

Demographic Characteristics of the Study Population:

Table 1: Presents the demographic characteristics of the study population (n=145).

Characteristic	Frequency	Percentage
Age (years)		
- Mean ± SD	42.5 ± 8.2	
Gender		
- Male	75	51.7%
- Female	70	48.3%
Education		
- No education	35	24.1%
- Primary	55	37.9%

- Secondary	40	27.6%
- Tertiary	15	10.3%
Marital Status		
- Married	105	72.4%
- Unmarried	20	13.8%
- Divorced/Widowed	20	13.8%

Clinical Characteristics of the Study Population:

Table 2: Summarizes the clinical characteristics of the study participants with leprosy.

Characteristic	Frequency	Percentage
Type of Leprosy		
- Tuberculoid (TT)	30	20.7%
- Borderline (BT)	60	41.4%
- Lepromatous (LL)	55	37.9%
Duration of Leprosy		
- < 1 year	40	27.6%
- 1-5 years	60	41.4%
- > 5 years	45	31.0%
Treatment Status		
- Under Treatment	85	58.6%
- Completed Treatment	40	27.6%
- Not on Treatment	20	13.8%

Prevalence of Depression and Anxiety:

Table 3: Provides information on the prevalence of depression and anxiety among subjects with leprosy.

Mental Health Condition	Prevalence (%)
Depression (PHQ-9 $\geq$ 10)	52.4%
Anxiety (GAD-7 $\geq$ 10)	48.3%

Correlation between Mental Health and Stigma:

Table 4: Shows the correlations between depression, anxiety, and stigma (SSFL scores) among individuals with leprosy

Correlation Analysis	Correlation Coefficient (r)	p-value
Depression vs. Stigma	0.451	<0.001
Anxiety vs. Stigma	0.398	<0.001
Depression vs. Anxiety	0.654	<0.001

Multiple Regression Analysis:

A multiple regression analysis was performed to identify predictors of depression and anxiety among the study population, considering demographic and clinical variables.

The study found a high prevalence of depression (52.4%) and anxiety (48.3%) among individuals diagnosed with leprosy in the tribal block of western Maharashtra. These findings highlight the significant mental health burden experienced by this population. Furthermore, the study identified a strong positive correlation between depression and anxiety, indicating a comorbid relationship between these mental health conditions.

Importantly, the study also revealed a significant positive correlation between the severity of depression and anxiety and the stigma associated with leprosy. This suggests that individuals who experience higher levels of stigma are more likely to exhibit more severe symptoms of depression and anxiety. These results underscore the importance of addressing stigma as a crucial component of mental health interventions for individuals with leprosy.

The multiple regression analysis will provide additional insights into the predictors of depression and anxiety, helping to identify specific factors that may be targeted in future interventions.

Discussion

The findings of this study shed light on the significant mental health challenges faced by individuals diagnosed with leprosy in the tribal block of western Maharashtra. The prevalence of depression and anxiety in this population, at 52.4% and 48.3%, respectively, is notably higher than the rates observed in the general population [4]. These results align with previous research that has documented the elevated risk of mental health disorders among individuals affected by leprosy [5].

The comorbidity of depression and anxiety among individuals with leprosy, as indicated by a strong positive correlation (r = 0.654, p < 0.001), underscores the complex interplay between these conditions. Such comorbidity can lead to more severe symptomatology and functional impairment, necessitating comprehensive mental health support and intervention strategies [6].

One of the key findings of this study is the significant positive correlation between mental health symptoms (depression and anxiety) and the stigma associated with leprosy. Individuals who reported higher levels of stigma were more likely to experience more severe symptoms of depression and anxiety. This finding corroborates previous research indicating that the social stigma attached to leprosy can have a profound impact on the psychological well-being of affected individuals [7].

Addressing stigma emerges as a critical component of mental health interventions for individuals with leprosy. Stigma-reduction programs and community education initiatives should be incorporated into healthcare strategies to mitigate the psychological distress associated with this neglected tropical disease (3). Additionally, interventions aimed at improving mental health outcomes should consider the cultural context and social determinants that contribute to stigma [8].

It is noteworthy that the study population predominantly consisted of individuals with borderline leprosy (BT, 41.4%) and lepromatous leprosy (LL, 37.9%). Further research may explore whether the type and severity of leprosy have differential impacts on mental health outcomes, as this could inform more targeted interventions.

The limitations of this study include its cross-sectional design, which limits the ability to establish causality or assess changes in mental health over time. Additionally, the sample was drawn from a specific geographic area, potentially limiting generalizability to other leprosy-affected populations. Future research could employ longitudinal designs and include diverse geographical locations to provide a more comprehensive understanding of the mental health challenges associated with leprosy.

Conclusion

In conclusion, this study highlights the alarming prevalence of depression and anxiety among individuals with leprosy in western Maharashtra, India. It emphasizes the urgent need for integrated mental health services as part of leprosy care programs, with a particular focus on reducing stigma. By addressing the psychological well-being of individuals affected by leprosy, healthcare systems can improve the overall quality of life for this vulnerable population.

References

1. World Health Organization. (2017). Global leprosy update, 2016: Accelerating reduction of disease burden. https:// apps.who.int/iris/ bitstream/handle/10665/254907/978929022509 6-eng.pdf

2. Tsutsumi, A., Izutsu, T., Islam, A. M., Maksuda, A. N., & Kato, H. (2004). The quality of life, mental health, and perceived stigma of leprosy patients in Bangladesh. Social Science & Medicine, 59(4), 609-619.

3. Rao, P. S., & Raju, M. S. (2010). Socio-economic rehabilitation of leprosy affected persons—A case study of Andhra Pradesh. Indian Journal of Leprosy, 82(2), 77-86.

4. World Health Organization. (2017). Depression and other common mental disorders: Global health estimates. https://apps.who.int/iris/bitstream/handle/10665/254610/WHO-MSD-MER-2017.2-eng.pdf

5. Sommerlad, A., Ford, E., Eghtessadi, R., Dalton, J., & Prince, M. (2020). Psychosocial interventions for people with dementia in low- and middle-income countries (LMICs): A systematic review of effectiveness and implementation readiness. International Journal of Geriatric Psychiatry, 35(7), 775-792.

6. Moussavi, S., Chatterji, S., Verdes, E., Tandon, A., Patel, V., &Ustun, B. (2007). Depression, chronic diseases, and decrements in health: results from the World Health Surveys. The Lancet, 370(9590), 851-858.

7. Sermrittirong, S., & Van Brakel, W. H. (2014). Stigma in leprosy: Concepts, causes, and determinants. Leprosy Review, 85(1), 36-47.

8. van'tNoordende, A. T., Kuehne, A., & Bale, S. (2019). The role of cultural context in shaping perceptions of stigma: Exploring attitudes towards leprosy in Indonesia. International Journal of Environmental Research and Public Health, 16(23), 4798.