Psychiatric Morbidity Among Inmates of Leprosy Homes

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ABSTRACT

Context: Leprosy affected people are having high psychological distress and it in turn leads to psychiatric disorders. There is a paucity of literature from our country in this significant health problem. Aims: The aim of this study was to find the prevalence of psychiatric morbidity and its association with sociodemographic and clinical factors among the inmates of leprosy homes. Settings and Design: Study sample was obtained from individuals residing in two leprosy homes of malwa belt of Punjab. Materials and Methods: In screening stage, the study subjects were administered sociodemographic proforma and general health questionnaire (GHQ-12). In the confirmation stage, the study subjects were interviewed in detail and disability assessment was done using World Health Organization disability scale. Final psychiatric diagnosis was made as per ICD-10 criteria’s. Statistical Analysis: Statistical analysis was performed using the descriptive statistics, Chi-square test, analysis of variance, and correlation analysis. Results: Majority of the subjects was in the age group 41-50 years, female, married, illiterate, Hindu and were from nuclear families. Nearly, 50.38% of subjects were having GHQ-12 score more than twelve. Nearly, 55.6% subjects were having psychiatric disorders out of which a large number of patients was diagnosed as having dysthymia. The other psychiatric disorders found in the study population were moderate depressive episode, generalized anxiety disorder, mixed anxiety and depressive disorder and schizophrenia unspecified. Psychiatric morbidity was found to be significantly related to age, family status, and duration of leprosy illness and presence of deformities among inmates. Conclusions: This study highlighted that psychiatric disorders were found in a large number among inmates of leprosy homes. Leprosy eradication program must place specific emphasis on psychiatric care of these patients.

Key words: Disability, leprosy, psychiatric disorder

INTRODUCTION

Leprosy as a skin disease has multidimensional impact on the health of an individual. The prevalence of leprosy and its psychiatric morbidity has a high national impact; however, only few reports have investigated the link between two.¹⁻¹⁰ Previous researchers from our country and abroad drew our attention to the high rate of psychiatric morbidity in leprosy patients.⁵⁻⁹,¹¹,¹² The studies showed that people with leprosy had more psychiatric problems than the general population.⁵⁻⁸,¹²,¹³ In a recent international study of psychiatric morbidities among subjects with leprosy it was concluded that leprosy patients are more likely to manifest with psychiatric illness than those suffering from other skin diseases and normal subjects.¹²

The beliefs and cultural practices of our country affect the mental health of people with leprosy. As evident...
from the literature review, there are no structured studies, which have been conducted in Indian subcontinent with a clear focus on the prevalence and pattern of psychiatric disorders among inmates residing in leprosy homes. Hence, this study was designed with the following aims and objectives:
1. To find out the prevalence of psychiatric morbidity among inmates of leprosy homes
2. To study the association between sociodemographic and clinical factors and psychiatric morbidity among these inmates.

**MATERIALS AND METHODS**

**Location**
The present study was conducted in two leprosy colonies (kusth ashrams) of two districts of Punjab. Baba Farid Kusth Ashram is situated at the outskirts of district Faridkot and Anand Dham Kusth Ashram is situated in Ferozepur district and is run by a charitable society. The inhabitants have built 30 houses at Baba Farid Kusth Ashram and 46 houses at Anand Dham Kusth Ashram sharing common toilets and bathrooms in the colony. All inmates were involved in beggary in the respective cities.

**Sample**
The residents of Baba Farid Kusth Ashram, Faridkot and Anand Dham Kusth Ashram, Ferozepur constituted the sample for the present study. The participants in the sample fulfilled the following inclusion and exclusion criteria.

**Inclusion criteria**
1. Subjects who were diagnosed having leprosy earlier
2. Registered cases of leprosy that took full course of treatment and were declared non-infectious
3. Permanent residents of the leprosy homes.

**Exclusion criteria**
1. Non-availability of written informed consent
2. Current acute medical/surgical illness
3. New patients enrolled in leprosy homes after the initiation of the study.

**Instruments used**
1. Sociodemographic data sheet
2. Clinical profile sheet
3. World health organization (WHO) disability scale\(^{[14]}\)
4. General health questionnaire-12 (GHQ-12)\(^{[15]}\)
5. ICD-10 criteria’s.\(^{[16]}\)

**Procedure**
The study was approved by the institutional ethics committee. Data collection was performed in two stages. Male and female “pardhans” of the leprosy homes were contacted in the first stage and were explained in detail about the study. They introduced the investigators to the residents of Kusth Ashrams and helped in rapport building session with the inmates. Written informed consent was taken from all the participants. Interviews were conducted at their place of residence so that no case is missed. Male and female inmates were interviewed separately. To address language problems, assistance was taken from the inmates having command on the local language. All participants were assured of their anonymity and were free to withdraw from participation in the study at any time. The information collected from various sources was cross-checked to rule out any dropout.

In screening stage of the study, the patients were administered GHQ-12 to detect any psychological strain. In the final confirmation stage, all the subjects under the study who exceeded the cut-off score of 2 on GHQ-12 were interviewed and detailed clinical information was recorded. The patients were physically examined and their physical deformity was graded according to the WHO disability scale.\(^{[14]}\) Finally, the psychiatric diagnoses were made on the basis of ICD-10 criteria’s.\(^{[16]}\)

**Statistical analysis**
Statistical analysis was carried out by using the SPSS 11.0 version. Descriptive statistics, in terms of percentage were used to describe the categorical variables. Detailed analysis was performed using Chi-square test, ANOVA, and correlation analysis. \(P<0.05\) were considered significant.

**RESULTS**
A total of 133 subjects, consisting of 63 males and 70 females formed the study group. Maximum number of the subjects \(n=45; 33.83\%\) were of the age group 41-50 years. Most of the subjects \(n=122; 91.73\%\) were married. 76.69\% \(n=102\) of the subjects were living in a nuclear family while 23.31\% \(n=31\) were from joint family background. 90.23\% of the subjects belonged to Hindu religion. Majority of subjects (70.68\%) were illiterate a high proportion of the subjects were having a duration of illness more than 30 years. Mean duration of leprosy illness was 30.2 years \(n=64; 48.12\%\). 50.38\% of subjects were having GHQ-12 score more than twelve while 49.62\% of subjects were having GHQ-12 score less than twelve. Disability grading assessment as per WHO disability scale showed that 24.06\% \(n=32\) of subjects were having deformity grade zero, 17.29\% \(n=23\) of subjects were having deformity grade one, 58.65\% \(n=78\) of subjects were having deformity grade two. All the
subjects (100%) belonging to both the ashrams were involved in begging. Most of the subjects (58.65%) were having visible deformities, out of which 33.33% were in the age group of 41-50 years.

A total of 74 (55.6%) subjects were having one or other psychiatric disorders. The greater number of patients were diagnosed as having dysthymia (n=34; 25.5%). The other psychiatric disorders were moderate depressive episode (n=20; 15.04%), generalized anxiety disorder (n=15; 11.28%), mixed anxiety and depressive disorder (n=4; 3%) and schizophrenia unspecified (n=1; 0.75%) [Table 1]. As per Table 2, the distribution of psychiatric morbidity revealed a significant difference in different age groups. Highly significant difference was found when the data were analyzed between duration of illness and deformity grades [Table 3]. Maximum number of the subjects (58.11%) with psychiatric disorders were having a duration of leprosy illness more than 30 years and this relationship with psychiatric morbidity was found to be statistically significant [Table 4]. There was no significant difference in the psychiatric morbidity between genders [Table 5]. Table 6 shows family distribution of sample as per psychiatric diagnosis and the statistical analysis revealed a significant difference between variables (P=0.002). Table 7 shows the distribution of subjects with and without psychiatric disorder. There was a significant difference in the psychiatric morbidity as far as age and family status of the study subjects was concerned. No significant difference was seen in distribution of sex, marital status, religion, and educational status of the study subjects. Duration of leprosy illness and GHQ score distribution among subjects with and without psychiatric disorders also revealed a significant difference values [Table 8]. There was a highly significant correlation between the psychiatric morbidity and duration of leprosy illness (r=0.323) and presence of deformities (rho=0.468) [Table 9]. Mean GHQ-12 score (SD) in study subjects was 12.8 (6.31) and one-way analysis of variance showed significant association between the presence of psychiatric disorders in subjects and GHQ scores [F=18.799, P<0.001; Table 10]. Mean GHQ-12 score (SD) among individuals with deformity grade two was 15.29 (6.21). The association between deformity grades and GHQ score was found to highly significant [F=18.799, P<0.001, Table 11].

**DISCUSSION**

In the present study, majority of the subjects belonged to the age group of 41-50 years. Similar finding have been reported from studies conducted in the Jodhpur of Rajasthan state and Raipur of Madhya Pradesh.[7,17] Our study shows that the majority of the subjects were married, which is consistent with the earlier studies.[17,18] Dwivedi[7] in a study of medico-social problems of cured leprosy cases in a rural population of Raipur (Madhya Pradesh) showed that most of the patients (75%) resorted to beggary while in our study all the subjects (100%) were involved in begging. Our study showed that 76.69% of the subjects were living in nuclear families. Similar finding has been reported by Dwivedi.[7] We found that most of the patients (70.68%) were illiterate and 9.02% had obtained education up to primary level, which is consistent with the previous studies.[16,19]

Chatterjee et al.[8] in a study on the social and psychological correlates of leprosy reported that GHQ score above twelve was much more frequent among leprosy patients. We found that 50.36% of the subjects were having GHQ scores more than twelve. Reddy and Bansal[20] revealed that the presence of disabilities and deformities constitutes a major problem in the management of leprosy and a high rate (30.76%) of deformities was observed in the age group of more than 45 years. These findings are consistent with our study.

**Table 1: Pattern of psychiatric disorders among study subjects**

| Diagnosis (ICD-10 code)                      | No. of subjects | % of age |
|---------------------------------------------|-----------------|----------|
| Dysthymia (F-34.1)                          | 34              | 25.56    |
| Moderate depressive episode (F-32.1)        | 20              | 15.04    |
| Generalized anxiety disorder (F-41.1)       | 15              | 11.28    |
| Mixed anxiety and depressive disorder (F-41.2) | 4               | 3.00     |
| Schizophrenia, unspecified (F-20.9)         | 1               | 0.75     |
| Nil psychiatric diagnosis                   | 59              | 44.36    |

ICD – International classification of disease-10; n=133

**Table 2: Distribution of psychiatric morbidity in different age groups**

| Age (years) | Mixed anxiety and depressive disorder | Dysthymia | GAD | Moderate depressive episode | Schizophrenia (unspecified) | Nil | Total |
|-------------|--------------------------------------|-----------|-----|-----------------------------|-----------------------------|-----|-------|
| ≤40         | 3                                    | 1         | 3   | 2                           | Nil                         | 22  | 31    |
| 41-50       | 1                                    | 8         | 5   | 9                           | 1                           | 21  | 45    |
| 51-60       | Nil                                  | 12        | 5   | 5                           | Nil                         | 9   | 31    |
| >60         | Nil                                  | 13        | 2   | 4                           | Nil                         | 7   | 26    |
| Total       | 4                                    | 34        | 15  | 20                          | 1                           | 59  | 133   |

GAD – Generalized anxiety disorder; χ²=35.358; df=15; P=0.002 (significant); n=133

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In the present study, 58.65% of the subjects were having visible deformities out of which 33.33% subjects were in the age group of 41-50 years.

Verma and Gautam in a study examined the confirmed leprosy patients with psychiatric co-morbidity and showed that psychiatric illness was common among those with deformities (89.7%) compared to those without deformities (46.9%). Our study findings are in keeping with those reported from Jaipur. Verma and Gautam reported a higher frequency of psychiatric disorders (76%) than our study (55.64%). The difference between our study and a previous study conducted by Verma and Gautam was in data collection methods. The investigators in the study from Jaipur collected data from a slum area and leprosy ashram and found that the occurrence of psychiatric problems among the slum area inmates (85.2%) was more prevalent than the individuals living in ashram (65.2%) . In contrast to these observations, we found that depressive disorders were present in a large number among inmates of leprosy homes. Study conducted by Bhatia et al. was a clinic based study. Our study was community based and we conducted a house to house field survey of two leprosy homes of different districts of Punjab (Faridkot and Ferozepur).

In the present study, 55.64% of the study subjects were having psychiatric disorders. Dysthymia was the most common psychiatric diagnosis followed by moderate depressive episode. Reddy et al. showed that the predominant psychiatric diagnosis found among leprosy cases was dysthymia. Ramanathan et al. and Chatterjee et al. have reported high frequency of psychiatric illness among leprosy patients (55% and 64.76% respectively). Verma and Gautam reported a higher frequency of psychiatric disorders (76%) than our study (55.64%).

### Table 3: Relationship between duration of leprosy illness and deformity grades

| Duration (in years) | Grade 0 | Grade 1 | Grade 2 | Total |
|---------------------|---------|---------|---------|-------|
| ≤20                 | 13      | 7       | 6       | 26    |
| 21-30               | 14      | 8       | 21      | 43    |
| >30                 | 5       | 8       | 51      | 64    |
| Total               | 32      | 23      | 78      | 133   |

$\chi^2 = 29.017; \ df = 4; \ P < 0.001 \ (\text{highly significant}); \ n = 133$

### Table 4: Relationship between duration of leprosy illness and psychiatric morbidity

| Duration of illness (years) | Mixed anxiety and depressive disorder | Dysthymia | GAD | Moderate depressive episode | Schizophrenia unspecified | Nil | Total |
|-----------------------------|--------------------------------------|-----------|-----|----------------------------|--------------------------|-----|-------|
| ≤20                         | -                                    | 2         | 5   | 3                          | 1                        | 15  | 26    |
| 21-30                       | 4                                    | 7         | 4   | 5                          | -                        | 23  | 43    |
| >30                         | -                                    | 25        | 6   | 12                         | -                        | 21  | 64    |
| Total                       | 4                                    | 34        | 15  | 20                         | 1                        | 59  | 133   |

GAD – Generalized anxiety disorder; $\chi^2 = 28.464; \ df = 10; \ P = 0.002 \ (\text{significant}); \ n = 133$

### Table 5: “Sex-wise” distribution of the subjects as per diagnosis

| Sex      | Diagnosis                                  | Total |
|----------|--------------------------------------------|-------|
|          | Mixed anxiety and depressive disorder       |       |
|          | Dysthymia                                  |       |
|          | GAD                                        |       |
|          | Moderate depressive episode                 |       |
|          | Schizophrenia unspecified                  |       |
|          | Nil                                        |       |
| Female   | 2                                          | 14    | 6 | 12 | 1 | 35 | 70 |
| Male     | 2                                          | 20    | 9 | 8  | Nil | 24 | 63 |
| Total    | 4                                          | 34    | 15| 20| 1| 59|133 |

GAD – Generalized anxiety disorder; $\chi^2 = 5.156; \ df = 5; \ P = 0.397 \ (\text{NS}); \ n = 133$

### Table 6: “Type of family-wise” distribution of the subjects as per diagnoses

| Family     | Diagnosis                                  | Total |
|------------|--------------------------------------------|-------|
|            | Mixed anxiety and depressive disorder       |       |
|            | Dysthymia                                  |       |
|            | GAD                                        |       |
|            | Moderate depressive episode                 |       |
|            | Schizophrenia unspecified                  |       |
|            | Nil                                        |       |
| Joint      | 4                                          | 5     | 2 | 2 | Nil | 18 | 31 |
| Nuclear    | Nil                                        | 29    | 13| 18| 1  | 41 |102 |
| Total      | 4                                          | 34    | 15| 20| 1  | 59 |133 |

GAD – Generalized anxiety disorder; $\chi^2 = 19.400; \ df = 5; \ P = 0.002 \ (\text{significant}); \ n = 133$
Table 7: Demographic distribution of the subjects with and without psychiatric disorder

| Variable          | Sub-variable       | Psychiatric disorder among subjects | \( \chi^2 \) (df) P value |
|-------------------|--------------------|-------------------------------------|--------------------------|
|                   |                   | With n (%) | Without n (%) |
| Age (years)       | \( \leq 40 \)     | 22 (37.29) | 15.143 | 3.002* |
|                   | 41-50              | 21 (35.59) |         |       |
|                   | 51-60              | 9 (15.25)  |         |       |
|                   | \( >60 \)          | 7 (11.86)  |         |       |
| Sex               | Female             | 39 (59.32) |         |       |
|                   | Male               | 34 (52.70) |         |       |
| Marital status    | Married            | 39 (60.93) |         |       |
|                   | Widowed            | 34 (52.70) |         |       |
| Family            | Joint              | 21 (35.59) |         |       |
|                   | Nuclear            | 6 (10.18)  |         |       |
| Religion          | Hindu              | 66 (99.19) |         |       |
|                   | Sikh               | 2 (3.27)   |         |       |
|                   | Other              | 8 (13.11)  |         |       |
| Education         | Illiterate         | 5 (8.26)   |         |       |
|                   | Below primary      | 8 (13.11)  |         |       |
|                   | Primary            | 6 (10.18)  |         |       |
|                   | Middle             | 4 (6.99)   |         |       |
|                   | Matriculate        | 1 (1.69)   |         |       |
|                   | Intermediate       | 1 (1.69)   |         |       |

* \( P<0.05 \) (significant)

Table 8: Duration of leprosy illness and GHQ score distribution of the subjects

| Variable            | Sub-variable     | Psychiatric disorder among subjects | \( \chi^2 \) df P value |
|---------------------|------------------|-------------------------------------|--------------------------|
|                     |                  | With n (%) | Without n (%) |
| Duration of illness | \( \leq 20 \)   | 15 (25.43) | 6.782 | 2.034* |
|                     | 21-30            | 23 (38.98) |         |       |
|                     | \( >30 \)        | 21 (35.59) |         |       |
| GHQ-12 score        | \( \leq 12 \)   | 59 (100)   | 107.6 | 1.001**|
|                     | \( >12 \)        | Nil (100)  |         |       |

GHQ – General health questionnaire; * \( P<0.05 \) (significant); ** \( P<0.001 \) (H.S.)

Table 9: Association of deformity grade with GHQ-12 score using one way ANOVA

| Deformity grade | Number of subjects | Mean GHQ score | Standard deviation | Significance |
|-----------------|--------------------|----------------|--------------------|-------------|
| 0               | 32                 | 8.62           | 4.62               | \( F=18.799 \) |
| 1               | 23                 | 10.34          | 4.49               | \( df=2 \)   |
| 2               | 78                 | 15.29          | 6.21               | \( P<0.001 \) |

GHQ – General health questionnaire; ANOVA – Analysis of variance; ** \( P<0.001 \); Highly significant

Table 10: Correlates of psychiatric morbidity in study subjects

| Variable          | GHQ scores P value |
|-------------------|--------------------|
| Duration of leprosy | \( r \) rho        |
| Illness           | 0.323 <0.0001**    |
| Deformity         | Nil 0.468 <0.001 ** |

GHQ – General health questionnaire; * \( r \) – Pearson correlation co-efficient; rho – Spearman correlation co-efficient

Table 11: Association of presence of psychiatric disorders in study population with GHQ score

| Psychiatric disorder | Number of subject | Mean GHQ score | SD | Significance |
|----------------------|-------------------|----------------|----|--------------|
| Present              | 74                | 17.58          | 4.17| \( F=326.433 \) df=1 |
| Absent               | 59                | 6.88           | 2.02| \( P<0.001 \)** |

GHQ – General health questionnaire; ** \( P<0.001 \); Highly significant

Turkan in a study on the degree of depression in 38 leprosy patients revealed that 70% had depression of moderate to severe degree.\[11\] High rate of moderate depressive episode was found in our study. Erinfolami in a study from Nigeria found that depressive illness was the most common diagnosis among subjects with leprosy.\[12\] In this international study, subjects were assessed for psychiatric morbidity through a clinical interview and present state examination. Similarly, in the present study both the psychiatric morbidity and the disability have been assessed by standardized instruments and a clinical interview of all individuals was conducted on one to one basis to make the final psychiatric diagnosis. The implications of our study are that a high proportion of psychiatric morbidity was observed among the inmates of leprosy homes. It was observed that the psychiatric disorders largely go unrecognized by health-care professionals and service providers of these patients. So there is a growing need to treat these psychiatric disorders. Psychiatric intervention in these patients would be of much help to them. Psychiatric care should be practiced as a part of comprehensive health-care of the inmates of leprosy homes.

**CONCLUSION**

In our study, most of the subjects were from the age group 41-50 years and were females, married, Hindu and illiterates. Majority of the subjects were living in nuclear families and had visible deformities and long duration of leprosy illness. Our study concluded that psychiatric morbidity was found to be high in the inmates of leprosy homes. The psychiatric diagnosis in the majority of the subjects was dysthymia (25.5%). Moderate depressive episode was found in 15.04% of subjects and generalized anxiety disorder was present in 11.28% subjects. Mixed anxiety and depression was found in 3.0% subjects. This study indicates that among inmates of leprosy homes, psychiatric morbidity is significantly related to age, family status, and duration of leprosy illness, and presence of deformities.

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