Original Research Article A Hospital Based Cross Sectional Study to Assess the Socio Demographic Profile of the Patients with Leprosy

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Abstract

Background: Leprosy is a common infectious disease causing as much social problem as a medical one. It leads to variety of disabilities resulting from nerve damage, immunological reactions and bacillary infiltration. Among communicable diseases, it remains a leading cause of peripheral neuropathy and disability worldwide. **Objective:** To assess the Socio demographic profile of the leprosy patients attending the clinic at Shri B M Patil Medical College Hospital. **Methodology:** A hospital-based, cross sectional study to detect deformities/disabilities in patients with leprosy was conducted in the department of Dermatology Venereology and Leprosy of B.L.D.E.U's Shri. B.M. Patil Medical College Hospital and Research Centre, Vijayapur, Karnataka. One hundred and forty six cases were included in the study. The study duration was from November 2014 to September 2016. **Results:** Among the 146 patients enrolled in the study, 85 were male and 61 were female, 10 were children, with a mean age of 38.1(\pm 15.6) years. The mean duration of disease was 2.6 (\pm 4.1) years. Majority of the patients belonged to lower socioeconomic (S-E) status (n=100, 68.5%) followed by middle (n=46, 31.5%). Most common type was multibacillary in 133 (91.1%) patients followed by 39 (26.7%) patients, whose disease duration was less than one year. **Conclusion:** Out of 146 patients, 56 (38.4%) had the disease for 1-2 years, followed by 39 (26.7%) patients, whose disease duration was less than one year.

Keywords: Leprosy, Deformity, Social Profile, Stigma.

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Introduction

Leprosy is a common infectious disease of mankind since the time unknown. There has been mention of leprosy in the Indian literature as early as 600 BC.¹ The discovery of Lepra bacillus by Sir Gerhard Henrik Armauer Hansen in 1873 opened a new vista in the understanding of the disease[1].Leprosy is a chronic granulomatous infection caused by Mycobacterium leprae.

The organism is a rod shaped acid fast bacilli mainly affecting the peripheral nerves and skin[2,3]. When the disease is left untreated, various deformities may develop[4]. World Health Organization (WHO) has declared leprosy as a major public health problem as it is known to be associated with crippling deformities[5]. Deformities are the loss or abnormality of psychological, physiological or anatomical structure or function[6]. It may be either visible impairments or consequences of invisible impairments.⁶ Disability is the inability to perform certain activities, which were normally possible, but become difficult or impossible to carry out because of deformities[6].

The deformities due to leprosy result in extensive loss of man power and economic loss to the society[7].Leprosy remains a public health problem in fifty five countries but thirteen countries account for 94% of total registered cases[8].India, Brazil and Indonesia report more than 10,000 new patients annually. Globally about 21,3899 new cases were detected with Grade 2 deformity corresponding to 6.6% of the total number of newly diagnosed patients and to a rate of 2.5 cases per million (WHO 2015)[5].

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Associate Professor, Department of Dermatology, East Point College of Medical Sciences and Research Centre, Bengaluru, Karnataka, India. E-mail: pmsangoli@gmail.com One of the objectives of the leprosy control programmes is to prevent onset of deformities (WHO 1982, NLEP 1987) and to pay particular attention to the number 2 and proportion of new cases with severe disabilities since they represent failure of case detection system (WHO 1985)[9]. Various factors seem to determine development of the disease and deformities. As these deformities are recognizable due to leprosy, presence of these result in social stigma[10,11].

Objectives of Study

To Assess the Socio demographic profile of the leprosy patients attending the clinic at Shri B M Patil Medical college Hospital.

Materials and Methods

Source of Data: A hospital-based, cross sectional study to detect deformities/disabilities in patients with leprosy was conducted in the department of Dermatology Venereology and Leprosy of B.L.D.E.U's Shri. B.M. Patil Medical College Hospital and Research Centre, Vijayapur, Karnataka. One hundred and forty-six cases were included in the study. The study duration was from November 2014 to September 2016.

Method of Collection of Data

Inclusion criteria: All leprosy patients irrespective of age, gender and treatment status were included in the study.

Method: Detailed history of the patient was taken in respect to duration of disease and deformity, history of contact, episodes of reactions if any, and treatment. Each patient was subjected to complete cutaneous examination and palpation of peripheral nerves. Presence or absence of deformities were recorded. All patients

underwent following steps of clinical examination:

• Detailed inspection of hands, feet, face and eyes for lesions and any visible deformity.

- Examination of peripheral nerves.
- Sensory tests done on hands and feet:
- 1) Temperature test with hot and cold water

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2) Pin prick test

3) Cotton wool test

4) Semmes Weinstein monofilament test (SWMT)

Investigations: Slit skin smear and biopsy were carried out in all newly diagnosed cases and in already diagnosed and treated cases whenever indicated to confirm the diagnosis

Statistical Analysis: All characteristics were summarized descriptively. For continuous variables, the summary statistics of N, mean, standard deviation (SD) were used. For categorical data, the number and percentage were used in the data summaries. Chi-square (χ 2) test was employed to determine the significance of differences between groups for categorical data. The difference of the proportion of analysis variables was tested with the z-test. If the p-value was < 0.05, then the results were considered to be significant. Data were analyzed using SPSS software v.24.0.

Results

A hospital based cross-sectional study was conducted from November 2014 to September 2016. A total of 146 patients with leprosy were included in the study.

Among 146 patients, 85 were males (58.2%) and 61 were females (41.8%).

Age distribution the age of the patients enrolled in the study ranged from 8 to 84 years. The mean age (\pm SD) of the study population was 38.1 (\pm 15.6) years. The Majority of them were in the age group of 26 to 40 years.

Among 146 patients, majority were farmers (n=43; 29.5%), next common being housewives (n=26; 17.8%), labourers (n=15;10.3%) and students (n=12; 8.2%). Daily wage workers were 8 (5.5%), and drivers and teachers were 7 (4.8%) each. Remaining 28 (19.2%) patients had other occupations.

Majority of the patients belonged to lower socioeconomic (S-E) status (n=100, 68.5%) followed by middle (n=46, 31.5%). Out of the 146 patients, 110 (75.3%) belonged to rural areas and 36 (24.7%) were from urban areas. Seventy-six (52.1%) patients were illiterate and 70 (47.9%) were educated at least till fourth standard.

Most prevalent clinical type was borderline tuberculoid leprosy in 54 (37%) patients, followed by lepromatous leprosy in 49 (33.6%), borderline lepromatous in 22 (15.1%), pure neural in 6 (4.1%), tuberculoid and histoid types in 5(3.4%) patients each, mid-borderline in 3 (2.1%) and indeterminate in 2 (1.4%) patients.

Distribution based on WHO classification of disease Most common type was multibacillary in 133 (91.1%) patients followed by paucibacillary in 13 (8.9%) patients.

Out of 146 patients, 56 (38.4%) had the disease for 1-2 years, followed by 39 (26.7%) patients, whose disease duration was less than one year. Thirty-six (24.7%) patients had the disease for 3-5 years, and 15 (10.3%) patients had disease duration for more than 5 years. Among 146 patients, 41 (28.1%) had type 2 reaction, and 22 (15.1%) had type 1 reaction. Duration of deformity was less than a year in 90 (61.6%) patients. Twenty-eight (19.2%) patients each, had deformities for 1-2 years, and more than 2 years.

Table 1:	Gender	distribution	of	patients	with leprosy
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	ition of patients with lept osy	
Gender	Number	Percentage
Male	85	58.2%
Female	61	41.8%
Table 2: Age wise dist	tribution of study subjects	
Age group	Number	Percentage
5-15	5	3.4
16-25	33	22.6
26-40	51	34.9
41-60	42	28.8
61-75	14	9.6
>75	1	0.7
Table 3: Distribution of stu	dy subjects based on occupation	
Occupation	Number	Percentage
Farmer	43	29.5
Housewife	26	17.8
Labour	15	10.3
Student	12	8.2
Daily wage worker	8	5.5
Driver	7	4.8
Teacher	7	4.8
Other	28	19.2
Table 4: Distribution of study sub	pjects based on Socio Economic Statu	5
Occupation	Number	Percentage
Upper	0	0
Upper Middle	18	12.3%
Upper Lower	68	46.6%
Lower Middle	28	19.2%
Lower	32	21.9%
Table 5: Distribution of study subj	ects based on Clinical types of Lepro	SV
Clinical types of Leprosy	Number	Percentage
Tuberculoid	5	3.4%
Tuberculoid Leprosy	54	37%
Lepromatous Leprosy	49	33.6%
Borderline Lepromatous	22	15.1%
Pure Neural	6	4.1%
Histoid	5	3.4%
Mid Borderline	3	2.1%
Intermediate	2	1.4%

Table 6: Distribution of study subjects based on duration of the disease and deformity						
		Number	Percentage			
	<1	39	26.7%			
Duration of Disassa In years	1-2	56	38.4%			
Duration of Disease in years	3-5	36	24.7%			
	>5	15	10.3%			
	< 1	90	61.6%			
Duration of Deformity in years	1-2	28	19.2%			
	>2	28	19.2%			

Discussion

Leprosy is a disabling disease when diagnosed late and left untreated. WHO expert committee on leprosy has recommended in their 6th report that prevention and management of leprosy related impairments and disabilities should be implemented effectively. The best way to prevent disabilities in leprosy is through early detection of patients, early recognition of mild impairments, and provision of appropriate treatment[12,13].

In this hospital based cross sectional study on deformities and disabilities in leprosy, total 146 cases were included. The age of the patients ranged from 8 to 84 years with a mean age of $38.1 (\pm 15.6)$ years. Most common age group affected was 26 to 40 years followed by 41 to 60 years. In a study by Jain et al[14] the average age of disease onset was 35.73 years (range 6 to 75 years). Singh et al[15] have reported the age range of leprosy patients in their study to be 7 to 80 years (mean 36.5 years).

Male patients were the common sufferers (M:F=1.3:1). Though male patients had more deformities than females, the association of deformities with gender of patients was not statistically significant (p=0.390). Similarly, Kumar et al[16] and Jain et al[14] have reported higher occurrence of deformities in male patients as compared to females, among their study subjects (p=<0.0001).

Although leprosy affects both the genders, in most parts of the world males are affected more frequently than females often in the ratio of 2:1. This preponderance of leprosy in males has been observed in countries like India, Philippines, Hawaii, Venezuela and Cameron. Relatively lower prevalence of leprosy among females may be due to environmental or biological factors. Epidemiological characteristics of leprosy appears to be like many other communicable diseases where males are more frequently affected than females[17]. Indian society is male dominated. In general, they take up the occupational burden and hence more out-going. This makes them prone to get exposed to the environment and other leprosy sufferers more closely than females. Occupation related trauma make them more vulnerable to develop deformities. As males are the bread-earners in India, they are considered privileged and they seek health care facilities more often[17].

In this study, 100 (68.5%) patients belonged to lower socio-economic status and majority had deformities of hands and feet. The association of deformity and socio- economic status was statistically significant (p=0.008). Similar was the finding in an epidemiological study on leprosy conducted in Agra by Kumar et al[16]. Majority of the patients with disease and deformities were farmers by occupation. Sarkar et al[18], reported agricultural workers to have significantly more disabilities than those who were engaged in other occupations. The probable reasons for higher prevalence of leprosy among people of low SE status may be related to their large family size and small ill-ventilated households, where overcrowding is inevitable, making them vulnerable to acquire the disease, if there is a contact in the family. Moreover, they have a low literacy level, making delayed appreciation of disease manifestations and hence more occurrence of deformities. Many of these people are daily wagers and are forced to go for manual work inspite of their anaesthetic hands and feet. This makes their invisible deformities visible in the form of trophic ulcers. Inability to seek medical care due to work-pressure and monetary constraint leads to neglected reactions and consequent motor

deformities. This leads to stigma and psychological stress, further enhancing occurrence of reactions and a vicious cycle sets in.

In our study, close contacts of 3 patients had developed leprosy. Of them, two were couples (conjugal leprosy) and in case of the third patient the spouse and two 63 children were affected. This finding confirms the fact that household contacts are the most important source of acquiring infection. Studies have shown that the risk of acquiring the disease is 8 to 10 times more in households of lepromatous leprosy cases as compared to the surrounding population and 2 to 4 times for tuberculoid disease[19,20]. In a study by Anjum et al[21] 27.6% of the newly diagnosed leprosy patients had an index case in the family; either parents or siblings. Seven patients (12.9%) had multiple index cases in the family and social contacts were detected in fourteen cases.

More than 91% of the patients belonged to MB group and 9% belonged to PB group. Higher incidence of deformities of hands, feet and eves was seen in MB cases, and association of ocular deformities with MB disease was statistically significant (p=0.006). Kumar et al[16] have reported overall disability rate of 7.9% in their study subjects and among these MB patients had significantly higher disability rate than PB patients (17% vs. 3.8%). Chavan et al[22] recorded more disability among MB patients (60%) as compared to PB patients (19%). In the study by Jain et al[21] majority of the patients belonged to MB group while 131 (43%) were in the PB group. Disability rate was more in MB leprosy patients (11.6%) than in PB (6.9%). Similarly, Sarkar et al[18], noted that MB patients had significantly higher disability (31.6%) than PB patients (10%). So our study results are similar to the published Indian literature.

Majority of the MB cases in our study had BT disease with more than five skin lesions and more than two peripheral nerve involvement. It ascertains the well- known fact that BT leprosy is the commonest spectrum of the disease.

Conclusion

Leprosy is known to cause a plethora of deformities. Detailed history and examination of the patient at presentation is of utmost importance especially when there is sensory loss. Neglecting anaesthetic limbs can lead to progression of deformity leading to untoward consequences. This study leads to recognition of various deformities in the patients ranging from mild impairment of sensory functions to gross mutilation of hands, feet and face. Early detection of anaesthesia in the extremities can help in educating the patients regarding the care of limbs and also to identify risk factors. Both treated and newly diagnosed cases of leprosy were included in this study which led to tracing the close contacts especially children and educating the patients about the disease.

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