

## Reasons of Delay in Diagnosis of Leprosy: A Cross Sectional Study

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### Abstract

**Background:** This manuscript is based on one of the objective of the study titled " An Assessment of Health Seeking Behaviour and Reasons for Delay In Diagnosis of Leprosy Patients Attending Dermatology OPD, Rajendra Institute of Medical Sciences(RIMS), Ranchi.

**Introduction:** In a chronic debilitating disease like leprosy, early diagnosis and treatment is essential to prevent disability. The delay and misdiagnosis has disabling consequences on the patient. We conducted this study to identify the factors contributing to the delay in diagnosis and start of treatment in leprosy.

**Methods:** A total of 46 patients with leprosy attending Dermatology OPD, RIMS, Ranchi were interviewed through semi-structured questionnaire during the period between June 2015 to November 2015.

**Results:** We found that out of 46 leprosy patients, of which 31(67.4%) were male and 15(32.6%) female. Mean and standard deviation of age of the patients was 38 years and 14.5 years respectively. Majority [35(76%)] of the patients belong to lower class according to modified Kuppuswamy's index (2015). First contact with the health service was local practitioner (45.6%), PHC/CHC (23.9%), quacks (15.2%), faith healers (2.1%), and only 13.04 % came for tertiary care centers for diagnosis. Also many took home remedies like neem oil, alternative medicines like ayurvedic(6.5%) and homeopathy(6.5%). 13 % didn't avail any health service. 43.47% were diagnosed in their first visit itself. 41.30% were diagnosed in 2<sup>nd</sup> visit. 15.21% were diagnosed in their 3<sup>rd</sup> visit which added for the delay. 26(56.5 %) patients were misdiagnosed in their first visit. 22(47.82%) patients were diagnosed after 1 year of symptoms and signs of leprosy. It clearly shows that there was delay in diagnosing the disease. Due to this delay and misdiagnosis, 14(30.43%) developed deformities. Reasons for delay varied from ignorance about the symptoms and signs of the disease, monitoring of symptoms in the hope that they would disappear by themselves and lack of vigilance among local medical practitioners in the lower levels of the health system.

**Conclusion:** This study concludes that main reason of delay in diagnosis of Leprosy patients is that they had not reached to right place in right time due to illiteracy, unawareness, ignorance, low socio economic status(SES) and social stigma about this disease.

**Keywords:** Reasons, delay, diagnosis, Leprosy

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### I. Introduction

Leprosy has been around since ancient times, often surrounded by terrifying, negative stigmas and tales of leprosy patients being shunned as outcasts. Social stigma is associated mainly due to prevalent myths like its hereditary and contagious nature, divine curse along with the physical deformities caused. The affected people not only face physical impairments but also suffer psychosocial repercussion due to community's attitude.

According to NLEP 2001, prevalence rate in Bihar-Jharkhand was >10/10000 against whole country's prevalence of 3.74/10000. It declined to 0.68/10000 in 2011 in India <sup>[1,2,3]</sup>. However, the state of Bihar-Jharkhand showed less decline with prevalence of >1/10000<sup>[1]</sup>. As per NLEP progress report 2014-15, 33 states/UT had attained the level of leprosy elimination except Bihar, Chhattisgarh and Dadar & Nagar Haveli.<sup>[4]</sup> Early diagnosis of leprosy and adequate therapeutic coverage reaching all individuals diagnosed are priorities in leprosy control program and essential condition for the interruption of transmission and the reduction of physical and social consequences of the disease <sup>[5]</sup>.

This manuscript is focussed to assess the reasons for delay in diagnosis of leprosy patients attending Dermatology OPD in Rajendra Institute of Medical Sciences, Ranchi, Jharkhand. Outcome of this study will be strengthening the implementation in strategy of NLEP.

## II. Material And Methods

A cross-sectional study was conducted on leprosy patients during a period between June 2015 to November 2015 attending the outpatient department of Dermatology, Venereology & Leprosy of a tertiary care centre. Informed consent was taken from patient or patient's relative. Ethical clearance was obtained from the Institutional Ethics Committee. A total 46 subjects who were clinically diagnosed and had more than one cardinal features of leprosy (viz. hypo/anesthetic patches, nerve thickening, Positive AFB on ZN staining) and met the inclusion criteria of the study during our data collection period were recruited for this study.

Study Subjects were interviewed through semi structured questionnaire to assess the socioeconomic status according to modified Kuppaswamy's index (2015)\*, their first place of visit, reasons for preference, compliance of the patients to MDT, complications of leprosy and its consequences on patient's family and reasons for delay in diagnosis of leprosy.

### Inclusion Criteria:

- i. A newly diagnosed leprosy patient presenting with more than one cardinal features of leprosy.
- ii. Patients who were previously diagnosed as leprosy coming for follow up and taking anti-leprotic drugs/MDT
- iii. Patients with severe deformity due to leprosy.
- iv. Patients who came after default treatment.

### Exclusion Criteria:

Patients presenting with similar symptoms secondary to other cause like diabetic neuropathies, traumatic neuropathies, etc. were excluded.

### Statistical Analysis:

Proper template for data entry was generated in MS Excel. Data were randomly checked to assure the quality of the data. Descriptive analysis was done through SPSS software.

## III. Results

A total of 46 patients were assessed of which 31(67.4%) were male and 15(32.6%) female. Mean age of male was 38 years and of female was 36 years. Socioeconomic status according to modified Kuppaswamy's index (2015) was as follows:- Lower class(LC):- 13(28%), upper lower class(ULC):-22(47.8%), Lower middle class(LMC):- 6(13%), upper middle class (UMC):-5(10.9%). There were no patients from upper class (LC). Out of these patients, 37 (80.4%) were old cases on follow up and 9(19.6%) were newly diagnosed cases.(Referred to table 1)

**Knowledge About The Disease:** - 19(41.3%) patients did not have any knowledge about the disease. 5(10.86%) knew only the name of the disease and the remaining 21(45.65%) had other views about the disease like curse, myth, allergy, trauma etc. Only 1(2.17%) patient who was well educated and belonging to upper middle class knew about the exact cause of the disease and its complications.

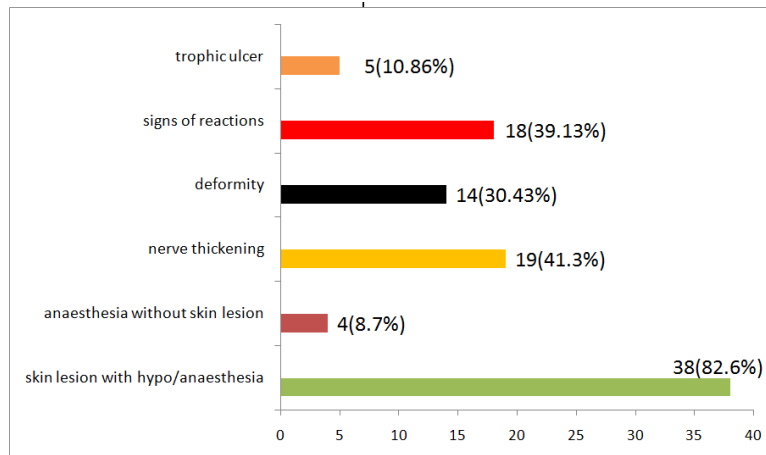
**Table 1: Socio-demographic profile of the patients (n=46)**

Variables	Category	Numbers(%)
Sex	Male	31(67.4%)
	Female	15(32.6%)
Socio Economic Status(SES) As modified Kuppaswamy index(2015)	LC	13(28%)
	ULC	22(47.8%)
	LMC	6(13%)
	UMC	5(10.9%)
	UC	0(0%)
Education Status	Illiterate	20(43.47%)
	Literate	16(34.78%)
Sex	<b>Mean Age(yrs.)</b>	<b>Standard Deviation</b>
	Male	38
	Female	36
	Total	38

**Table 2: DURATION OF DISEASE**

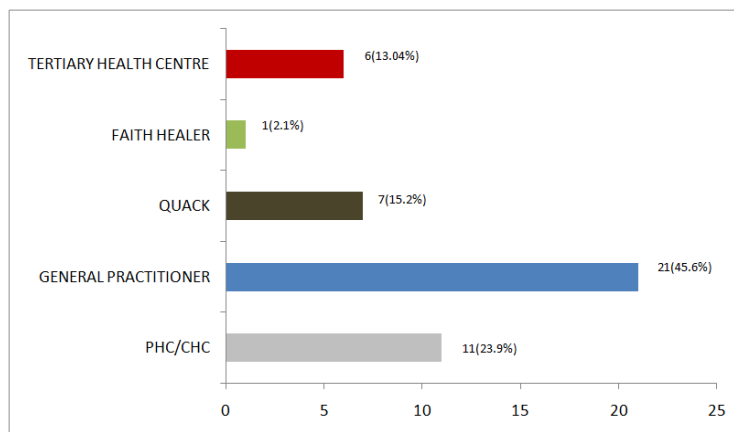
Duration of disease	No. of patients(n=46)	Percentage
<1 month	2	2.17%
1-6 months	2	2.17%
6m-1 year	5	10.86%
1-5 years	27	58.7%
>5 years	10	37%

Above table 2 shows that majority (80% of 46) of the patients were suffering from leprosy more than one year.



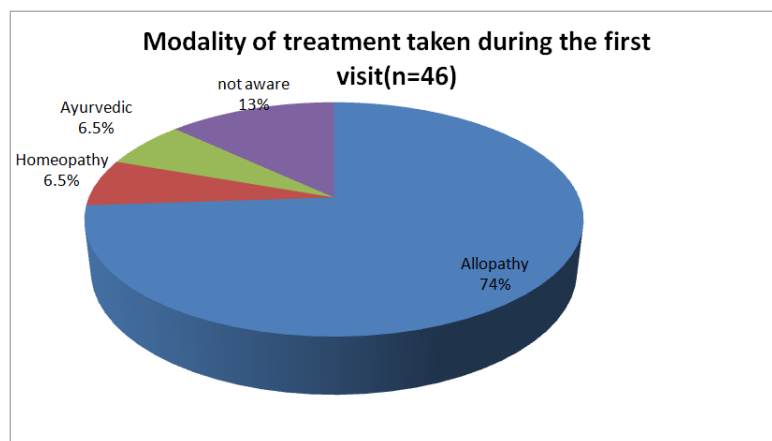
**Figure 1: Clinical Presentation [multiple response] (n=46).**

Above figure 1 shows majority of the patients had skin lesion with hypo/anaesthesia followed by nerve thickening, signs of reaction, deformity, trophic ulcer and anesthesia without skin lesion.



**Figure 2: First place of visit (n=46)**

Above figure 2 shows that most of the patients were visited first time to General Practitioner followed by govt. hospital, Quack. One patient was visited faith healer at first time.



**Figure 3: Modality of treatment taken during the first visit.**

Above figure 3 shows that majority (74% of 46) of the patients took mainly allopathic medicine. Few patients took homeopathic and ayurvedic medicine along with allopathic treatment.

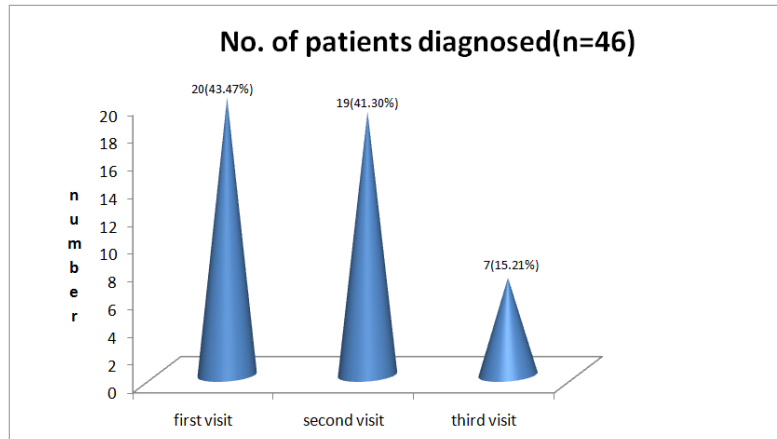


Figure 4: Patients diagnosed in different visits

Above figure shows that 20(43.7%) patients were diagnosed during the first visit. 26(56.5%) patients were diagnosed in second visit and third visit.

Table no. 3: Total No. of patients who took MDT

MDT taken	No. of patients	Percentage
Regularly	26	56.52%
Irregularly	11	23.91%
Newly started	09	19.56%

Out of 46 patients, 44 were multibacillary and only 2 were paucibacillary.

Above table 3 shows that out of 46 patients, 26 patients took MDT regularly, 11 were irregular in their treatment and 9 patients were newly started on MDT.

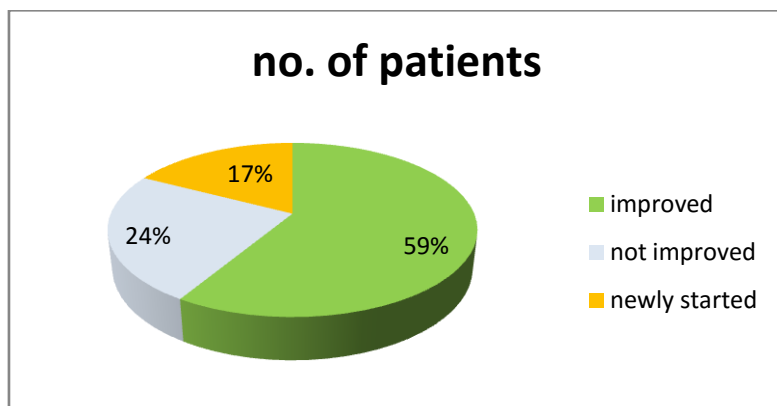


Figure 5: Improvement of Patients

Above figure shows that 59% patients improved after taking MDT. Most of them took MDT regularly. 24% patients did not improve due to irregularity in treatment.

Table no. 4: Reasons for delay in diagnosis

Reasons for delay	No. of response*by 46 patients	Percent
Unawareness & Ignorance	24	48%
Social Stigma	17	34%
Alternative therapy	6	12%
No delay	3	6%
Total response	50	100%

\*Multiple responses

Above table 4 reveals that main reason for delay in treatment was due to health seeking behavior i.e., low socio-economic status, myth & misconception, illiteracy and unawareness. Some patients had believed on alternative therapy.

**Consequences of leprosy:**

- 6 (13.04%) patients had family history of leprosy.
- 17 (37%) patients faced social stigma.
- Daily activities of 36(78.26%) patients were affected.
- Income of 27(58.7%) patients got affected.
- Education of children was affected in 26(56.52%) patients.

**IV. Discussion**

Despite leprosy is being inducted into a national programme since 1955, the prevalence in certain endemic areas of India remains higher than the national prevalence. Even though there have been advances in therapeutic options, there are still a lot of difficulties in the early detection of leprosy. There are so many factors responsible for delay in the diagnosis. There have been very few studies in India which focused on these issues. We conducted this study to identify the reasons for delay in diagnosis of leprosy in Jharkhand.

**Awareness Of Signs/Symptoms**

In our study, it was observed that awareness of signs/symptoms by the patient, skin alterations were noticed along with sensory impairment in 80% of the patients. Only 20% came with severe symptoms like ulcer, lepra reactions and deformity. Most of the patients ignored early symptoms due to their painless, quiescent nature and seek help only with onset of visible and bothersome complaints.

**Reasons For Delay**

In our study, 19(41.3%) patients did not have any knowledge about the disease. 5(10.86%) knew only the name of the disease and the remaining 21(45.65%) had other views about the disease like curse, myth, allergy, trauma etc. Only 1(2.17%) patient who was well educated and belonging to upper middle class knew about the exact cause of the disease and its complications. Socioeconomic status according to modified Kuppuswamy's index (2015) was as follows:- Lower class:- 13(28%), upper lower class:-22(47.8%), Lower middle class:- 6(13%), upper middle class :-5(10.9%). There were no patients from upper class. Most of the patients belonged to lower and upper lower class which suggested that lower the class, more the time taken for diagnosis. Higher the socio-economic class earlier was the diagnosis. Due to this delay and misdiagnosis, 14(30.43%) developed deformities. First contact with the health service was local practitioner (45.6%), PHC/CHC (23.9%), quacks (15.2%), faith healers (2.1%), and only 13.04 % came for tertiary care centers for diagnosis. Also many took home remedies like neem oil, alternative medicines like ayurvedic(6.5%) and homeopathy(6.5%). 13 % didn't avail any health service. In our study we found that the main reason for delay in treatment was due to unawareness & ignorance and social stigma. Some patients had adopted initially alternative therapy. Few patients responded there is not delay in treatment. Samraj et al., (2012) also explained that reasons for delay can be medical (painless and insidious initial symptoms), cognitive (lack of awareness, inadequate knowledge about treatment availability, ignorance, lack of motivation), socio economic (work constraints, reluctance to lose daily wages due to hospital visits), psychological due to (stigmas and denial)<sup>[6]</sup>.

**Point Of Diagnosis**

In our study, 43.47% were diagnosed in their first visit itself. Most of them were visited govt. hospital at first time. 41.30% were diagnosed in 2<sup>nd</sup> visit. 15.21% were diagnosed in their 3<sup>rd</sup> visit which added for the delay. 26 patients i.e., 56.5 % were misdiagnosed in their first visit. 22 patients (47.82%) were diagnosed after 1 year of symptoms and signs of leprosy. It clearly shows that there was delay in diagnosing the disease. A similar study conducted by Cacilda silva et al, (2003) showed that 55% were diagnosed after 1 year of signs/symptoms and 54 % developed deformities<sup>[7]</sup>. In study of Furen Zhang et al., (2009) explained 43.2% patients were developed deformities due to delay of treatment and 44% patients were misdiagnosed in first visit<sup>[8]</sup>.

**V. Conclusion**

This study concludes that main reason of delay in diagnosis of Leprosy patients is that they had not reached to right place in right time due to illiteracy, unawareness, ignorance, low socio economic status(SES) and social stigma about this disease.

## **VI. Recommendation**

Reasons of delay in diagnosis of leprosy must be addressed in National leprosy Eradication Programme (NLEP). There is a need for educational activities in primary schools and colleges. Mass media tools need to be adequately utilized. Mobile phone which has revolutionized mass communication is a wonderful tool in spreading awareness about the disease through social media.

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