Clinico-epidemiological pattern of determinants of visible disabilities among patients affected with leprosy in Raipur district, Chhattisgarh

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INTRODUCTION

Disability or physical impairment in leprosy is usually due to nerve damage resulting from the chronic granulomatous inflammation caused by mycobacterium leprae.1 15% of the world’s population has some form of disability.2 Leprosy is also one of the cause of disability which is preventable if it is identified earlier.3 Widespread implementation of MDT has been extremely successful strategies for leprosy control across the world including India. Out of 36 states or UTs, one state (Chhattisgarh) and one U.T. (Dadra and Nagar Haveli) are yet to achieve elimination.4 Identifying the causes of delay in presentation remains a matter of concern. Hence the present study was conducted with an objective to assess the clinico-epidemiological pattern of determinants of Leprosy patients with visible disabilities (Grade II disability) in Raipur District of Chhattisgarh.

METHODS

Study design: A community based cross-sectional study.
Inclusion criteria

All newly diagnosed leprosy patients with visible disabilities (grade II disability) registered between 1st April 2016 to 31st March 2017 (financial year) of Raipur district were included.

Exclusion criteria

Patients who had migrated from their actual address, patients who did not consent to participate in the study and patients who were critically ill were excluded.

Study duration

The study was conducted between August 2017- October 2019.

Sample size

All (87) newly diagnosed leprosy cases with grade II disability registered during the financial year 1st April 2016 till 31st March 2017,

Study area

All the 4 blocks of Raipur district of, Chhattisgarh (Arang, Tilda, Abhanpur, Dharsiwa)

Study tool and data collection

A pre designed, pre tested, semi structured questionnaires consisting clinico-epidemiological profile, clinical history and clinical examination. After obtaining ethical clearance from the institute’s ethical committee; list of enrolled patients was obtained from District leprosy office, Raipur. These patients tracked in the community by treatment card address and their telephone numbers. After obtaining informed consent from patients, necessary clinical history was elicited followed by clinical examination.

Delay in diagnosis

It is the time from the patient’s first visit to a health care facility till diagnosis. A period of 180 days was chosen as maximum acceptable delay’, and defined as a cut-off point for longer patient delay.

Treatment outcomes

Completed: When MDT treatment for PB patient in 6 month or in 9 month and for MB patients in 12 month or 18 months.

Defaulter: Whenever missed dose for PB patient more than three months and for MB patient more than 6 months declared as defaulter.

Relapse: Re-occurrence of the disease at any time after the completion of a full course of treatment.

Ethical approval

Ethical Committee Pt. J.N.M. Medical College, Raipur, Chhattisgarh.

Study analysis

Data collected was entered and compiled in Microsoft excel 2007. After checking its completeness and correctness data were analyzed using SPSS software version 17.0.

RESULTS

Out of all 87 study participants included in this study, 64.6% were male, 37.9% were >44 years (mean 39.79±14.25 years), 89.7% were married, majority (71.3%) were literate. 50.6% were from rural residents with majority (73.6%) from other backward castes. Many (43.7%) belonged from middle class socioeconomic status as per the modified B. G Prasad classification (Table 1).

Table 1: Distribution of students according to their socio-demographic characteristics.

| Socio-demographic variables | Study subjects |          |
|-----------------------------|----------------|----------|
|                             | Frequency      | %        |
| Age group (in years)        |                |          |
| <15                         | 2              | 2.3      |
| 15-29                       | 20             | 23       |
| 30-44                       | 32             | 36.8     |
| >44                         | 33             | 37.9     |
| Mean year of age = 39.79±14.25 |                |          |
| Sex                         |                |          |
| Male                        | 56             | 64.4     |
| Female                      | 31             | 35.6     |
| Category                    |                |          |
| Unreserved                  | 8              | 9.2      |
| Other backward caste        | 64             | 73.6     |
| Schedule caste              | 11             | 12.6     |
| Schedule tribes             | 4              | 4.6      |

Continued.
| Socio-demographic variables          | Study subjects |
|-------------------------------------|----------------|
| **Marital status**                  |                |
| Married                             | 78 89.7        |
| Unmarried                           | 7 8            |
| Separated                           | 2 2.3          |
| **Educational status**              |                |
| Illiterate                          | 25 28.7        |
| Up to primary                       | 19 21.8        |
| Up to middle                        | 22 25.3        |
| Up to higher                        | 19 21.8        |
| Up to graduate and above            | 2 2.3          |
| **Place of resident**               |                |
| Rural                               | 44 50.6        |
| Urban                               | 43 49.4        |
| **Socio-economic status**           |                |
| Upper class (≥6254)                 | 3 3.4          |
| Upper middle class (3127-6253)      | 15 17.2        |
| Middle class (1876-3126)            | 38 43.7        |
| Lower middle class (938-1875)       | 26 29.9        |
| Lower class (<938)                  | 5 5.7          |
| Total                               | 87 100         |

Table 2: Distribution of clinical presentation of study subjects during treatment and following treatment (n=87).

| Variables                          | Study subjects |
|------------------------------------|----------------|
| **Variables**                      |                |
| Types of leprosy                   |                |
| Pauci-bacillary                    | 8 9.2          |
| Multi-bacillary                    | 79 90.8        |
| **H/o lepra reaction**             |                |
| Present                            | 28 32.2        |
| Absent                             | 59 67.8        |
| Occurrence of lepra reaction (n=28) |                |
| Before                             | 14 50          |
| During treatment                   | 7 25           |
| After                              | 7 25           |
| **Type of lepra reaction (n=28)**  |                |
| Type I                             | 7 25           |
| Type II                            | 21 75          |
| **MDT taken under supervision**    |                |
| Yes                                | 33 37.9        |
| No                                 | 54 62.1        |
| **Examined by doctor on subsequent visits** |                |
| Yes                                | 33 37.9        |
| No                                 | 54 62.1        |
| **Treatment outcomes**             |                |
| Completed                          | 76 87.4        |
| Defaulter                          | 11 12.6        |
| Total                              | 87 100         |

Table 3: Distribution of health seeking behaviour of study subjects (n=87).

| Variables                                      | Study subjects |
|------------------------------------------------|----------------|
| **1st health facility visited by study subjects** |                |
| Government health facility                     | 34 39.1        |
| Faith healers                                  | 5 5.7          |
| Private practitioners                           | 41 47.1        |
| Quack                                          | 7 8            |
| **Health facilities where diagnosis was made** |                |
| AIIMS                                           | 1 1.1          |
| Community health centre                         | 23 26.4        |
| District hospital                               | 28 32.2        |
| Primary health centre                           | 10 11.5        |
| Private hospital                                | 2 2.3          |
| RLTRI                                           | 23 26.4        |
| **Appearance of 1st symptoms & diagnosis**     |                |
| ≤6 months                                       | 27 31           |
| >6 months                                       | 60 69           |
| Mean= 14.59±11.87                              |                |

Continued.
Almost all (90.8%) were multi-bacillary leprosy. 32.3% experienced lepra reaction, of them 50% prior to the starting treatment followed and 25% each during and after the completion of treatment respectively. 62.1% were neither received supervised 1st dose nor were examined by a health professional or doctor. But 87.4% subjects were able to complete their treatment on time (Table 2).

Most common symptom noticed were deformities (28.7%) followed by patches (25.3%), sensory loss (23%), ulcerations (17.2%), lepra reactions (16.1%) and tingling (3.4%) (Figure 1).

More than half (56.3%) were seeking health care by visiting various health facility, (40.2%) didn’t do anything and (2.3%) subjects self-medicated after noticing the 1st sign and symptoms (Figure 2).

43.7% visited government health facilities 47.1% to private dispensaries, 8% visited quacks and 1.1% visited faith healers. Almost all the subjects were diagnosed in public health facilities. Almost 2/3rd (69%) of study subjects were diagnosed more than 6 months after the appearance of 1st symptom with a mean duration of 14.59±11.87 months. 2/3rd study subjects were neither followed up by health facilities (staff or professionals) nor the study subject him/herself showed up for follow up after the completion of treatment. Majority of study subjects had two finger claws (55.25%), followed by 24.1% four finger claws, 16.1% ulcer in foots, 8% wounds in foot, 8% foot drops, 3.4% lagopthlamia, 2.3% ulcer in hand, 2.3% claw toes, 2.3% resorption of toes and 1.1% resorption of finger (Table 3).
Most commonly involved in study subjects was ulnar nerve followed by posterior tibial nerve 35.6%, lateral popliteal nerve 31%, radial 2.3% and trigeminal nerve 1.1% (Figure 4).

The commonest cause for delayed in seeking health care or delayed in diagnosis was ignorance (94.3%), while (17.2%) were delayed because of negligence of health professional’s or (17.2%) by taking alternative therapies by study subjects followed by (9.2%) due to their socio-economic conditions (Figure 3).

**DISCUSSION**

In the present study 64.4% were male, similar finding was also reported by Raghavendra et al reported, 78% were males.5 In present study 90.8% had the multi-bacillary leprosy which was little less 63-69% proportion in similar study reported by Ghoshal et al and Arora et al.6 7 28.7% study subjects noticed deformities as 1st symptom noticed followed by patch, sensory loss, ulcer, lepra reactions and tingling respectively contradicts to this, Zhang et al has noticed tingling; sensation or numbness preceding the patch an early symptom of leprosy.8 9 47.1% study subjects after the appearance of the first symptom visited private health facilities (private sector). Similar observation were made by Balegar et al that first contact for seeking care through local practitioner, PHC/CHC, quacks, faith healers.9 Present study revealed that ignorance by patient was the commonest reason for delayed in seeking care and for diagnosis, similar observation was reported by Doshi et al reason for the delay in care was due to unawareness and ignorance and social stigma in similar kind of study.10

In the current study ulnar nerve was the commonest affected nerve and similar observations noticed by various authors by Bombay leprosy project clinics Mumbai, Maharashtra where majority (65.22%) of study participants had showed ulnar nerve involvement e.g. two-finger claws, Jain et al observed 60% claw hand and Naik et al reported anesthesia in the palm, Chavan et al reported ulcer showed at ulnar nerve involvement as primary nerve.11 14

**CONCLUSION**

Although we are in the era of eradication of Leprosy but the current study has observed many gaps in patient care viz. Lack of supervision of treatment, follow up examination, and assessment of disability during course of care.

Active surveillance of hidden causes in the Community, capacity building, and hands-on training of front-line public health care providers is recommended so that early diagnosis and treatment will be ensured and hence disability can be minimized. Despite of availability of free of cost diagnosis and treatment for leprosy instead of that significant number of cases visiting private health facility was observed. The author specially recommends strong advocacy for patient’s follow up and monitoring by provision of impairment cards along with the treatment card at the beginning to ensure rehabilitative services.

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