



**“PREVALENCE AND SEVERITY OF PERIODONTAL DISEASE AMONG LEPROSY PATIENTS IN WEST BENGAL STATE, INDIA - A CROSS SECTIONAL SURVEY.”**

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**ABSTRACT**

**Introduction:** Leprosy is one of the world's oldest and most dreaded diseases that have tormented humans throughout history, leaving lasting impressions on religion, literature and art. This study is thus undertaken with the objective of assessing the severity of periodontal diseases among subjects afflicted with leprosy in the state of West Bengal.

**Methodology:** A Cross-sectional descriptive epidemiological study was conducted among 350 subjects drawn from across the state of West Bengal, India. Data was collected by using a specially designed proforma. Results: Clinical examination for periodontal diseases showed that majority of the subjects were suffering from periodontal diseases, the severity of periodontal disease was Lepromatous type of leprosy followed by Tuberculoid type, the least affected was the Pure Neuritic type.

**Conclusion:** The present shows that the oral disease burden especially periodontal diseases is more on this community.

**KEYWORDS :** Periodontal disease, Leprosy, Periodontal status, Lepers oral health.

**Introduction:-**

Leprosy, Hansen's disease or Hanseniasis, described by the Chinese in 600 BC and currently affects roughly 10–12 million people worldwide<sup>[1]</sup> It is one of the world's oldest and most dreaded diseases that have tormented humans throughout history, leaving lasting impressions on religion, literature and art.<sup>[2]</sup>

Leprosy is a chronic infectious disease with interpersonal transmission caused by *Mycobacterium Leprae*, a microorganism that has an affinity for the skin and peripheral nerves and, in more advanced stages affects internal organs and mucous membranes, with a high potential for causing physical disability.<sup>[3]</sup> Thus it destroys not only the body, but also the soul. However, ten countries still represent the major part of the global burden of the disease. These are Angola, Brazil, Central African Republic, Congo, India, Liberia, Madagascar, Mozambique, Nepal, and the United Republic of Tanzania. With variable prevalence, India and Brazil are respectively the first and second countries with the highest number of leprosy cases.<sup>[4]</sup>

The Pan American Health Organization (PAHO) includes leprosy in the group of neglected diseases and other poverty-related infections, and considers it a public health problem. Discovery of Dapsone in 1941 and later implementation of multi drug treatment (MDT) in 1982 changed the entire scenario.<sup>[5]</sup>

The scenario as on, in 2014, is 215,656 new cases of leprosy were detected and the registered prevalence at the beginning of 2014 was 180,618 cases. And in India it is highest in the four respective states – West Bengal, Maharashtra, UP and Bihar.<sup>[5]</sup>

Right from biblical times leprosy has been portrayed as a highly contagious disease, inflicted as a result of sin. Thus, the patients are prohibited from participating in the social and economic activities of the community, they become fearful, withdrawn, and isolated and lose self-confidence and self-respect. It is difficult to imagine a socially created status more damaging to self-esteem than that of leprosy (Brand, 1995; Covey, 2001).<sup>[6-7]</sup>

Periodontal disease, which results in loss of periodontal attachment and resorption of alveolar bone, is one of the major causes of tooth loss in adults.<sup>[8]</sup>

This study is thus undertaken with the objective of assessing the severity of periodontal diseases among subjects afflicted with leprosy in the state of West Bengal.

**METHODOLOGY:-**

A Cross-sectional descriptive epidemiological study was conducted among Subjects affected with leprosy (irrespective of the stage) drawn from across the state of West Bengal, India. Ethical clearance was obtained from the institutional review board and permission to conduct the study was obtained from the concerned authorities. Based on previous studies with a higher expected prevalence the sample size estimated was around 350.

**Inclusion criteria-** Willing participants, with an informed consent, affected with leprosy from across the state of West Bengal.

**Exclusion criteria-** Subjects with congenital deformities and systemic conditions not favoring clinical examination.

The study was scheduled over a period of six months (Nov 2015–April 2016). Before the pilot study the examiner was calibrated for recording the periodontal status. A pilot study was conducted to check for the feasibility and infection control procedures.

The data was collected by the investigator himself on a specially designed proforma containing two parts.

Part A- Recorded the basic demography of the subjects

Part B - For recording the severity of periodontal disease using CPI Index.

Clinical examination was carried out using a mouth mirror and CPI probe.

**STATISTICAL ANALYSIS:-**

Statistical analysis was performed through SPSS version 21. Descriptive data was recorded; Chi-square and ANOVA were conducted to test significance of the findings. p value is set at  $\leq 0.05$

**RESULTS:-**

Three hundred and fifty patients were evaluated, 292 (83.4%) were male and 58 (16.5%) were female, with ages ranging from 18 to 77 years. However, most of the patients (70%) were between 40-77 years.

Analysis of socioeconomic status revealed that 284 (81.1%) belonged to upper-lower class, 56(16%) belonged to lower-middle class and 10(2.85%) belonged to lower class, statistically significant difference was observed among various age groups and socioeconomic status, as shown in Table no: 1.

The different types of Leprosy diseases in this study were Lepromatous cases 127(36.2%), Intermediate cases 103(29.4%), Pure neuritic cases 69(19.7%), Tuberculoid cases 43(12.2%) and cases were Borderline lepromatous 8(2.28%).

Familial history of leprosy was observed in 77 (22%) cases, whereas in 273(78%) cases family history was not observed. as shown in Table no: 2.

Clinical examination for the severity of periodontal diseases showed that majority of the subjects were suffering from periodontal diseases, the severity of periodontal disease was Lepromatous type of leprosy followed by Tuberculoid type, the least affected was the Pure Neuritic type as shown in Table no: 3.

**Table 1: Descriptive statistics showing demographic details of subjects affected from Leprosy**

Sl. no	Basic demographic factors	No of respondents	% respondents	Mean	SD	P value
<b>AGE</b>						
1.	18-38	35	10	40.7	5.0	<.0001
2.	39-58	129	36.85	33.15	8.8	
3.	59-75	186	53.14	24.5	3.14	
<b>GENDER :-</b>						
1.	Male	292	83.4	33.04	8.8	0.72
2.	Female	58	16.5	33.4	8.1	
<b>S.E.S SCORE:-</b>						
1.	Lower - middle class	56	16	33.4	8.5	0.053
2.	Upper – lower class	284	81.1	39.8	3.5	
3.	Lower class	10	2.85	32.6	9.6	

**Table no 2: Descriptive statistics showing types, history and status among subjects affected from Leprosy**

Sl. No	Factors	No of respondents	% respondents	mean	SD	P value
<b>FAMILY HISTORY:-</b>						
1.	Yes	77	22	32.7	8.6	0.18
2.	No	273	78	34.2	9.1	
<b>TYPES OF LEPROSY:-</b>						
1.	Indeterminate	103	29.4	32.9	9.0	0.68
2.	Tuberculoid	43	12.2	33.3	8.6	
3.	Borderline	8	2.28	31.1	13.0	
4.	Lepromatous	127	36.2	32.6	8.2	
5.	Pure neuritic	69	19.7	34.3	8.7	

**Table no 3: Descriptive statistics showing the mean score of CPI in subjects affected from various types of Leprosy**

	Indeterminate	Tuberculoid	Borderline	Lepromatous	Pure Neuritic
Mean number of Healthy sextants	3.1±1.2	2.6±1.2	2.9±1.3	1.9±1.2	3.2±0.84
Mean number of sextants with bleeding	1.8±0.9	1.2±0.6	0.8±1.0	3.2±1.0	1.2±0.64
Mean number of sextants with shallow pockets	1.2±0.96	0.9±0.3	---	1.6±1.2	---
Mean number of sextants with deep pockets	0.6±0.9	0.7±0.2	---	0.9±0.3	---

**DISCUSSION**

Leprosy is a chronic infectious disease caused by Mycobacterium leprae, an acid-fast, rod-shaped bacillus. The disease mainly affects the skin, the peripheral nerves, mucosa of the upper respiratory tract, and the eyes. In addition to the physical effects of the diseases, patients have also suffered several social stigma and ostracism from their families, communities, and even health professionals to such extent that leprosy has been known since ancient times as 'the death before death'. It is a disease that destroys not only the body, but also the soul. According to Bainsan and Van den Borne (1998) and Antony and

Broota (1991),<sup>[9-10]</sup> the emotional turmoil that the leprosy sufferer experiences is intensified by the adverse reactions of the community, as the patients are prohibited from participating in the social and economic activities of the community, they become fearful, withdrawn, and isolated and lose self-confidence and self-respect. It is difficult to imagine a socially created status more damaging to self-esteem than that of leprosy (Brand, 1995; Covey, 2001).<sup>[6-7]</sup>

Of the 213 899 (two hundred thirteen thousand eight hundred ninety nine) leprosy cases reported in 2014, 94% came from just 13 countries. These countries are Bangladesh, Brazil, Democratic Republic of Congo, Ethiopia, India, Indonesia, Madagascar, Myanmar, Nepal, Nigeria, the Philippines, Sri Lanka and Tanzania.

Among these 13 countries India is contributing the largest number of leprosy cases. India accounts for two-thirds of the new leprosy cases detected annually. And therefore, WHO had launched the Global Leprosy Strategy in India, on 20th April, 2016 at New Delhi, India. And in India it is highest in the four respective states – West Bengal, Maharashtra, UP and Bihar.

Patients affected from leprosy have not only suffered from physical disabilities but also suffered from several social stigma and ostracism.

This study was thus undertaken with the objective of assessing the severity of periodontal diseases among subjects afflicted with leprosy.

The results in this study indicated that the burden of periodontal disease is very high among these subject. Majority of the patients was found to have chronic periodontitis. Poor oral health and periodontal status was also reported in these patients in the study done by Núñez-Martí *et al.* in 2004.<sup>[11]</sup>

In the present study, the periodontal disease severity is very high and it was the most common reason reported for tooth loss in the edentulous subjects or subjects with tooth mobility. This can be due to poor oral hygiene conditions and compromised immunity.

**CONCLUSION:**

The present shows that the oral disease burden especially periodontal diseases is more on this community. Various preventive and curative oral health programs should be planned for them. Awareness about the oral health problems and reinforcement of oral hygiene should be insisted to the leprosy patients to prevent further morbidity.

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