

Hansen's Disease: Still a Burden in Post Elimination Era

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Despite the multidrug regimen, Hansen's disease still remains a public health scourge. The present study aims to study the epidemiological and clinical trends of Hansen's disease in a tertiary care center for a period of 1 year. A cross sectional study was carried out in the outpatient department of the institute for a period of 1 year from July 2020 to June 2021 and all leprosy cases were included in the study. The patients were examined thoroughly, and the diagnosis was done using WHO criteria. The nerves involved, lepra reactions were identified and disability was graded using WHO grading. Out of 62 patients, maximum number of patients (15 patients) were in the 21-30 years age group (24.2%). The most common type of leprosy was borderline lepromatous leprosy (32.25%) and nerve enlarged was the ulnar nerve (63.9%). As per WHO classification, 51(82.25%) cases were classified as MB and 11(17.7%) cases as PB. Among these 62 patients 25 (40%) were slit skin smear positive for AFB. A total of 18 patients (29.03%) presented with lepra reactions of which 10 presented with type 1 and 8 with type 2 reactions. A total of 25 patients (40.32%) presented with deformities which shows delayed diagnosis and inadequate timely treatment of disease and its complications. Our data shows that only 13% of cases reported within one year of noticing the symptoms. Community based studies are required to understand the reasons for such a situation in this area. Efforts must be made to prevent its spread, promote early detection, ensure proper treatment, and maintain patient follow-up.

Keywords : Leprosy, Disability, Reactions, South India

Introduction

India declared elimination of leprosy as a public health problem after achieving a nationwide prevalence of less than 1 case/10,000 population in December 2005 which it had targeted earlier (Dhillon & Barkakaty 2004). At present, in spite of availability and implementation of an effective multidrug therapy for more than 30 years and attainment of elimination at global level (WHO 2002), India continues to have a high share of 58.8% of the world leprosy population (WHO

2014, Global leprosy update). The South-East Asia Region (SEAR) accounted for 71% of the new leprosy cases globally at the end of 2018, with India and Indonesia contributing 92% of the region's case load (Khurana 2020).

Although Karnataka is considered a low endemic state for leprosy, according to a newspaper (The Hindu) write up, the prevalence rate in the five districts of Raichur, Ballari, Uttara Kannada, Dharwad, and Chamarajanagar continued to be higher than the national average with 74% being

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multibacillary (Yasmeen 2021). This news needs to be analyzed with reference to state figures and validated on the ground by community-based studies.

The number of new cases reported in the year 2019-2020 was 73 and 27 new cases were reported in the year 2020-2021, according to data from the Shimoga District Leprosy Office. The reduction in number of cases was mainly due to COVID 19 pandemic, during which cases were under reported. Although the prevalence tends to be low in Shimoga, there are pockets of endemicity in few locations, such as one taluk of the district where approximately half of the cases are documented. Even after elimination of leprosy, although the number of cases has drastically gone down, the active transmission of infection has remained unchanged as is apparent from the data obtained from the leprosy centres. As the trend of self-reported/ referred cases can be indicator of ground situation in the area, the current study was carried out to analyse the clinico epidemiological trends of Hansen's disease from our tertiary care center.

Materials and Methods

This was a cross sectional study done in the outpatient department of Department of

Dermatology, Venereology and Leprosy, McGann Hospital, Shimoga Institute of Medical Sciences, Karnataka, India. All the leprosy cases visiting the hospital during the period between July 2020 to June 2021 were included in the study. The diagnosis and classification of leprosy clinical types were made using the criteria of IAL (1982) and Ridley & Jopling (1966). These were classified into multibacillary (MB) and paucibacillary types as per World Health Organization operational definitions (WHO 2018) classification. After obtaining informed consent from patients, demographic details were collected. A thorough clinical examination was done, reactions were identified, managed and disability was graded using WHO disability grading (Brandsma & van Brakel 2003). Socioeconomic status was measured by modified BG Prasad criteria (Majhi & Bhatnagar 2021). Duration between first symptom and diagnosis and contact history was also elicited.

Results

A total of 62 patients (old and fresh) attended the OPD during the study period. The maximum disease burden (15 patients) was seen in the 20-30 years age group which accounts for 24.2% and least in 4 patients (6.4%) aged 11-20 years

Table 1: Age wise distribution of study population.

Age group	No	Percentage
<10	0	-
11-20	4	6.4%
21-30	15	24.2%
31-40	13	20.9%
41-50	13	20.9%
51-60	10	16.12%
>60	7	11.2%
Total	62	

SOCIO ECONOMIC STATUS - MODIFIED BG PRASAD CLASSIFICATION

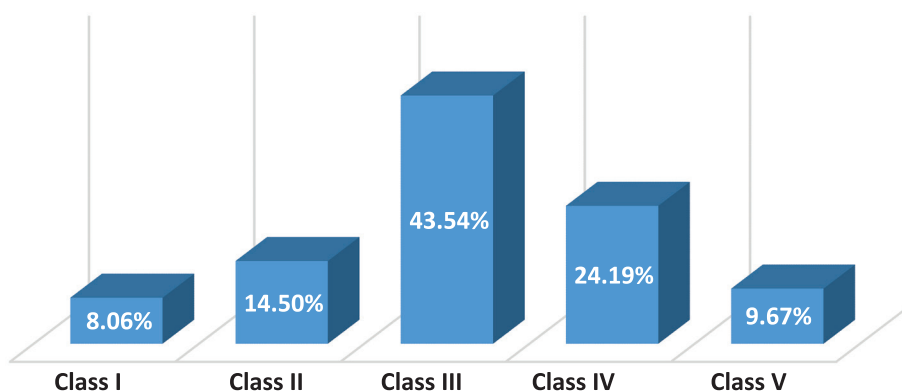


Fig 1 : Classification based on socio economic status.

Table 2 : Clinical profile of leprosy in study population.

Type	Male	Female	TOTAL	%
TT	7	3	10	16.12%
BT	11	6	17	27.41%
BB	1	1	2	3.22%
BL	16	4	20	32.25%
LL	6	3	9	14.51%
Others (Histoid & Pure neuritic type)	4		4	6.45%
Total	45	17	62	

(Table 1). Male to Female ratio was found to be 2.6:1. Contact history was present in 12 patients accounting for 19.35%.

Based on Socio-economic status, maximum patients (27 patients) fall in class III (43.5%) and least number of patients (5 patients) fall in class I (8.06%) of modified BG Prasad classification (Fig 1)

Out of 62 patients, based on number of lesions, 22 patients presented with 1-5 lesions (35.48%), 21 patients presented with 10-20 lesions

(33.87%), 13 patients presented with >20 lesions (20.96%) and 6 patients presented with 5-10 lesions (9.67%).

The most common type of leprosy was borderline lepromatous leprosy seen in 20 patients, accounting for 32.25%. histoid leprosy and pure neuritic leprosy constituted 4.8% and 1.6% cases respectively (Table 2).

Out of 62 patients, 38 cases were old cases accounting for 61.29% and 24 cases were new cases (38.70%).

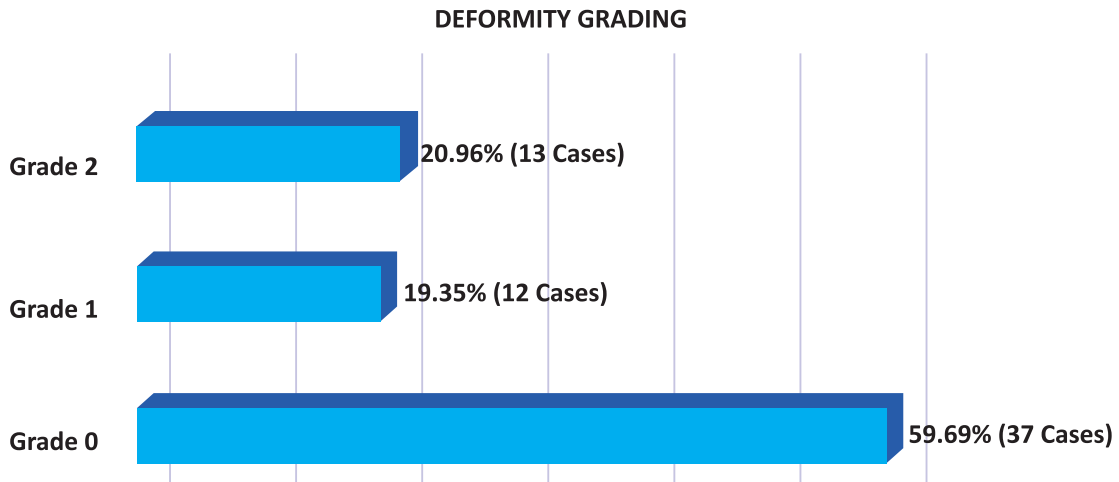


Fig 2 : WHO grading of deformities.

Of 62 patients, 25 patients had positive slit skin smear (40.32%). 9 patients had 6+, 12 had 5+, 2 had 4+ 1 had 3+ and 1 had 2+.

Based on gap between onset of 1st symptom to diagnosis, 29 patients presented between 1 year to 2 year duration (46.77%), 21 patients between 2-5 years (33.87%), 6 patients presented from 2 months to 1 year (9.67%), 4 patients presented > 5 years (6.45%) and 2 patients presented <2 months of duration (3.22%). Thus only 13% (9.67% + 3.22%) were diagnosed within one of them noticing any symptoms.

The most common nerve enlarged was the ulnar nerve (63.9%) followed by greater auricular nerve (36.1%), radial nerve (27.8%) and others. A total of 51 (82.25%) cases were classified as MB and 11 (17.7%) cases as PB.

A total of 18 patients (29.03%) presented with lepra reactions of which 10 presented with type 1 and 8 patients presented with type 2 reactions. A total of 25 patients presented with deformities (40.32%), 13 patients (20.96%) presented with

Grade 2 disability and 12 patients (19.35%) presented with Grade 1 disability (Fig. 2). The disability was 3 times higher in males as compared to females. The deformities in the hand were most common (50%) followed by feet (33.33%) and face (16.7%). The most common deformity was trophic ulcer of hands and feet followed by claw hand, wrist drop and foot drop. Of the total deformities, 10 patients (40%) presented with deformity at the time of diagnosis and 15 patients (60%) during the follow up.

Discussion

When leprosy was declared to be eliminated as a public health problem (prevalence < 1/10,000) from India in 2005, it was heralded as a golden chapter in the history of leprosy. But soon it was realized that the future was not as rosy as expected. The cases remained almost static and even showing an upward trend over the past one decade (Celine et al 2021). The Global Leprosy Strategy 2016-2020, "Accelerating towards a leprosy-free world", was officially launched

in April 2016 (WHO 2021a). In a country like India, effective contact tracing and utilization of health care facilities pose a practical problem in eradication of leprosy.

Recently, the WHO launched a new Global Leprosy Strategy 2021-2030, coined '*Towards Zero Leprosy*'. The concept of zero leprosy has been operationalized in 4 strategic pillars: (i) implement integrated, country-owned zero leprosy roadmaps in all endemic countries; (ii) scale-up of prevention alongside integrated active case detection; (iii) manage leprosy and its complications and prevent new disability; and (iv) combat stigma and ensure human rights are respected (WHO 2021b).

In the present study, a major section of patients (24.2%) were between 21 and 30 years of age whereas in other studies, majority of patients were in 20-40 years age group (Sirisha et al 2019, Vashisth et al 2021). Younger age groups are most affected in our study which can be attributed to increased exposure to disease. Though Karnataka has a lower prevalence rate of less than 1/10,000 population, the disease is still persisting and has an impact in the community. Male: female ratio is 2.6:1 in our study which is similar to other studies in literature (Patil & Sherkhane 2016, Tegta et al 2019).

Borderline lepromatous leprosy was the most common type constituting 32.25% patients correlating with some studies (Arif et al 2019), followed by borderline tuberculoid (BT) type which was 27.41%. Overall, in the last 30 years, many other studies have shown BT to be the commonest subtype on the clinical spectrum of Hansen's disease (Rao et al 2005, Mukherjee & Misra 1988). Higher proportion of BL cases in our study can be due to clustering of cases in our area and also based on individual immunity. Three patients had histoid leprosy accounting for about 4.8% which is high when compared with

the observations of Kaur et al (2009).

Contact history was present in 12 patients accounting for 19.35%, which is slightly lesser than earlier reports of around 30% (Patil & Sherkhane 2016, Tegta et al 2019). A total of 51(82.25%) patients were classified as MB leprosy which is higher than the global average but consistent with the recent studies (Sirisha et al 2019, Tegta et al 2019). A high proportion of MB cases in our study because of referral from nearby peripheral health centers where the cases with reactions and deformities cannot be properly taken care of.

Leprosy reactions were seen in 18 patients (29.03%), Type 1 reaction was more common than Type 2 reaction, which was contradictory to other studies where T2R was more common (Patil & Sherkhane 2016, Sirisha et al 2019, Tegta et al 2019). In the current scenario of leprosy elimination, lepra reactions (LRs) remain a major persistent problem. Type 1 LR (T1LR) and type 2 LR (T2LR) are the major causes of nerve damage and permanent disabilities. The immunopathogenesis of LR have recently become an important field of research since it may provide the relevant targets for the early detection and control of these episodes (Pandhi & Chhabra 2013).

G2D was seen here in 13 patients (20.96%) which is higher than the NLEP report for the year 2015-16. Similar to this study, many studies reports higher G2D rates (Patil & Sherkhane 2016, Sirisha et al 2019, Tegta et al 2019). Higher rates of G2D are due to delay in seeking health care facility, delay in diagnosis and treatment, also poor patient's compliance.

The changes in population demography, internal migration, and merging of urban-rural boundaries in developing countries are a few of the many factors attributed to the rise in leprosy cases recently (Murto et al 2013).

The challenge in this post elimination era is to contain the transmission of Leprosy. Hence early diagnosis and complete MDT treatment is required to reduce the transmission. Regular follow up is very much required for prevention of deformities. Also, research tools are required for detecting infection in early stage.

In the current study, both old and new cases were included. As the majority were old cases, no definite conclusions about trends can be drawn. Further, data cannot be extrapolated to situation in the community without carrying out actual studies.

Conclusions

The current study provides an insight into disease burden and also utilization of health services in a tertiary care hospital. The main reason for increased cases in this study can be due to social stigma, reduced awareness about the disease in general population and delay in diagnosis. Therefore, an integrated approach from the population and health system is required for containing the infection and to reduce the complications.

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References

1. Arif T, Amin SS, Adil M et al (2019). Leprosy in the post-elimination era: A clinico-epidemiological study from a northern Indian tertiary care hospital. *Acta Dermatovenerol Alp Pannonica Adriat.* **28(1)**: 7–10.
2. Brandsma JW, van Brakel WH (2003). WHO disability grading: Operational definitions. *Lepr Rev.* **74(4)**: 366-373.
3. Celine MI, Jaleel A, Palakkal S et al (2021). A clinicopathological and electrophysiological study of nerve involvement in leprosy in a tertiary care centre in South India. *Lepr Rev.* **92(3)**: 225–235.
4. Dhillon GP, Barkakaty BN (2004). National Leprosy Eradication Programme and progress towards elimination of leprosy in India. *J Indian Med Assoc.* **102(12)**: 674–676.
5. Indian Association of Leprologists (1982). The consensus classification of leprosy approved by the Indian Association of Leprologists. *Lepr India.* **54(1)**: 17-26.
6. Kaur I, Dogra S, De D et al (2009). Histoid leprosy: A retrospective study of 40 cases from India. *Brit J Dermatol.* **160(2)**: 305–310.
7. Khurana A (2020). Epidemiology and world distribution. In: Jopling's handbook of leprosy (K Sardana & A Khurana, Eds.), 6th edition, CBS Publishers & Distributors, New Delhi, India, p3.
8. Majhi MM, Bhatnagar N (2021). Updated BG Prasad's classification for the year 2021. *J Family Med Primary Care.* **10(11)**: 4318-4319.
9. Mukherjee A, Misra RS (1988). Comparative histology of skin and nerve granulomas in leprosy patients. *Lepr Rev.* **59(2)**: 177–180.
10. Murto C, Chammartin F, Schwarz K et al (2013). Patterns of migration and risks associated with leprosy among migrants in Maranhao, Brazil. *PLOS Negl Trop Dis.* **7(9)**: e2422.
11. Pandhi D, Chhabra N (2013). New insights in the pathogenesis of type 1 and type 2 lepra reaction. *Indian J Dermatol Venereol Leprol.* **79(6)**: 739–749.
12. Patil AA, Sherkhane MS (2016). Clinico-epidemiological study of Hansen's disease patients attending a tertiary care centre in South India. *Int J Commun Med Publ Health.* **3(11)**: 3092–3095.
13. Rao PN, Sujai S, Srinivas D et al (2005). Comparison of two systems of classification of leprosy based on number of skin lesions and number of body areas involved - A clinicopathological concordance study. *Indian J Dermatol Venereol Leprol.* **71(1)**: 14–19.
14. Ridley DS, Jopling JH (1966). Classification of leprosy according to immunity. *Int J Lepr other Mycobact Dis.* **34(3)**: 255-273.

15. Sirisha NL, Sangem S, Kumar AS et al (2019). Clinico epidemiological study of Hansen's disease (leprosy) in patients attending government general hospital, Kadapa. *Indian J Appl Res.* **9 (12)**: December 2019.
16. Tegta GR, Verma GK, Verma K et al (2019). A clinico-epidemiological scenario of leprosy at a tertiary care centre in sub-Himalayan region: A seven year retrospective study. *Indian J Lepr.* **91**: 7–16.
17. Vashisht D, Shankar P, Pathania V et al (2021). A retrospective clinico-epidemiological study of leprosy cases treated at a tertiary care hospital in Western Maharashtra. *Med J Dr DY Patil Vidyap.* **14(4)**: 385-391.
18. World Health Organization (2002). Global target attained. Remaining endemic countries pose greatest challenge [Press release]. *Western History Association/2.* (May 16, 2002). World Health Organization.
19. WHO (2015). Global leprosy update, 2014: Need for early case detection. *Releve Epidemiolog Hebd.* **90(36)**: 461–474.
20. WHO (2018). Guidelines for the diagnosis, treatment and prevention of leprosy. WHO South East Asia Regional Office, New Delhi.
21. World Health Organization (2021a). *Towards zero leprosy: Global Leprosy (Hansen's disease) Strategy 2021–2030.* World Health Organization. <http://www.jstor.org/stable/resrep38997>
22. World Health Organization (2021b). *Towards zero leprosy. Global leprosy strategy 2021–2030.* WHO Regional Office for South-East Asia.
23. Yasmeen A (2021). Leprosy rate in five districts higher than national average. (<http://www.the-hindu.com/news/national/karnataka/Leprosy-rate-in-five-districtshigher-than-national-average/article19994486.ece>).

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