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Trends of Leprosy in Post Elimination Era in One of the Western Hilly Areas of Himachal Pradesh

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Over the past decade, the world has made considerable progress in the battle against leprosy. Though India announced the elimination of leprosy as a public health problem in December 2005, still wide variations exist in leprosy prevalence rates across the country. A retrospective, record-based study was carried out on all the patients registered in Leprosy Care Unit; of Kangra district, one of the western districts of Himachal Pradesh from 2011 to 2021. Descriptive statistics and Pearson's chi-square test was used for the analysis of collected data, and to ascertain the associations between variables. A total of 252 patients were registered at this hospital over a ten-year period with male preponderance. Mean age of the cases was 43.49±16.27 years with the youngest being 10 years and oldest being 90 years. Multibacillary cases outnumbered (88%) the paucibacillary cases. 42% of new cases had grade 1 disability whereas 18% had grade 2 disabilities. Age and gender were found to be significant factors associated with disability. A mortality rate of 1.6% was also observed. Despite advances in all spheres of medical science, leprosy continues to be a public health challenge in countries like India. Our findings highlight the need for implementation of sustained effective measures for early diagnosis and treatment of leprosy, while improving awareness to ensure appropriate health-seeking behavior.

Keywords : Leprosy, Multibacillary, Paucibacillary, Disability, Trends, Himachal Pradesh, India

Introduction

Leprosy, also known as Hansen's disease, is classified by World Health Organization (WHO) as one of twenty Neglected Tropical Diseases (NTDs). Like other NTDs, its occurrence is often

related to poor socio-economic conditions. It is a communicable disease caused by *Mycobacterium leprae* (*M. leprae*), a slow growing mycobacterium, manifesting as damage to the skin and peripheral nerves with a long

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incubation period. It has been classified by the World Health Organization as Paucibacillary disease and multibacillary disease depending on the number of lesions (World Health Organization 2020). In addition to the physical consequences of leprosy, social stigmatization also remains a challenge for many persons affected by leprosy (Bharti et al 2019, Van't Noordende et al 2019).

WHO global strategy 2016-2020 focused on the "elimination of leprosy as a public health problem", defined as less than one case on treatment per 10,000 population (World Health Organization 2020), while the new global strategy 2021-2030 strategy focuses on interrupting transmission and achieving zero autochthonous cases (World Health Organization 2021). The Global Leprosy Strategy 2021–2030 is one of the disease-specific strategies underpinning the WHO Road map for NTDs 2021–2030. As per this strategy, WHO 2030 global targets include 120 countries reporting zero new autochthonous cases, 70% reduction in the annual number of new cases detected, 90% reduction in rate per million populations of new cases with grade 2 disability, 90% reduction in rate per million children of new child cases with leprosy. There were 2,02,256 new leprosy cases registered globally in 2019, according to official figures from 161 countries from the 6 WHO Regions (Department of Health & Family Welfare, Government of India 2021-22, World Health Organization 2021).

In India, National Leprosy Control Programme (NLCP) was launched by the Government of India in 1954-55, and the National Leprosy Eradication Programme (NLEP), a centrally sponsored programme, was introduced in 1983 with the mission to provide quality leprosy services free of cost to all sections of the population. The main aim of NLEP is to provide technical and financial assistance to states for all activities related to the case detection, diagnosis, treatment and

post-treatment care of persons affected by this disease. The programme is also supported by WHO, ILEP, and a few other Non-Governmental Organizations (NGOs). Due to their efforts, India has succeeded with the implementation of MDT in bringing the national prevalence down from a prevalence rate of 57.8/10,000 in 1983 to less than 1/10,000 in December 2005 (Directorate General of Health Services Ministry of Health & Family Welfare 2020). Himachal Pradesh already attained the goal of eliminating leprosy in 2002, and since then, the prevalence rate has been less than one in 10,000. Also, for the last five years, the leprosy prevalence rate in Himachal has hovered around 0.2 per 10,000 (Dhillon 2020, National Health Mission 2009). Despite advances in all spheres of medical science, leprosy continues to be a public health challenge in countries like India. In the year 2020, 50505 cases were detected throughout India against 120334 and 126164 new cases (NLEP 2018-19) in 2019 and 2018, respectively. Also, the percentage of grade II disability (G2D)/visible deformity among new cases decreased from 3.05% in 2018-19 to 2.39% in 2019-20 (Ministry of Health & Family Welfare Government of India 2020). Analysis of trends of leprosy over a period provides valuable information on how the disease has evolved over the years.

Data from health care facilities is an essential pre-requisite to assess the current situation of leprosy and address the possible loopholes in the running program. The present study was conducted at Leprosy Care Unit (LCU) Kandbari of Kangra district, one of the 12 districts of Himachal Pradesh, spread out over the western region of the state and by far the largest region of the Himachal Pradesh.

In Himachal Pradesh, a total of 141 new cases were detected in 2019-20 and 74 new cases in 2020-21. The annual case detection rate was

1.85 and 0.95 per lakh population in 2019-20, 2020-21, respectively. In Kangra district of Himachal Pradesh, total 23 and 10 new cases were detected, annual case detection rate was 1.4 and 0.6 in 2019-20, 2020-21, respectively (Directorate General of Health Services Ministry of Health & Family Welfare 2020-21).

Although many studies have been conducted to analyze the disability limitation in leprosy patients, no such study has been done in this area. The aim of this study was to describe the epidemiology and clinical trends of leprosy in District Kangra Himachal Pradesh.

Methodology

A retrospective record-based study was carried out at LCU where all the leprosy patients of District Kangra are registered. The study population included all leprosy cases registered for the last 10 years from 1st April 2011 to 31st March 2021

The patients had been diagnosed based on clinical signs and symptoms and slit skin smear had been done in all cases. After recording relevant clinical history, the clinical spectrum of the patients was decided after detailed clinical and slit-skin smear examination. All the patients were given paucibacillary (PB) and multibacillary (MB) therapy based on World Health Organization (WHO) guidelines depending upon the disease spectrum. All the data records that were complete and available for the study period as per the predefined indicators were included, and records with incomplete information were excluded from the study. Data was analyzed according to age, sex, education, occupation, type of leprosy, and presence or absence of disabilities/deformities.

No statistical sample size calculation was performed, and the sample size was equal to the number of patients diagnosed and treated during

the mentioned study period. The data collected were tabulated and analyzed using Microsoft Office Excel 2016, and analysis was done using Epi info 7, SPSS 20 software. Descriptive statistical tools like mean and standard deviation were used for continuous data, while frequencies and percentages were used for categorical data. In addition to descriptive analysis, Pearson's chi-square test was applied to ascertain the associations between certain variables. The level of significance was set at $\alpha \leq 0.05$.

Results

In this 10-year retrospective study, we analyzed 252 cases of leprosy belonging to various clinical spectrums. Table 1 summarizes the demographic and epidemiological characteristics of the participants. Maximum number of cases was found to be 35 in 2012. Majority of cases (46%) were of the middle age group (21-40 years). The mean age of the cases was 43.49 ± 16.27 years, with the youngest being 10 years and the oldest being 90 years. There was a male preponderance (73%) with an M: F ratio of 2.7:0.4.

The proportion of child cases is small (2.7%). Multibacillary cases outnumbered the paucibacillary cases, and 42% of new cases with grade 1 disability were found. Treatment successful rate of 91% and a mortality rate of 1.6% were also found in the study (Table 2).

Year-wise Distribution of Leprosy Cases

Fluctuating trends of cases till 2018 and declining trend afterwards was observed (Fig. 1). The maximum proportion of cases were seen in 2012 over the period of 10 years.

Yearly Trends in Grade 1-2 and Multibacillary Type Leprosy

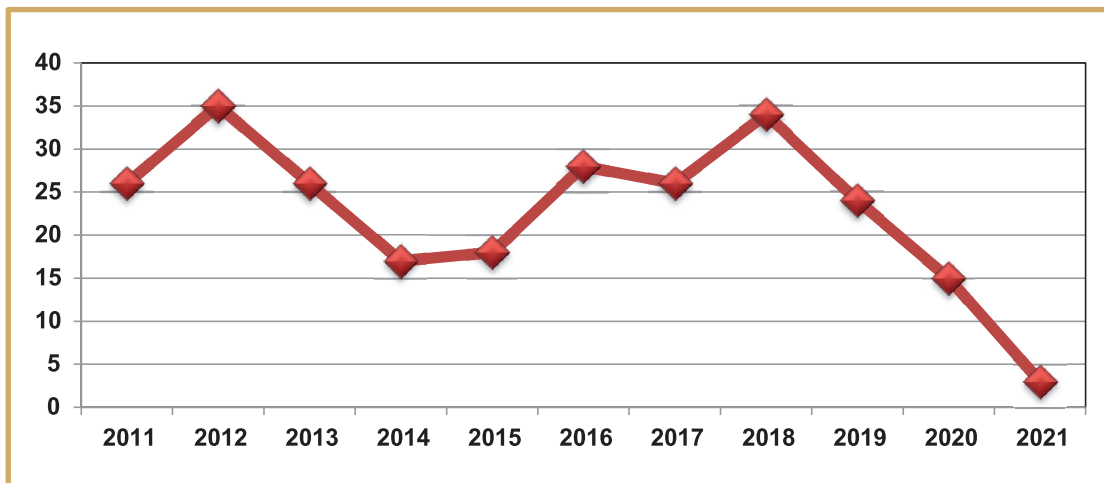
Over the period of 10 years, the number of multibacillary cases showed a fluctuating trend, with a maximum proportion in 2018 and a steep decline afterwards. While comparing the number

Table 1 : Socio Demographic Characteristics

Variables	N (%)
Total patients	252 (100)
Age in years (Mean \pm SD), 95% CI	43.49 \pm 16.27, 41.5 to 45.5
Age Groups	
1-20	7 (2.8)
21-40	116 (46)
41-60	85 (33.7)
61-80 & Above	44 (17.5)
Gender	
Male	184 (73)
Female	68 (27)
Education	
Illiterate	149 (59)
Literate	103 (41)
Urban	60 (24)
Rural	192 (76)
Occupation / Employment status	
Pvt job	131 (52)
Farmer	51 (20)
Housewife	18 (7)
Student	4 (1.6)
Unemployed	48 (19)
Block wise	
Bhawarna	10
Dadasiba	12
Fatehpur	2
Gangath	12
Goplapur	30
Indora	5
Jawalamukhi	22
Mahakal	17
Nagrota Bagwan	31
Nagrota Surian	5
Shahpur	65
Thural	6
Tiara	35

Table 2 : Clinical Characteristics

Variables	N (%)
IPA	161 (64)
OPA	91 (36)
Leprosy classification	
Multibacillary	222 (88)
Paucibacillary	30 (12)
DISABILITY	
Grade 0	100 (40)
Grade 1	106 (42)
Grade 2	46 (18)
OUTCOMES	
Completed	228 (90.5)
Defaulters	16 (6.3)
Under Treatment	4 (1.6)
Died	4 (1.6)

**Fig. 1 : Trends of leprosy cases over 10 years**

of cases with deformities, grade 2 deformities did not seem to decline over the years, even though the number was small. A steady increase in the proportion of new cases with grade 2 deformity was observed during the period of four years

(2013-17) and a gradual decline afterwards (Fig. 2).

Migratory versus indigenous cases

Yearly trends of migratory and indigenous cases

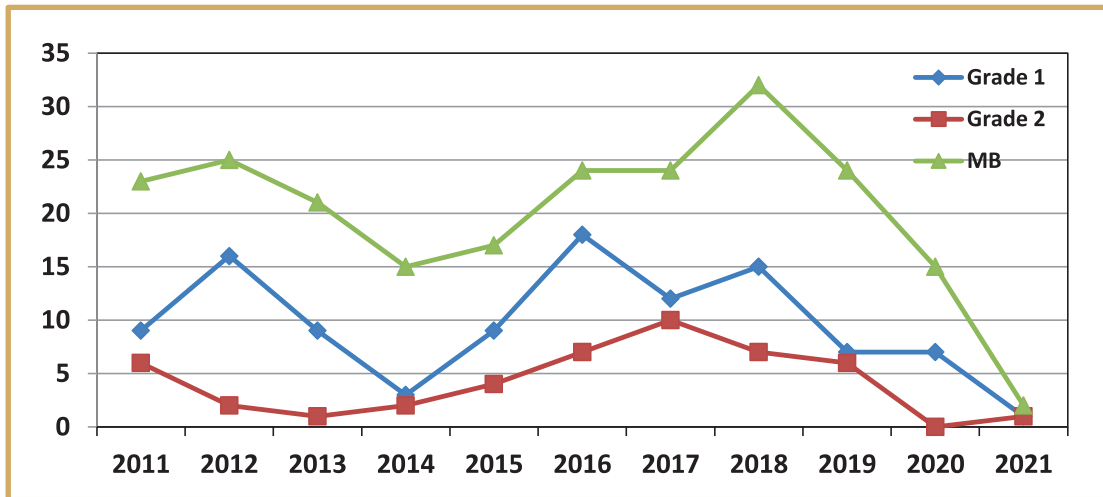


Fig. 2 : Trends of Grade 1-2 and Multibacillary Type Leprosy over a decade

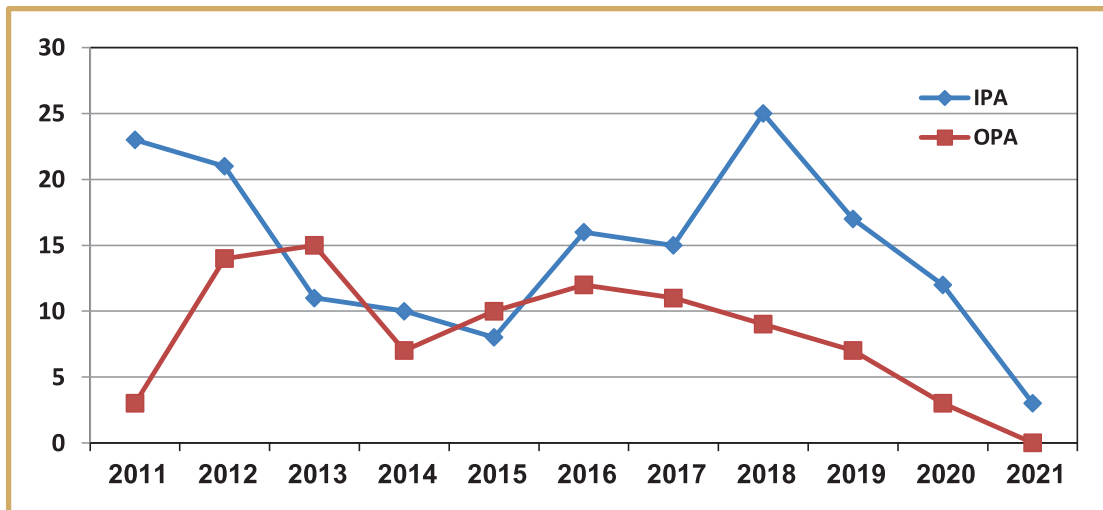


Fig. 3 : Yearly trends of migratory versus indigenous cases

showed a decline in leprosy in the migratory population with a corresponding decline in indigenous leprosy cases as both trend lines go downwards for the years 2013-14 and for 2018-21 (Fig. 3).

Relation between Age, Gender, and Disability

The middle age group (21-40 years) was the most

affected group (46%) in comparison to other age groups. Comparing the cases with deformities, Grade 1 cases were found to be maximum among the younger age group, while grade 2 cases were found to be maximum among the 41-60 years age group. This difference was also found to be statistically significant ($p < 0.05$).

Table 3 : Relation between age, gender, and disability

Age groups	Disability		
	Grade 0 (n, %)	Grade 1 (n, %)	Grade 2 (n, %)
1-20	5 (2)	2 (0.8)	0
21-40	51 (20.2)	51 (20.2)	14 (5.6)
41-60	29 (11.5)	32 (12.7)	24 (9.5)
61-80 & Above	15 (5.9)	21 (8.3)	8 (3.2)
Pearson Chi-Square (χ^2) 12.80, df = 6, p value=0.04			
Sex	Grade 0 (n, %)	Grade 1 (n, %)	Grade 2 (n, %)
Male	69 (27.4)	82 (32.5)	33 (13.1)
Female	31 (12.3)	24 (9.5)	13 (5.2)
Pearson Chi-Square (χ^2) 1.87, df = 2, p value=0.03			

Table 4 : Classification of cases into multibacillary and paucibacillary types

Age groups	Types	
	Paucibacillary (N, %)	Multibacillary (N, %)
1-20	2 (0.8)	5 (2)
21-40	19 (7.5)	97 (38.5)
41-60	5 (2)	80 (31.7)
61-80 & Above	4 (1.6)	40 (15.9)
Pearson Chi-Square (χ^2) 7.34, df = 3, p value=0.05		

Proportion of cases was high among males in comparison to females and among those proportion of grade 1 was more prevalent than others. This difference was found to be statistically significant (Table 3).

Relation between Age and Type of Leprosy

Multibacillary cases outnumbered paucibacillary cases, and the younger age group was affected more (39%) compared to other age groups (Table 4).

Discussion

Although the advent of MDT has resulted in a significant reduction in the prevalence of leprosy, it continues to be a major public health problem,

especially in developing countries like India. It remains an important cause of preventable disabilities.

The majority of the leprosy patients in our study belonged to the middle age group (21-40 years) consistent with previous research suggesting the higher representation of younger groups (Barua et al 2021, Jindal et al 2021, Kalita et al 2020). Our study also finds out that the burden of the disease mainly affects the young productive male population of the society than females, which corroborates with previous research suggesting that the male preponderance may be attributed to increased exposure among males due to greater mobility and increased accessibility to health

care as compared to females in most developing countries including India (Jabeen et al 2019, Jindal et al 2021, Kalita et al 2020, Mushtaq et al, 2020, Muthuvel et al 2016). We also found that multibacillary cases outnumbered paucibacillary cases. This is consistent with previous studies that found a high proportion of MB cases and indicate delayed diagnosis due to difficult access to services or inadequate public awareness. Another reason for the rise in MB cases could be due to the shift from active to passive case detection (Shankari et al 2021, Thyvalappil et al 2019). Social stigma also contributes to this as it often deters patients from seeking treatment early, as they tend to hide their lesions. It was also found that the proportion of multibacillary cases was higher in the younger age group with a statistically significant difference. A high proportion of multibacillary cases contributes to an increased grade 2 disability rate due to the high bacillary load (Mushtaq et al 2020).

We also found a higher proportion of male cases with disability with a statistically significant difference, which could be due to the referral of severe patients with advanced disease to the tertiary care centre, some coming with complications - reactions, disabilities of their own. Previous studies also had similar findings regarding a higher proportion of disability. However, no study to our knowledge could find statistical significant differences between gender and disability (Kalita et al 2020, Rahman et al 2010). Grade 2 disability rates in the cases reporting to our centre (18%) are also much higher than national average and indicate delayed detection and inadequate/delayed treatment. Lack of awareness among public and health care providers are the usual contributory factors which need to be identified and rectified. Zero grade 2 disability is the goal of WHO and NLEP in India.

In the present study, the major epidemiological indicators i.e., grade 1 disability, and multibacillary cases shows a fluctuating trend over the past decade. A decreasing trend of leprosy cases was observed during 2018–2021, although this was not statistically significant. Previous research also reports a declining trend of leprosy over the past few years (Anand et al 2020, Jindal et al 2021). The drop in numbers during the year of 2020-21 could be attributed to a decrease in detection and surveillance owing to Covid-19 (Robert et al 2021, Chakraborty 2022). Low case detection, delayed detection and diagnosis and underreporting of leprosy cases are still a few of the major challenges (Anand 2019, Kumar & Husain 2013, Kurian 2019). Additionally, low voluntary reporting due to lack of awareness as well as stigma and discrimination against leprosy may be attributed as one of the major reasons for hidden cases in the community (Sengupta 2018, Thyvalappil et al 2019).

The results of our study and many other studies published on the subject thus emphasize that we have not been able to keep the major programme indicators of NLEP and WHO under control (Chudasama et al 2016, Jabeen et al 2019, Shetty et al 2013, Van't Noordende et al 2019). We also found that disease was more prevalent in uneducated (59%) than educated ones (41%). This is like previous findings concluding that that low level of awareness led to delayed diagnosis and increased chances of deformity and disability. Therefore illiteracy remains a major deterrent to self-reporting causing delayed treatment and subsequent disability (Anand et al 2020, Kalita et al 2020). The number of patients from rural areas outnumbered those from urban areas, similar to previous findings (Adil et al 2018). However, one study also found that the number of new cases was more in the urban areas (Barua et al 2021). However, we cannot

rule out inappropriate health-seeking behavior due to a lack of awareness among rural patients. Our study also found that the percentage of leprosy among the migratory population was less in comparison to the indigenous people and also showed a decline for the past few years, which is consistent with previous research concluding that there has been decline in cases for the past few years (Bharti et al 2019, Jabeen et al 2019).

To the best of our knowledge, this was the first kind of study in this hilly district. We also tried to find out the association between certain variables. The records of patients of the whole district were analyzed, and the study population is likely to be representative of the general population. Hence, the findings are applicable to the whole district. This, however, needs to be assessed at population level at periodical intervals.

Youngest patient was 10 years old among leprosy patients treated at this Centre. Usual incubation period of disease is 2 to 10 years, few cases can be beyond these limits. It is possible that transmission might have been interrupted in this population. However, this should be closely watched.

Limitations of the Study

Despite the clarity of findings, this study has a few limitations. This was a retrospective data analysis based on departmental records; hence, bias in reporting cannot be ruled out and it also makes the generalization of our study findings difficult. As only registered records were analyzed, therefore limited variables based on records were included. Subgroup analysis on treatment compliance in the migrant population is not presented in our study. Although slit smear examination was done, results were inconsistent and not properly recorded. Hence those were not analyzed in our study which is also one of the limitations of study.

Conclusion

Our findings highlight the need for implementation of sustained effective measures for early diagnosis and treatment of leprosy in order to prevent disabilities while improving awareness to ensure appropriate health-seeking behavior. Emphasis should be on generating community awareness to decrease the social stigma that and improve voluntary reporting. Improving surveillance activities, IEC activities may help further reduce leprosy's prevalence. Still noteworthy increase in the proportion of multibacillary cases must be taken earnestly, and the drive to identify active cases in the community needs to be commenced. The possibility of a continuous trend of infection among the OPA and IPA needs to be further examined.

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References

1. Adil M, Amin SS, Mohtashim M et al (2018). Clinico-epidemiological study of leprosy from a North Indian tertiary care hospital. *Int J Res Dermatol.* **4(4)** : 518–521.
2. Anand A (2019). Why leprosy has resurfaced in India. *Down to Earth.* <https://www.downtoearth.org.in/blog/health/why-leprosy-has-resurfaced-in-india-63403>. Accessed May 2022.
3. Anand V, Kunte R, Jathar S et al (2020). Evaluation of National Leprosy Eradication Programme in Pune city of Maharashtra from 2008 to 2019 – A Record Based Study. *Indian J Lepr.* **92**: 211–219.
4. Barua JK, Khan S, Chandra A et al (2021). Clinico-epidemiological profile of adult leprosy patients from a referral hospital in Eastern India : A retrospective study. *J Pakistan Asso Dermatol.* **31**: 158–164.
5. Bharti OK, Rana RS, Kaushal DS (2019). Investigating a possible linkage of working with

- migrant workers and new leprosy cases among indigenous populations of Shimla, Himachal Pradesh. *Indian J Lepr.* **91**: 117–123.
6. Chakraborty R (2022). Detection of leprosy cases drops amid pandemic, orders dry up for factory making shoes for patients. <https://indianexpress.com/article/cities/mumbai/leprosy-cases-detection-covid-pandemic-7747768/>. Accessed April 2022..
 7. Chudasama RK, Lakkad SG, Patel UV et al (2016). Evaluation of national leprosy eradication program after integration into general health system in Rajkot District, Gujarat from 2003 to 2014. *Indian J Dermatol.* **61**: 57–62. <https://doi.org/10.4103/0019-5154.174027>
 8. Department of Health & Family Welfare Ministry of Health & Family Welfare Government of India. (n.d.). *Annual Report (2021-22)*. [https://main.mohfw.gov.in/sites/default/files/Final for Net English MoHFW040222.pdf](https://main.mohfw.gov.in/sites/default/files/Final%20for%20Net%20English%20MoHFW040222.pdf). Accessed December 2021.
 9. Dhillon GS (2020). Explained: Why is Himachal testing residents for leprosy? How prevalent is leprosy in Himachal Pradesh? <https://indianexpress.com/article/explained/himachal-pradesh-leprosy-prevalence-cases-surveillance-campaign-7114700/>. Accessed May 2022.
 10. Directorate General of Health Services Ministry of Health & Family Welfare, G. of I. (n.d.). *State Wise Leprosy Report (2020-21)* [https://dghs.gov.in/content/1349_3_National LeprosyEradicationProgramme.aspx](https://dghs.gov.in/content/1349_3_NationalLeprosyEradicationProgramme.aspx). Accessed December 2021.
 11. Directorate General of Health Services Ministry of Health & Family Welfare, G. of I. (n.d.). *National Leprosy Eradication Programme (2019-20)* [https://dghs.gov.in/content/1349_3_National LeprosyEradicationProgramme.aspx](https://dghs.gov.in/content/1349_3_NationalLeprosyEradicationProgramme.aspx). Accessed December 2021.
 12. Jabeen KJ, Sarita S, Vadakkayil B et al (2019). A 10 - year Retrospective descriptive study on pure neuritic leprosy from a tertiary referral centre. *Indian Dermat Online J.* **10(1)**: 13–18. https://doi.org/10.4103%2Fidoj.IDOJ_118_18.
 13. Jindal R, Chauhan P, Roy S (2021). Trends of leprosy over a period of four years (2016-2019) at a tertiary care hospital in Uttarakhand (India) and comparison with last lustrum (2011-2015). *Indian J Lepr.* **93**: 53–61.
 14. Kalita JM, Nag VL, Yedale K (2020). Spectrum of leprosy among suspected cases attending a teaching hospital in Western Rajasthan, India. *J Family Med Pri Care.* **9(6)**: 2781–2784. <https://doi.org/10.4103/jfmprc.jfmprc>
 15. Kumar A, Husain S (2013). The Burden of new leprosy cases in India : A population-based survey in two states. *ISRN Trop Med.* **2013(2)**: 1–8. <https://doi.org/http://dx.doi.org/10.1155/2013/329283>.
 16. Kurian OC (2019). Leprosy and inequities in India's healthcare: Beyond the persistent rhetoric of 'Elimination', Observer Research Foundation. <https://policycommons.net/artifacts/1347517/leprosy-and-inequities-in-indias-healthcare/1959677/>. Accessed March 2022.
 17. Ministry of Health & Family Welfare Government of India. (n.d.). *Annual Report. (2019-20)* [https://main.mohfw.gov.in/sites/default/files/Annual Report 2019-2020 English.pdf](https://main.mohfw.gov.in/sites/default/files/Annual%20Report%202019-2020%20English.pdf) Accessed July 2021.
 18. Mushtaq S, Dogra N, Dogra D et al (2020). Trends and patterns of leprosy over a decade in a tertiary care hospital in Northern India : A retrospective analysis. *Indian J Dermatol Venereol Leprol.* **86(2)**: 141-149.
 19. Muthuvel T, Isaakidis P, Shewade HD et al (2016). Leprosy trends at a tertiary care hospital in Mumbai, India, from 2008 to 2015. *Global Health Act.* **1**: 1–5.
 20. National Health Mission (2009). *Himachal Pradesh State Report*. https://www.nhm.gov.in/images/pdf/nrh-in-state/state-wise-information/himachal-pradesh/hp_report.pdf. Accessed May, 2022.
 21. Rahman SM, Ali NA, Jennings L et al (2010). Factors affecting recruitment and retention of community health workers in a newborn care intervention in Bangladesh. *Human Reso Health.* **8(12)**: 1–14. <https://doi.org/10.1186/1478-4491-8-12>.

22. Robert G, Arquer D, Kumar A et al (2021). COVID-19 and leprosy new case detection in India. *Lepr Rev.* **92**: 88–91.
23. Sengupta U (2018). Elimination of leprosy in India : An analysis. *Indian J Dermatol Venereol Leprol.* **84**: 131–136.
24. Shankari LS, Ambhore NA, Mantri RS (2021). Current scenario of leprosy in post elimination era at a tertiary care hospital in central India. *Panacea J Med Sci.* **11(1)**: 41–44.
25. Shetty VP, Ghate SD, Wakade AV et al (2013). Clinical, bacteriological, and histopathological characteristics of newly detected children with leprosy : A population based study in a defined rural and urban area of Maharashtra, Western India. *Indian J Dermatol Venereol Leprol.* **79(4)**: 512-517.
26. Thyvalappil A, Pretty M, Anumod B et al (2019). Current trends of leprosy in a tertiary care centre in North Kerala : A 10 year observational retrospective study. *Indian J Lepr.* **91**: 175–183.
27. Van't Noordende AT, Korfage IJ, Lisam S et al (2019). The role of perceptions and knowledge of leprosy in the elimination of leprosy : A baseline study in Fatehpur district , northern India. *PLoS Negl Trop Dis.* **13(4)**: e0007302. doi: 10.1371/journal.pntd.0007302
28. World Health Organization (2020). *Global Leprosy Strategy 2016-20* (pp. 1–62). https://apps.who.int/iris/bitstream/handle/10665/208824/9789290225096_en.pdf. Accessed July 2021.
29. World Health Organization (2021). *Global Leprosy Strategy 2021–2030* (pp. 1–30). <https://www.who.int/docs/default-source/ntds/leprosy/global-consultation-on-global-leprosy-strategy-2021-2030/06-global-leprosy-strategy-overview.pdf>. Accessed July 2021.

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