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SPATIAL ANALYSIS OF LEPROSY DISEASE IN BAGALKOT DISTRICT

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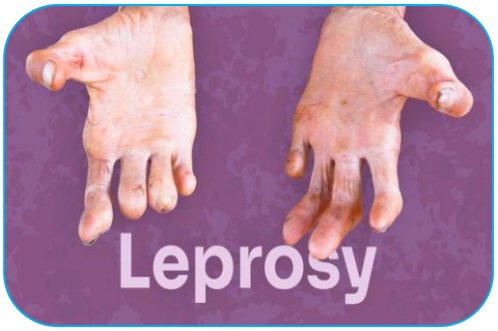
ABSTRACT



Leprosy, also known as Hansen's disease, is a chronic infectious condition caused by the bacterium Mycobacterium leprae primarily affecting the skin, peripheral nerves, upper respiratory tract, and eyes. Although leprosy has been significantly reduced globally due to early detection and treatment through multidrug therapy (MDT), it continues to pose a public health challenge, particularly in regions with high endemicity, such as India. India bears the highest global burden of leprosy cases, despite substantial progress through national programs like the National Leprosy Eradication Programme (NLEP). These efforts have been pivotal in providing free treatment, increasing awareness, and addressing the stigma associated with the disease. In Karnataka's Bagalkot district, the incidence of leprosy remains a concern, with new cases regularly reported despite national elimination efforts. A recent study conducted in a tertiary care hospital in Bagalkot highlights ongoing challenges, including the late diagnosis of cases, nerve damage, and disabilities among many patients. This underscores the need for intensified efforts in early case detection, prompt treatment, and community education to combat the persistent social stigma that hinders timely healthcare-seeking behaviour. The present study aims to assess the current epidemiology of leprosy in Bagalkot district, examining the effectiveness of the NLEP, the patterns of disease presentation, and the outcomes of MDT. Understanding these factors is essential for devising improved strategies to further reduce the incidence of the disease and manage complications effectively in this region.

KEYWORDS: *Leprosy, Deceases.*

1. INTRODUCTION:

Leprosy, also known as Hansen's disease, is a chronic infectious disease caused by the bacteria *Mycobacterium leprae*. It primarily affects the skin, peripheral nerves, upper respiratory tract, and eyes. Contrary to misconceptions, leprosy is not highly contagious, and most people have a natural immunity to the disease.

Symptoms: Skin lesions: Pale or reddish patches on the skin that may be numb to touch. Nerve damage: Can cause muscle weakness, numbness, and loss of sensation in the limbs. In severe cases, untreated leprosy can lead to deformities. Eye problems: Leading to blindness if untreated.

Types of Leprosy: Paucibacillary (PB): Milder form with fewer skin lesions and bacteria. Multibacillary (MB): More severe with widespread lesions and higher bacterial load.

Transmission: Leprosy spreads through prolonged, close contact with an untreated person, likely through respiratory droplets. It cannot be spread through casual contact (e.g., shaking hands or hugging).

Treatment: Multidrug therapy (MDT) is the standard treatment, combining antibiotics like rifampicin, clofazimine, and dapsone. This treatment, typically lasting 6-12 months, cures the disease and prevents transmission. Early diagnosis and treatment are critical to prevent long-term complications like nerve damage and disabilities.

India has the highest number of leprosy cases globally, though significant progress has been made through national programs aimed at early detection, treatment, and education to combat stigma. The National Leprosy Eradication Programme (NLEP) is India's primary initiative to control and eliminate leprosy. Free treatment is provided at government hospitals, and awareness campaigns aim to reduce stigma.

Leprosy continues to be a public health concern in Bagalkot district, Karnataka. A study conducted at a tertiary care hospital in Bagalkot found that the district faces ongoing challenges despite national efforts to eliminate the disease. Newly diagnosed cases are regularly reported, with many patients exhibiting late-stage symptoms, including nerve damage and disabilities.

The National Leprosy Eradication Programme (NLEP) actively works in the region to identify cases early, provide free multi-drug therapy, and reduce stigma, aiming for early treatment and preventing disabilities.

2. STUDY AREA:

Geographically, the district is situated in the northern portion of the Deccan plateau. From a historical perspective, the Bagalkot district is among the richest districts in the state of Karnataka. from the point of view of history, tradition, and legend. The district lies between $15^{0}48'$ to $16^{0}46'$ minutes north latitude and 74^{0} 58 to $76^{0}18$ minutes' east longitude. The district is surrounded by six districts, mainly Raichur district in the east, Westside in Belgaum, Gadag and Koppal districts in the south, and north side located in Bijapur district. The district extended 101 km from north to south and 138 km from east to west, covering a geographical area of 6,552.00 sq. km. In relations of area, Bagalkot occupies the 12^{th} place among the districts in Karnataka state. The area is drained by the major important rivers, namely, Krishna, Ghataprabha and Malaprabha, with their leading tributaries and several streams. The district climate is generally dry and healthy. The district received maximum of the rainfall during the rainy season. The district of Bagalkot, which is located in a semi-arid area, has unpredictable rainfall patterns, hot summers, and dry winters. the soil groups are seen in the district, namely Deep black soil, Medium black soil and Mixed red and black soil etc.

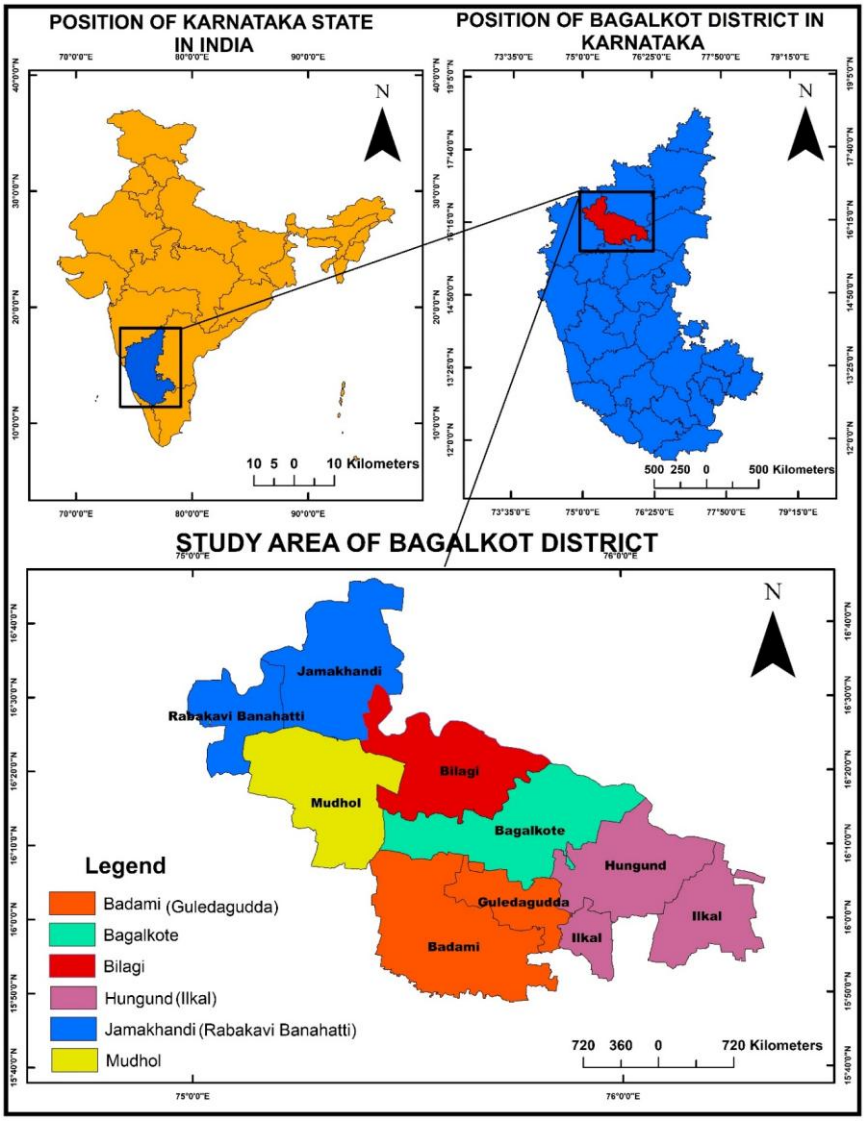


Fig.No.1

3. OBJECTIVES:

1. To assess the current epidemiology of leprosy in Bagalkot district, Karnataka, focusing on the incidence and prevalence of the disease.
2. To evaluate the effectiveness of the National Leprosy Eradication Programme (NLEP) in detecting, treating, and managing leprosy cases in the region.

4. METHODOLOGY:

1. A cross-sectional observational study was conducted at a tertiary care hospital in Bagalkot, Karnataka.

2. Data Collection: Data were collected from patient records, including demographic details, clinical presentation (type of leprosy, number of skin lesions, nerve involvement), and MDT treatment regimens.

3. Analysis: The data were analysed to determine disease patterns, treatment outcomes, and the prevalence of disabilities and complications at the time of diagnosis.

5. ANALYSIS:

The present study in Bagalkot district, Table 1 explains that identified Leprosy patients in taluka wise. The district identified a total Leprosy patient about 19 persons, out of which 11 persons belong to male and female patients accounts for about 8 persons. Whereas the cured Leprosy patients occurred in District 38 person out of which 22 males and 16 females were cured in 2021. (Table No 1)

BAGALKOT DISTRICT LEPROSY PATIENTS DURING 2021

Table No. 1

LEPROSY PATIENTIFIED AND CURED DURING 2021							
		Identified Leprosy Patients			Leprosy Patient Cured		
Sl No	Talukas	Male	Female	Total	Male	Female	Total
1	Badami	3	3	6	6	4	10
		27.27	37.5	31.58	27.27	25	26.32
2	Bagalkot	1	1	2	2	4	6
		9.09	12.5	10.53	9.09	25	15.79
3	Bilagi	0	0	0	3	3	6
		0	0	0	13.64	18.75	15.79
4	Hunagund	2	2	4	2	0	2
		18.18	25	21.05	9.09	0	5.26
5	Jamakhandi	3	2	5	7	3	10
		27.27	25	26.32	31.82	18.75	26.32
6	Mudhol	2	0	2	2	2	4
		18.18	0	10.52	9.09	12.5	10.53
	Total	**11**	**8**	**19**	**22**	**16**	**38**
		100	**100**	**100**	**100**	**100**	**100**

Source: 1. District census hand book of Bagalkot district i.e. 2001, 2021
2. District at a glance of Bagalkot District i.e. 2001, 2021

A. Identified Male Leprosy Patients 2021:

The distribution of male Leprosy patients identified in the Bagalkot district by taluka in 2021 is exposed in Figure No. 2 and Table No. 1 The lowest percentage of male (<9.09%) Leprosy aids patients identified was observed in the talukas of Bagalkot (9.09%) and Bilagi (0). On the other hand, the Mudhol (18.18%) and Hunagund (18.18%) talukas contained the medium (9.10-18.18%) population. In the district, the highest (>18.19%) percentage of male Leprosy patients was seen in the talukas of Jamakhandi (27.27%) and Badami (27.27).

B. Aidentified Female Leprosy Patients 2021:

Table No 1 and Figure No .2 exposed to female Leprosy Patient Cured occurred in the district of Bagalkot. The lowest percentage of female (>0%) Leprosy patient's cured was observed in the talukas of Bilagi (0%) and Mudhol (0). whereas the medium (1-12%) female Leprosy patents were seen in Bagalkot (12.5%) taluka. In the district, the highest (>13%) percentage of female Leprosy patients was seen in the talukas of Badami (37.5), Jamakhandi (25%) and Hunagund (25%).

C. Aidentified Total Leprosy Patients 2021:

Table No 1 and Figure No 2 exposed to total Leprosy patient's occurred in the district of Bagalkot. The lowest percentage of total (<10.53%) Leprosy patients was observed in the talukas of Mudhol (10.52%), Bagalkot (10.52%) and Bilagi (0%). whereas the medium (10.54-21.05%) total Leprosy patents were seen in Hunagund (21.05%) talukas. In the district, the highest (>21.06%)

percentage of total Leprosy patients was seen in the talukas of Badami (31.58%) and Jamakhandi (21.62%).

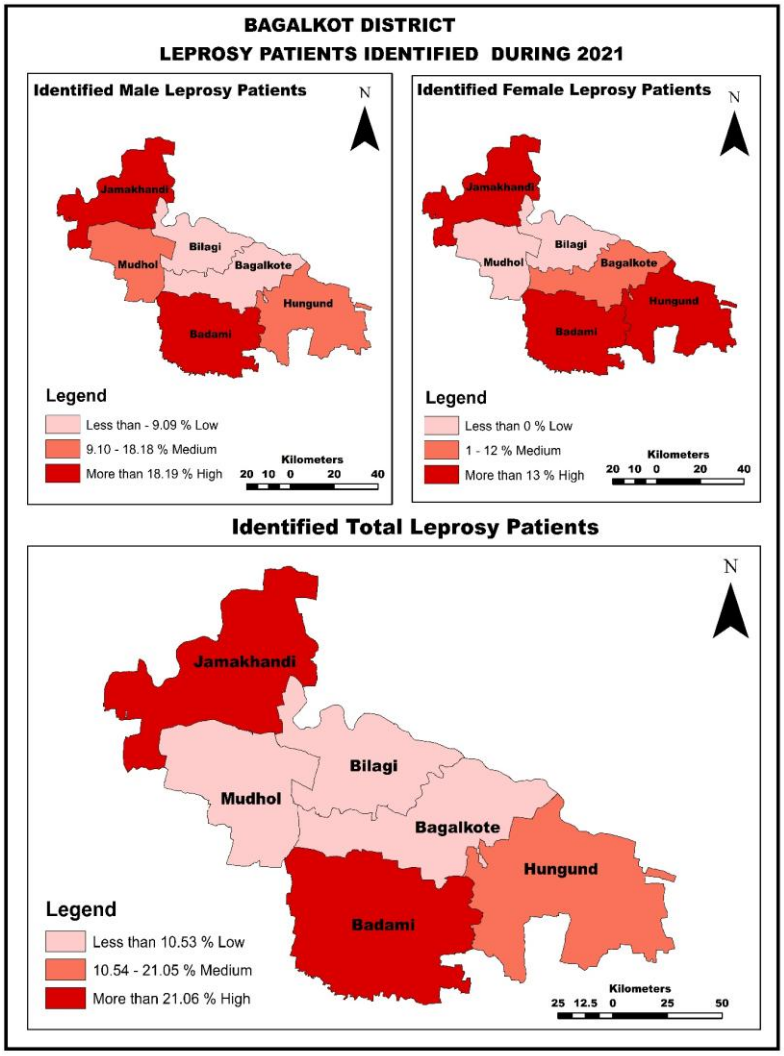


Fig No. 2

Leprosy Cured Patients

A. Male Leprosy Cured Patients 2021:

The distribution of male Leprosy Patients Cured identified in the Bagalkot district by taluka in 2021 is exposed in Figure No. 3 and Table No.1 The lowest percentage of male (<9.09%) Leprosy aids patients identified was observed in the talukas of Bagalkot (9.09%) and Mudhol (9.09%) and Hunagund (9.09%). On the other hand, the Bilagi (13.64%) talukas contained the medium (9.10-13.64%) population. In the district, the highest (>13.65%) percentage of male Leprosy patients was seen in the talukas of Jamakhandi (31.82%) and Badami (27.27).

B. Female Leprosy Cured Patients 2021:

Table No 1 and Figure No 3 exposed to female Leprosy Patient Cured occurred in the district of Bagalkot. The lowest percentage of female (>0.10%) Leprosy patient's cured was observed in the talukas of Hunagund (0%). whereas the medium (0.11-18.75%) female Leprosy patents were seen in Jamakhandi (18.75%), Bilagi (18.75%) and Mudhol (12.5%). In the district, the highest (>18.76%)

percentage of female Leprosy cured patients was seen in the talukas of Badami (25%) and Bagalkot (25%).

C. Total Leprosy Cured Patients 2021:

Table No 1 and Figure No 3 exposed to total Leprosy patient's cured occurred in the district of Bagalkot. The lowest percentage of total (<10.53%) Leprosy patients was observed in the talukas of Mudhol (10.52%) and Hunagund (5.26%). whereas the medium (10.54-15.79%) total Leprosy patents were seen in Bilagi (15.79%) and Bagalkot (15.79%) talukas. In the district, the highest (>15.80%) percentage of total Leprosy cured patients was seen in the talukas of Badami (26.32%) and Jamakhandi (26.32%).

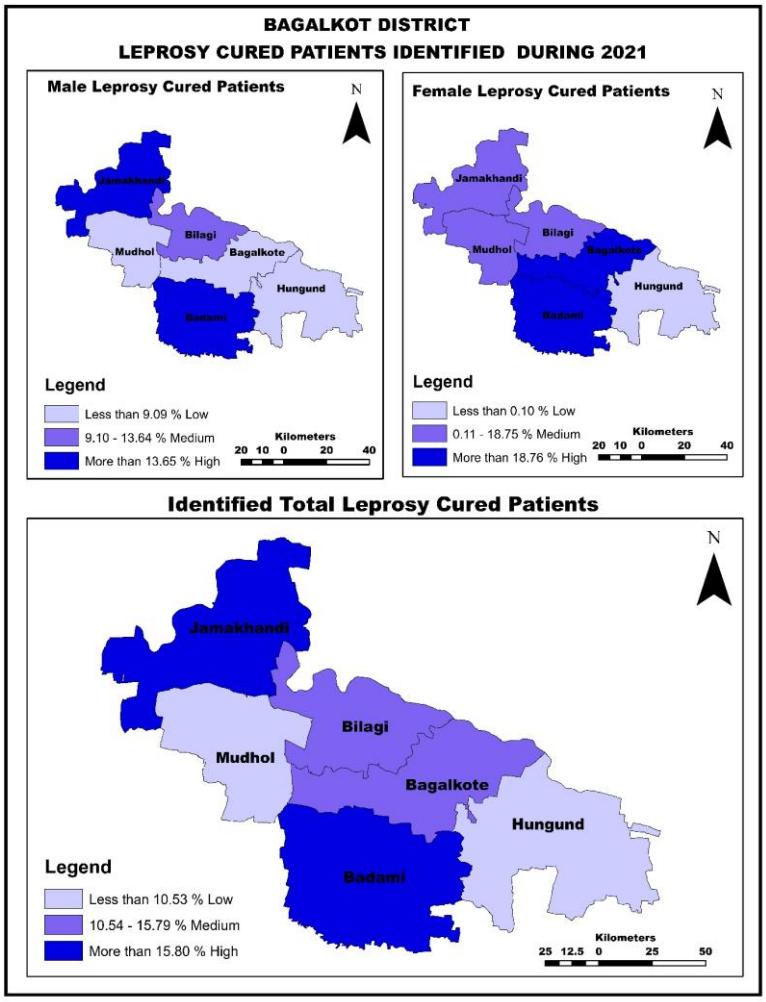


Fig No.3

CONCLUSION:

The 2021 data on leprosy patients in Bagalkot district, Karnataka, shows a varied distribution of cases and treatment outcomes across different talukas.

- **Male Leprosy Patients:** The highest percentages of male patients were reported in Jamakhandi and Badami talukas (27.27%), while Bilagi had none. Moderate cases were observed in Mudhol and Hunagund (18.18% each).
- **Female Leprosy Patients:** Badami had the highest percentage of female patients (37.5%), followed by Jamakhandi and Hunagund (25% each). No cases were identified in Bilagi and Mudhol.

- **Total Leprosy Patients:** Badami led with the highest total cases (31.58%), followed by Jamakhandi (21.62%). The lowest was in Bilagi (0%) and Mudhol (10.52%).
- Regarding cured patients, Jamakhandi and Badami again had the highest rates for both males and females. However, some talukas, like Hunagund, had significantly lower cure rates, especially for females (0%).

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