
Article DOI: <https://doi.org/10.3126/jeri.v5i1.88610>

Journal of Educational Research and Innovation

A Multidisciplinary Bilingual Journal

ISSN 2631-2336; Volume 5, Issue 1, December 2025, pp. 57-73

Indexed in Nepal Journals Online ([NepJOL](http://NepJOL.org)) 

Changing Trends of Major Communicable Diseases in Karnali Province of Nepal: A Descriptive Review

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Abstract

Several communicable diseases have been actively impacting the health of people in Karnali province. Due to several reasons, some diseases are difficult to control and which impacts the mortality and morbidity in the Karnali province. This article aims to explore changing trends of communicable diseases in rural Nepal.

This article has used a descriptive method, and data have been collected from a desk review related to communicable diseases. The information is mainly used from the national level health survey, like Nepal Living Standard Survey (2023), Nepal Demographic and Health Survey (2022), Health Service Directorates (2024), Department of Health Services (2025), National Housing and population census (2021), and other published and unpublished national and international publications. This study has used the last five years' data, related to communicable diseases of Karnali Province only. The data was analyzed descriptively and presented in graphs and tables, providing insights into the socio-economic factors.

Tuberculosis and HIV/AIDS are major issues in Karnali province. Others are Malaria, Leprosy, Dengue, and Kala-azar. The province uses several IEC and health insurance programs, but due to the changing climate, population migration, and overcrowding, disease control is not effective. Therefore, it is suggested that multi-sectoral collaboration covers the challenges.

Article Info.

Article History

Received: 19 October 2025

Revised: 11 November 2025

Accepted: 8 December 2025

Copyright Information

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Publisher



Graduate School of Education
Mid-West University
Birendranagar, Surkhet
www.mwu.edu.np

Keywords: Communicable disease, double burden, health hazard, death, counselling.

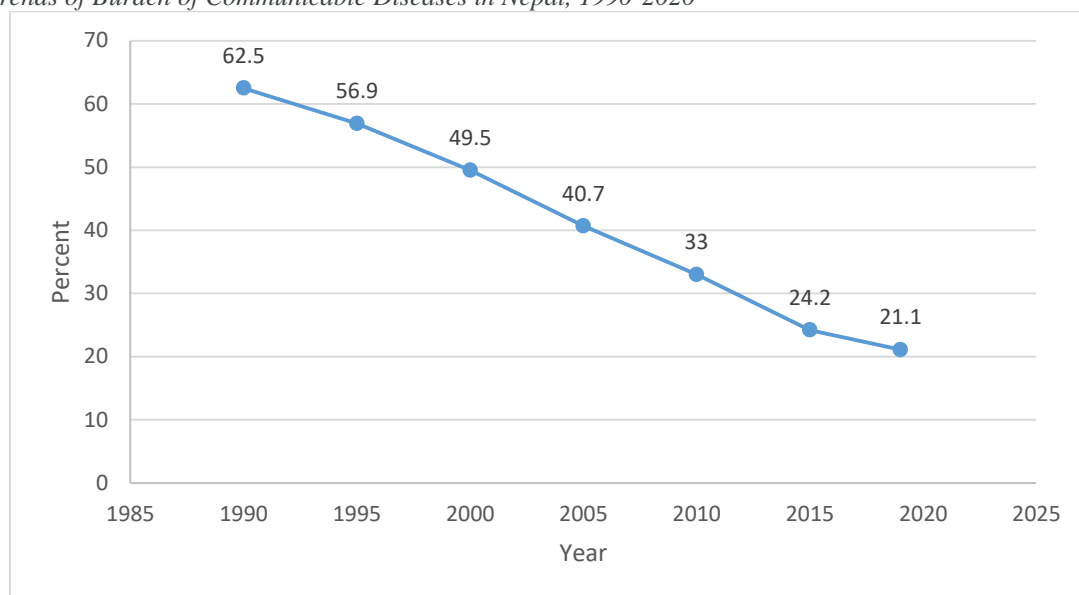
Introduction

The death of people is associated with two broad causes as cardiovascular and respiratory problems. Cardiovascular diseases include ischemic heart diseases and stroke, and respiratory diseases include COVID-19, chronic obstructive pulmonary diseases, and lower respiratory infections. The causes of death can be grouped into three categories such as communicable, non-communicable, and injury (WHO, 2024). Ischemic heart disease is the world's biggest killer; more than 9.1 million (13Percent) of the world's total deaths occurred from this disease in 2021. COVID-19 was placed second place with 9.1 million deaths, stroke and chronic obstructive pulmonary disease became the third and fourth leading causes for approximately 10Percent and 5 Percent of total deaths worldwide.

The World Bank has classified countries with national gross income into four categories: low-income, lower-middle, upper-middle, and high-income countries. People living in a low-income country suffer from communicable diseases than non-communicable diseases. The most common diseases in low-income countries are Malaria, tuberculosis, and HIV/AIDS. Others are lower respiratory infection and diarrheal disease. It shows that 8 out of 10 causes of death are communicable diseases in low-income countries in 2021 (WHO, 2024)

Figure 1:

Trends of Burden of Communicable Diseases in Nepal, 1990-2020



There are notable changes in the causes of death in South Asian countries during the last 70 years. Vicziany (2021) outlined that asthma has been a chronic disease in South Asian countries for a long time. In India, 6 percent of children and 2 percent of adults have asthma, other communicable disease is TB, and HIV/AIDS. In recent times, SARS-CoV-2 and COVID-19 have been identified as a new burden of disease in South Asian countries during 2010-2020. It is argued that the first three top ten ranking diseases in India are non-communicable. But the three main infectious diseases in India are diarrheal disease (5.1 percent), respiratory infections (3.9 percent), and TB (3.7 percent). In the 1950s, there were plague, smallpox, guinea worm, yaws, and polio. This scenario shows a shift in communicable diseases in India over the last 70 years.

In the context of Nepal, there is a declining trend of communicable diseases in Nepal due to the use of various preventive measures. Rai (2018) argues that the overall burden of infectious diseases (IDs) in Nepal is decreasing, but several newer infectious diseases, namely dengue fever, scrub typhus, influenza (H5N1 and H1N1), and others, are increasing in Nepal. He further explores that Nepal is trapped in the double burden of disease of communicable and non-communicable diseases, and suggests a multi-sectoral plan to save from the double burden of diseases.

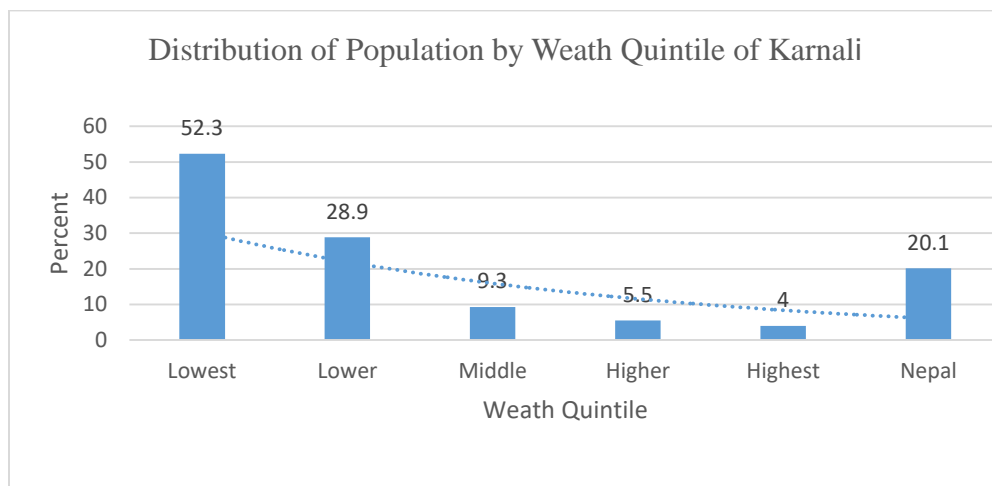
Studies show that communicable disease control does not depend on boundaries; therefore, it needs multi-sectoral and multi-country efforts. Mishra et al (2025) argue that tuberculosis and HIV/AIDS are major issues in Nepal. Some other diseases have difficult-to-treat coverage and care in Nepal due to the changing climate, population migration, and overcrowding. It is needed for cross-border collaboration to control communicable diseases in Nepal with other neighboring countries, because some diseases have a 100 km spread rate.

In the case of Karnali province, there is a lower Human Development Index (HDI) compared to other provinces, lower health indicators, and a high burden of common diseases. Other challenges include limited access to clean water and sanitation, high rates of out-migration, and inadequate health infrastructure. Studies show that the province's overall health indicators are lower than the national average, and respiratory infection is the top disease (14.8 percent) in Karnali. Other diseases include acute peptic disorder (10 percent), headache (8 percent), and worm infections (7 percent), respectively. Among infectious diseases, the new case detection rate is 0.5 per 100,000, and the HIV incidence rate is 5.3 per 10,000 in Karnali province (HSD, 2024).

Review of Literature

The population of Karnali was 1688412 (5.79 percent) in 2021, which was a drop from the earlier (5.93 percent in 2011 to 5.79 percent in 2021) census, with a 0.70 growth rate. It shows that the population doubling time for Karnali has increased from 56 years in 2011 to 60 years in 2021. Karnali is at the bottom in terms of population share (5.8 percent) and density (60), where Gandaki has the lowest population growth rate with 0.25 percent annually (NSO, 2023).

Out of 6660841 households, 47 percent of families are living in a nuclear family and 53.4 percent in a joint family in Nepal, where 49 percent live in a nuclear family, and 50.3 percent live in a joint family in Karnali province in 2021 (NSO, 2023). There is a 12.8 percent absentee population in Karnali province, where 18.1 percent are male and 7.7 percent of female in the 2021 census. Absence abroad was highest in Karnali (51.3 percent) and Sudurpaschim (33.9 percent) from the lowest quintile; they are higher in rural municipalities.

Figure 2:*Distribution of Population by Wealth Quintile in Karnali Province, 2021*

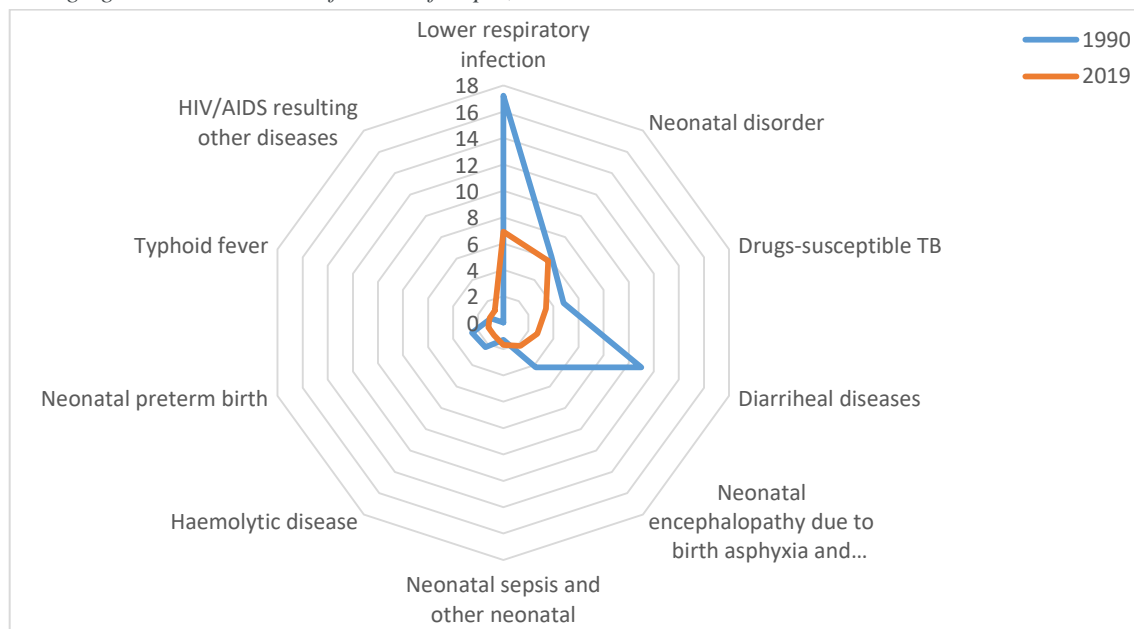
Source: NSO, 2023

Studies shows that Karnali province remains the lowest quintile (52 percent) than the national average, where 76 percent of people are literate. Males (83 percent) were more literate than females (69 percent), and about 38.6 percent of boys and 37.4 percent of girls are currently attending their school in Karnali province (NSO, 2023). Karnali province is a rural residual-dominant area where more than 80 percent of the population lives in rural municipalities, 4.3 percent in Peri-urban areas, and 15.5 percent in urban areas (NSO, 2024).

There are 10 districts, such as Dailekh, Dolpa, Humla, Jajarkot, Jumla, Kalikot, Mugu, Salyan, Surkhet, and Western Rukum district, where 1701800 population are inhabited. The majority of people speak Nepali (95 percent) in Karnali; other languages are Magar, Tharu, Bhote, Lama, Kham, Gurung, and others. Similarly, the Majority of Dalits reside in Karnali, like Kami (15.8 percent), others are Magar, Thakuri, Barhmin, Damai, Sarki, and Sansai. The majority of people are Hindu (95 percent) in Karnali; other religions are Buddhist, Christian, Muslim, and others.

The study shows that 38 percent of deaths occur from behavioral risk factors, 31.2 percent from environmental or occupational risk factors, and 22.9 percent from metabolic risk factors in Nepal (NHRC, 2021). The leading causes of death include smoking-related factors like household air pollution and ambient air pollution, and another cause is high fasting plasma glucose in Nepal. It shows that 17.7 percent of total deaths occur due to smoking, 12.3 percent caused by high Blood Pressure (BP), 11.2 percent from household air pollution, 9.3 percent from ambient particulate matter pollution, and 8 percent from high fasting plasma glucose in Nepal.

The leading cause of death pattern has changed during the last 30 years (1990-2020) in Nepal. Smoking was the second leading cause of death in 1990; it had ascended to the first position in 2019. High systolic BP was the fourth leading cause of death in 1990, and had ascended to second position in 2019. Household air pollution, which was initially in first position, decreased to third position, while high fasting plasma glucose increased from 15th to fifth position over 30 years in Nepal.

Figure 3:*Changing Pattern in Causes of Death of Nepal, 1990-2019*

Studies on the burden of diseases in Nepal show that a total of 19,331 deaths occurred in 2019, where 71 percent were from non-communicable diseases, 21 percent from communicable diseases, and 8 percent of deaths were due to injuries. Among communicable diseases, 3.9 percent of deaths occur due to Tuberculosis (TB), 4.8 percent of male deaths, and 2.8 percent of female deaths occur from TB in Nepal (NHRC, 2021).

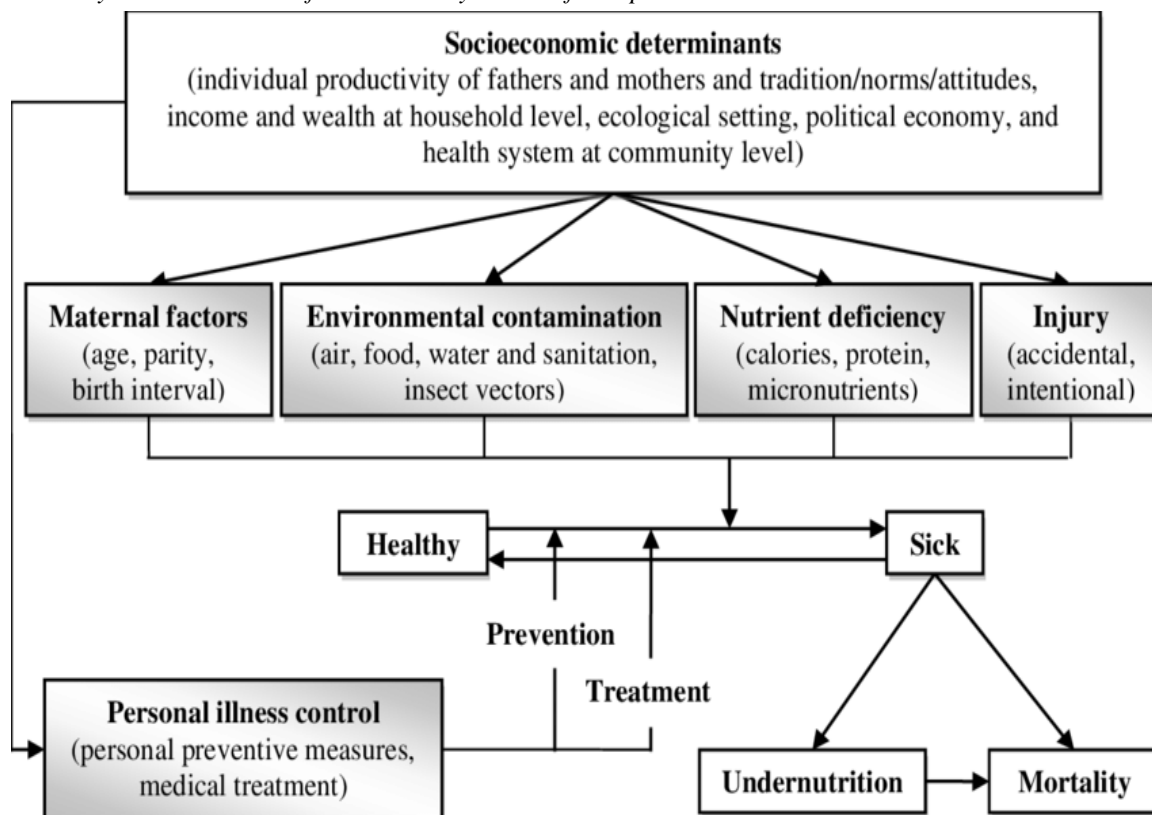
Defining the causes of death among people is a difficult task in developing countries like Nepal because most death occurs at home. Many scholars argue that it is difficult to identify the causes of death for a death that occurred at home. It is difficult to provide a death certificate without dignifying the dead body. Therefore, the deceased was classified with a previously diagnosed condition, and there is no guarantee that the death occurred due to that cause or disease. According to the National Housing Census of Nepal 2021, there were only 9,463 registered deaths during one year in Nepal, but NPHC reported 198,463 deaths during December 2020-November 2021. It shows that nearly 50 percent of deaths occur from non-communicable diseases in Nepal, followed by communicable diseases at 12.6 percent. Other reasons are natural disaster 4.8 percent, accident 4 percent, suicide 2.7 percent, road accident 1.9 percent, and pregnancy-related death 0.3 percent, respectively (NSO, 2025).

A study on child survival outlined several socio-economic determinants that impact the healthy and sick status of a population. Mosely and Chen (1984) explained a set of proximate determinants that directly influence the risk of morbidity and mortality of a population. There are five categories: maternal factors, environmental contamination, nutrient deficiency, injury, and personal illness control. The maternal factors influence pregnancy outcomes and infant survival, like the birth space of a child of young maternal age. The environmental factors that are responsible for contamination of diseases like food, water, fingers, skin, soil, and inanimate objects. Nutrient deficiency is mainly related to three

nutrients (calories, protein, and micronutrients) that influence the availability of the diet. Injury includes physical injury, burns, and poisoning.

Figure 4:

An Analytical Framework of the Health Dynamics of a Population



(Source: Mosley & Chen, 1984)

Mosley and Chain explained that a range of socioeconomic determinants influences the level of growth faltering and mortality of a population. These determinants mainly influence at individual level, household level, and community level. The traditional values, norms, and attitudes of parents play a healthy status of children in a family. It also depends on the income or wealth level of the family, and it impacts the community level, like ecological setting, political economy, and health system. The socio-economic status of Karnali province is quite below the national level human development index in 2023. More than 50.3 percent live in a joint family, 52.3 percent of the population are in the lowest quintile, and more than 80 percent of the population resides in rural areas (NSO, 2023).

The immunization coverage is nearly universal in Karnali, but the nutritional status of children under 1 years old shows that the 3 percent of underweight, coverage of vitamin A distribution (6-59 months) was 88.7 percent, albendazole coverage (12-59 months) was 87.6 percent, 77 percent women received a 180 days iron folic acid during pregnancy in Karnali province. Therefore, the maternal mortality ratio of Karnali province is higher (172) than the national level (151), infant mortality rate (IMR) is higher (36 vs 28 percent), teenage pregnancy is higher (20.5 vs 13.6 percent), life expectancy is lower (66.8 vs 70.5 years), and the human development index is lower (0.538 vs 0.587).

In this context, the health status of Karnali Province seems critical. There is a lower level of HDI, and poor health services. A poor drinking water service, low level of health facility availability, and difficult geographic location increase a high burden of common diseases. There can be observed respiratory infection, acute peptic disorder, headache, and worm infections are major health issues in Karali. The new case detection rate of TB and the HIV incidence rate are higher than the national average. Therefore, there is a need for a study on the changing trends of communicable diseases in Karnali province. This article aims to analyze the level and trends of communicable diseases, and discuss the major causes of communicable diseases in Karnali Province of Nepal.

Methods and Data

This paper used a desk review method, it mainly focused on the data from national level health survey and census of Nepal that includes Nepal Living Standard Survey (2023), Nepal Demographic and Health Survey (2022), Health Service Directorates, (2024), Department of Health Services (2025), National Housing and population census (2021), and other published and unpublished national and international publications. The World Bank reports, UN publications, and research works related to non-communicable diseases. Information/articles were collected over the last 7 years, and related to communicable diseases only. The Karnali province has been taken as a study area purposively for this study, due to its high socio-economic diversity, low HDI, and remote geographic location in Nepal. The data were presented in graphs and table form, and were analyzed using descriptive analysis. Finally data were compared with the national as well as international levels. Finally, some recommendations have been made based on available information at the provincial level.

Analysis and Discussion

Situation of Health Services in Karnali Province

There is a diverse range of healthcare facilities in Karnali province that includes an academic hospital, one Provincial Hospital, and 10 district level hospitals (comprising 2 Secondary Hospitals: Jajarkot Hospital and Mehelkuna Hospital, and 8 District-level Hospitals), 23 Primary hospitals at the local level, (3 Community Hospitals named Chaurjahari Hospital, Eye Hospital, and Shining Hospital, and 10 Private hospitals), 13 Primary Health Care Centers (PHCCs), 330 Health Posts (HPs), 300 Basic Health Service Centers, 30 Urban Health Centers, and 149 Community Health Units (HSD, 2024).

The immunization coverage in Karnali province shows that BCG coverage is 90.7 percent, DPT-Hep B-Hib-III coverage is 88.6 percent, OPV-III coverage is 88.1 percent, Measles-Rubella-I coverage is 86 percent, Measles-Rubella-2 is 87.7 percent, Td2 & Td2+ for pregnant women is 65.2 percent, and JE is 86.7 percent.

The nutritional status of children under 2 years old to enhance their overall well-being but study shows that the children under 1 years were 3 percent underweight, coverage of vitamin A distribution (6-59 months) was 88.7 percent albendazole coverage (12-59 months) was 87.5 percent, 77 percent women received a 180 days iron folic acid during pregnancy, and 97Percent postpartum mother received vitamin A supplementation. The family planning program among women of reproductive age (WRA) at the provincial level of modern contraceptive prevalence rate is 28.8 percent in fiscal year 2078/79. The status of safe motherhood services is that 85 percent of pregnant women have the recommended four ANC visits, the institutional delivery service is 83.4 percent, and 4272 Female Community Health Volunteers (FCHVs) have been working in Karnali province, but maternal mortality rates have not seen significant reductions.

The maternal mortality ratio of Karnali province is higher (172) than the national level (151), IMR is higher (36 vs 28 percent), teenage pregnancy is higher (20.5 vs 13.6 percent), life expectancy is lower (66.8 vs 70.5 years), and the human development index is lower (0.538 vs 0.587).

Table 1:

Distribution of Health Indicators of Karnali Province

Indicators	Karnali	National	National targets for SDGs 2030
Maternal Mortality Ratio	172	151	70
Infant mortality rate	36	28	10
Total fertility rate	2.6	2.1	2.1
Contraceptive prevalence (modern method)	46	43	30
Teenage pregnancy	20.5	13.6	-
Delivery by skilled birth attendance	72	80	90
Fully vaccinated (basic antigens)	84	80	100
Human Development Index	0.538	0.587	-
Life expectancy at birth	66.8	70.5	NA

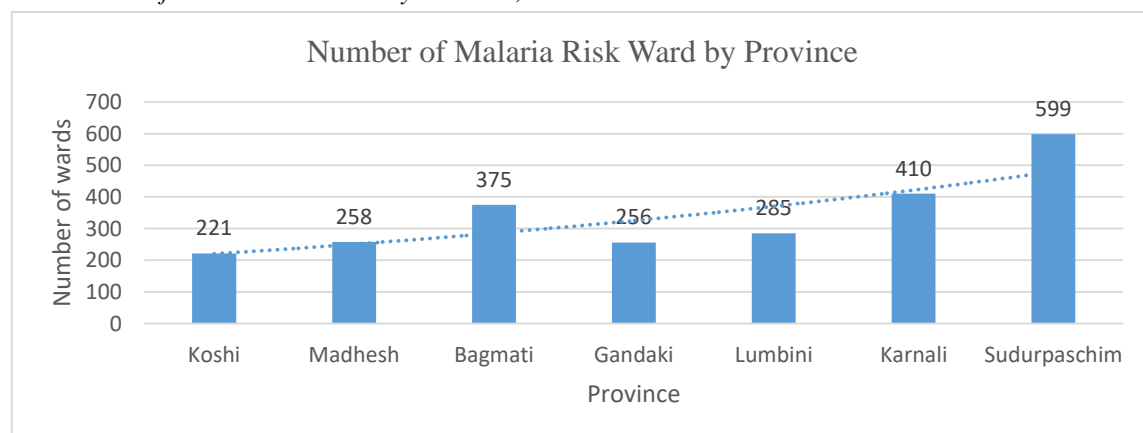
(Source: NDHS, 2022; NHDR 2020)

Burden of Malaria in Karnali Province

There was a total of 34 new malaria cases in Karnali province in fiscal year 2079/80, which decreased from 48 cases in the last fiscal year 2078/79. Kala-azar stands out as a high-priority public health concern in Karnali Province, with half of its districts reporting new cases in the recent fiscal year. The overall incidence of kala-azar cases in Karnali Province is reported to be 0.39 per 10,000 population.

Figure 5:

Distribution of Malaria Risk Ward by Province, 2018



Source: DOHS, 2025

Epidemiology and Disease Control Division (EDCD) and the Malaria Technical Working Group (TWG) have developed a ward-level microdata surveillance approach to achieve malaria control in Nepal that will help to focus on high, low, and medium-level risk for malaria and to take action to eliminate malaria. There are 25 wards with have high risk of malaria in Nepal, 22 wards have a moderate risk, and

2404 wards have a low risk. In the case of Karnali province, 3 wards have a high risk, 7 wards have a medium risk, and 410 wards have a low risk of malaria.

The government of Nepal has conducted several actions to control and eliminate malaria in Nepal. Major activities include the distribution of long-lasting insecticidal nets (LLIN) to people living in active foci and malaria risk groups. Indoor residual spray (IRS) in high and moderate wards, malaria commodities supply (supply of MRDT and anti-malaria drugs) at service points.

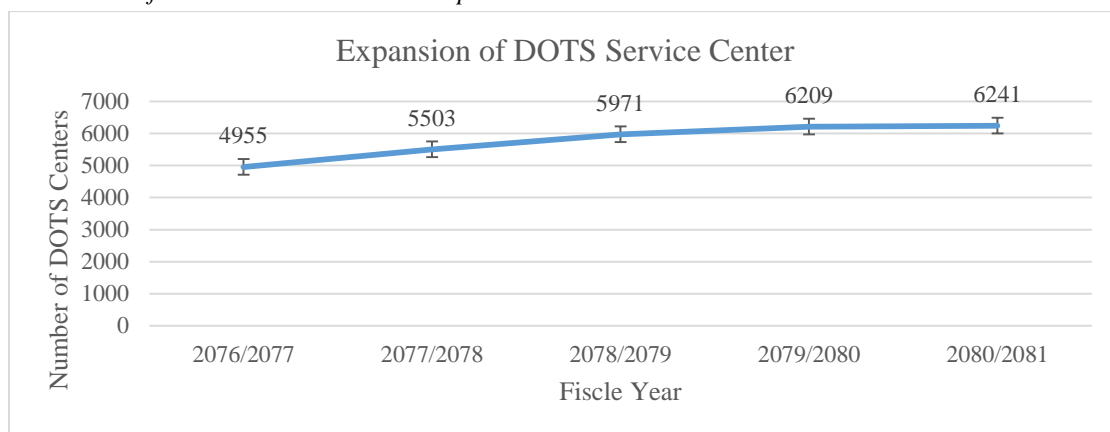
Burden of Tuberculosis in Karnali Province

A total of 1577 (PBC: 856, PCD: 251, and EP: 470) TB cases have been notified in Karnali province in fiscal year 2079/80. However, Directly Observed Treatment Short course (DOTS) for Tuberculosis (TB) has been provided through 400 treatment centers, and Multi Drug Resistant (MDR) TB management service has been implemented in Karnali province since 2005. A total of 10 MDR-TB cases have been registered in 2079/80 in Karnali, where the Treatment Success Rate is 93.2Percent. A study on TB burden shows that about 10.8 million people fell with TB in 2023 globally, 25 million people were diagnosed with TB in South Asia, and 117000 prevalence and 69000 deaths occurred in Nepal in the same year (DOHS, 2025).

Nepal initiated a TB control program adopting the Directly Observed Treatment Short-Course (DOTS) TB strategy in 1996 and is renowned as a successful program in effective control of TB, setting an example at the global level. In 2016, the program adopted the global end TB strategy, aiming to end the TB epidemic by 2035 and envisioning a TB-free Nepal by 2050. At present, DOTS centers are integrated into public health services or operated through NTP partner organizations in both public and private sectors. Nepal has expanded the DOTS service center into seven province-level centers, which have increased from 4955 in the FY 2076/77 to 6241 in the year 2080/81.

Figure 6:

Distribution of DOTS Service Centre in Nepal



Source: DOHS, 2025

There are 419 DOTS centers in Karnali province. The center has increased over the last three years. It was 388 in 2077 and has increased to 419 in 2080. Surkhet has a higher (73) number of DOTS centers, and the Dolpa district has fewer (24) centers. Other service sites in Karni Province are DR TB Treatment Centre 2, Sub-center 16, Designed Microscopy Centre 57, and mWRD (Xpert RIF) sites 9, and Sites 1 (HSD 2024).

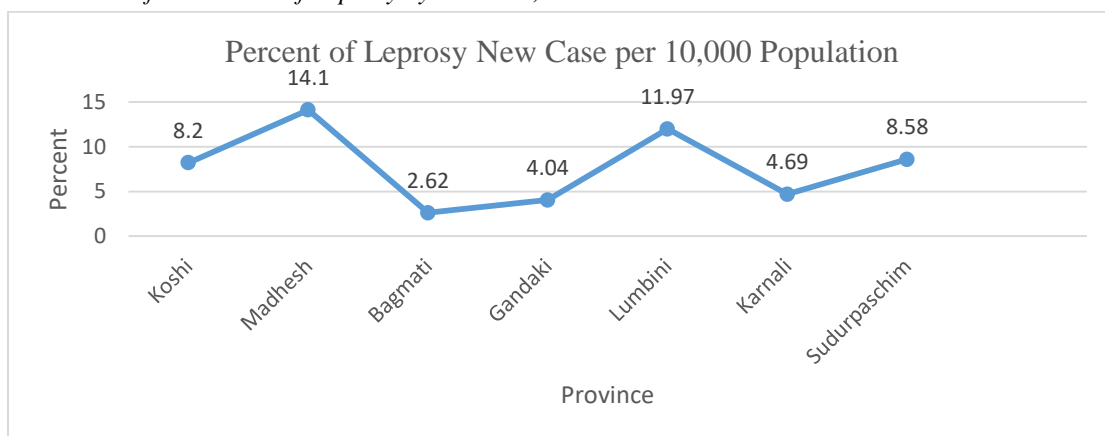
Table 2:*Distribution of Dots Centre in Karnali Province*

District	Dots Centre		
	2077/78	2078/79	2079/80
Dolpha	24	24	24
Mugu	27	27	27
Humla	28	28	28
Jumla	31	31	37
Kalikot	30	34	34
Dailekh	60	60	67
Jajarkot	35	35	42
Rukum West	43	39	32
Salyan	48	50	55
Surkhet	62	74	73
Total	388	400	419

Source: HSD, 2024

Burden of Leprosy in Karnali Province

The new case of Leprosy was identified among 2047 in the year 2080/81, which was 8.41 percent per 10,000 population of Nepal. The case was highest (14.01 percent) in Madhesh province and lowest (2.42 percent) in Bagmati province. The new case of Leprosy was identified 4.69 percent per 10,000 population in Karnali province. The highest prevalence rate of Leprosy was seen in Kapilvastu district, while the highest number of under-treatment cases was reported in Kailali.

Figure 7:*Distribution of New Cases of Leprosy by Province, 2080/81*

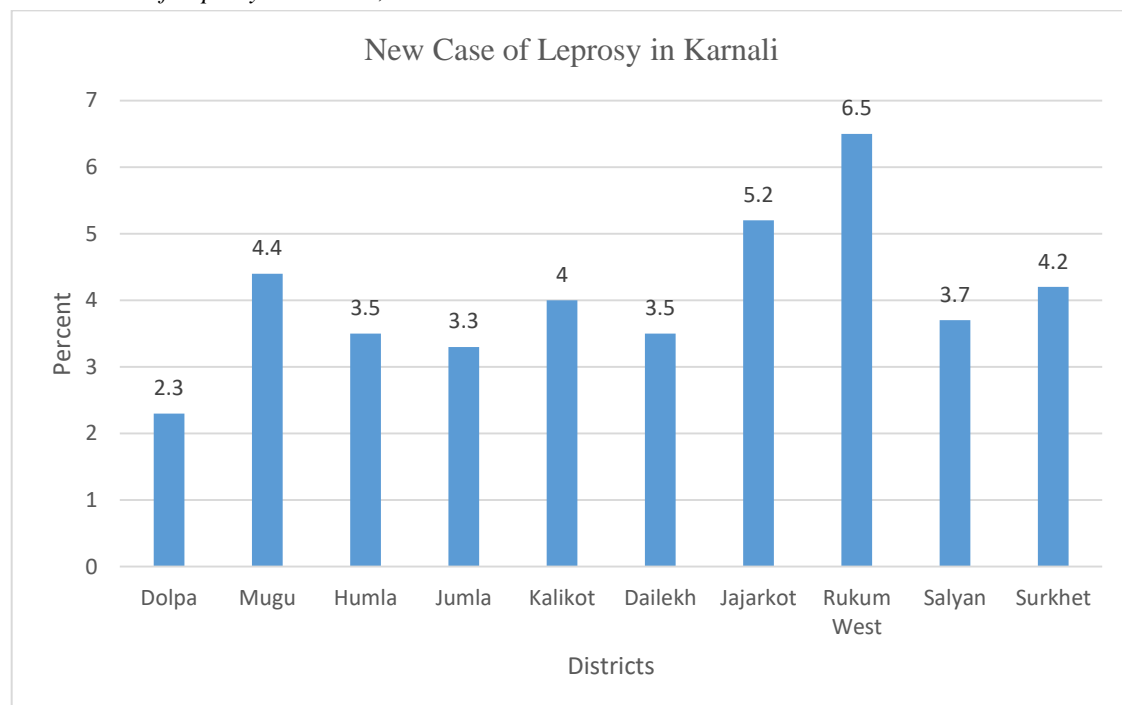
Source: DOHS, 2025

About 42 percent of females were diagnosed with a new case of Leprosy in Nepal, 5.5 percent were children, and 6.35 percent had grade 2 disability (DOHS, 2025). There were 89 Leprosy patients (73 new patients, 3 relapsed cases, 7 with treatment restarted, and 6 transferred cases) in Karnali province. The prevalence of Leprosy in Karnali remained stable at 0.53 per 10,000 population, which is below the Leprosy elimination threshold of less than 1 per 10,000 population.

The New Case Detection Rate (NCDR) was 4.2, and the Prevalence Rate (PR) per 10,000 population stood at 0.53 in Karnali province. Rukum West exhibited the highest (6.5 percent) NCDR, followed by Jajarkot (5.2 percent) and Mugu (4.4 percent). Additionally, Dolpa (2.3 percent) and Jumla (3.3 percent) have least new cases in Karnali province. The proportion of children among the new cases was 4.1Percent. Furthermore, 6.8Percent were identified with grade 2 disability (G2D), and the proportion of females among new cases was 32.9Percent in FY 2079/80 (HSD, 2024).

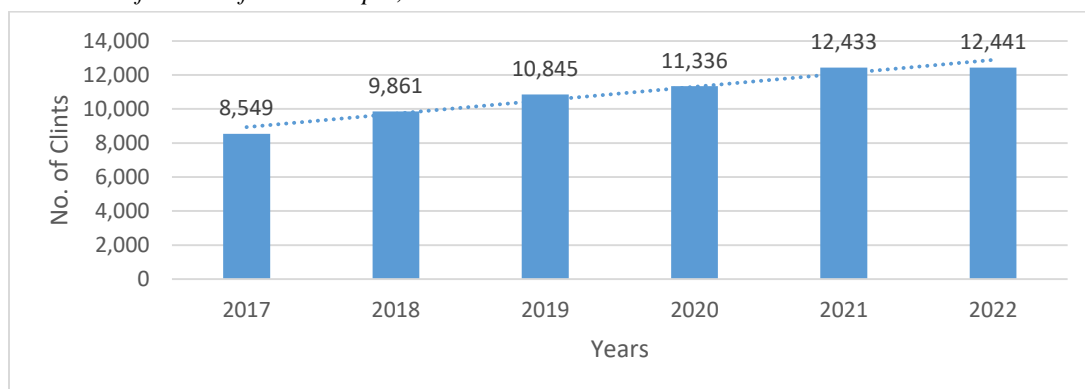
Figure 8:

Distribution of Leprosy in Karnali, 2079/80



Burden of HIV/AIDS and STIs in Karnali Province

About 56 new HIV positive cases were reported in fiscal year 2079/80, where 57 (20 female and 36 male, and 1 sexual minority) started new ART treatment in Karnal province. More than 17249 persons were involved in counseling & testing for HIV. A total of 713 clients, including 10 children, were receiving ART services in Karnali Province. Out of 35966 pregnant women, 3 women have been diagnosed positive in Karnali in the FY 2079/80.

Figure 9:*Distribution of Client's of HIV in Nepal, 2017-2022*

The number of clients for HIV/AIDS and related services has been increasing in Nepal over the last six years. There were around 8549 clients in 2017, and the number increased to 12441 in the year 2022. The increased rate is continuous and shows further progress for the service Centre. There was a continuous increment of clients from 8,549 clients in 2017 to 12,441 in 2022 (145.5 percent increase). The increasing trend in the uptake of services, driven by better advocacy for prevention and the promotion of testing and treatment services, however, presents a significant challenge in achieving adherence to all patients on ART.

Table 3:*HIV Testing and Counselling Service in Karnali*

Indicators	2075/76	2076/77	2077/78	2078/79	2079/80
Total Test for HIV	3512	2245	1497	12090	17249
Total HIV positive report	42	30	30	70	56
HIV positive rate	1.20	1.34	2.0	0.58	0.32

(Source: HSD, 2024)

HIV testing was found higher (17,249) in the year 2079/80, and report was higher (70 person) in the year 2077/78 in Karnali Province. The positive case of HIV was higher (2 percent) in the year 2077/78. It shows that awareness of HIV testing is increasing, and that the decreased HIV positive rate in Karnali since 2077/78.

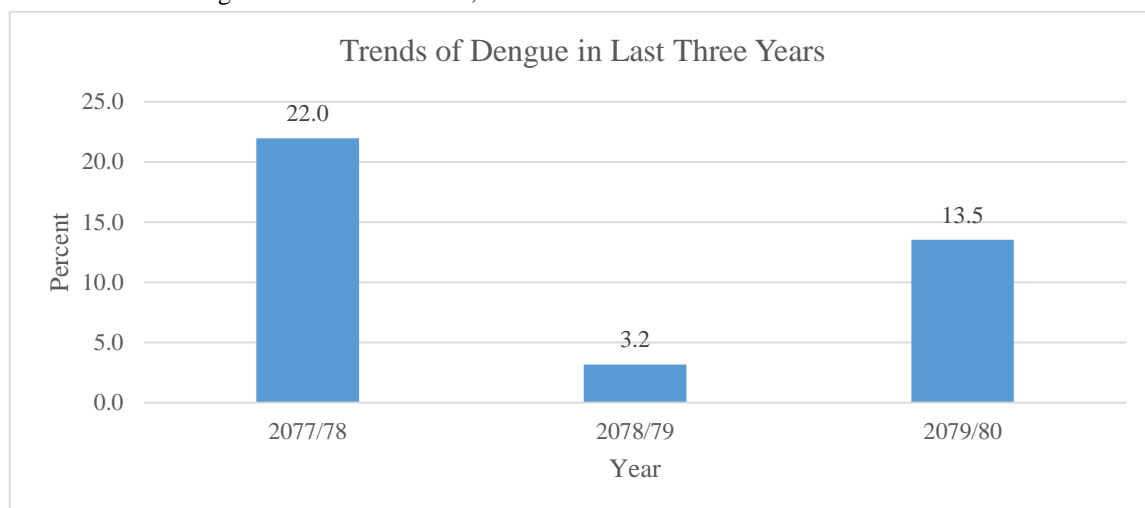
The knowledge about HIV prevention among young people is higher among males (27 percent) than among women (16 percent) in Nepal. About 37 percent of males and 26 percent of females aged 15-49 have known about ARV, where 37 percent of men and 47 percent of women know all three types of knowledge (during pregnancy, delivery, and breastfeeding).

Burden of Dengue in Karnali Province

The number of dengue cases slightly decreased in 2080/81 compared to the previous year. The highest number of cases was reported from Koshi province (18,067), followed by Bagmati province (12,970). There were 1468 cases reported in Karnali province in the year 2080 (DOHS, 2025). The trends of dengue prevalence were observed (22 percent) in the year 2077/78, which decreased by 3.5 percent in 2078/79, and again peaked at 13.5 percent in the year 2079/80 in 10 districts of Karnali province (HSD, 2024).

Figure 10:

Distribution of Dengue Diseases in Karnali, 2080

***Burden of Ka-azar in Karnali Province***

Kala-azar is a vector-borne illness caused by an intracellular protozoan parasite, which is transmitted from the bite of infected female mosquitoes, named phlebotomine sandflies. The number of Kala-azar cases was 72 in 2077, that was increased to 112 in 2079, and decreased to 68 cases in 2080. Study shows that only three districts (Jumla, Kalikot, and Surkhet) are categorized as endemic districts in Karnali province; the other two districts have been labeled as endemic doubtful, and the remaining districts are currently under review.

Information, Education, and Communication (IEC) Program in Karnali Province

The health education, information, and communication program is a modern health service in Nepal. It aims to raise the health awareness of people. It helps promote health status and prevent disease through behavior change facilitated by effective communication. The health education, information, and communication program is conducted through the IEC program using health education, information, communication, and social mobilization. The Provincial Health Service Directorate has been implementing the IEC program in collaboration with the Public Health Service Offices in Karnali province. The IEC program mainly focused on schools and the Community level, aiming to raise awareness and promote health literacy. The production and distribution of print materials further contribute to information dissemination. Regular, weekly, and periodic health programs are developed for radio, television, and FM radio, engaging local audiences. Health messages are published and disseminated through newspapers, emphasizing social mobilization, advocacy, workshops, seminars, observations on special days, and exhibitions. There are several IEC programs in the fiscal year 2022/23. It primarily focused on communication and social mobilization to strengthen routine immunization by implementing the healthy baby report (HBR) card during school enrollment, developing a jingle in the local language, and broadcasting it to the districts.

Health Insurance Program in Karnali Province

According to the annual report of the Health Service Directorate 2079/80, about 269903 people were insured in the year 2077 across the social health insurance program in Karnali province, which increased to 428668 people in the year 2080. Among the total insured population higher 73.24 percent were in Jumla district, followed by 48.34 percent in Rukum-west, and 39.24 percent in Kalikot district. The least insured districts in Karnali province are Salyan (9.21 percent), Dolpa, Mugu, and Dailekh (11 percent). The overall coverage of the health insurance program in Karnali Province was 31.4 percent (HSD, 2023).

Discussion

The scenario of the causes of death of people from communicable diseases has changed. It has changed over the last seventy years. This change is not only in Nepal; it can be observed at national, regional, and global levels. But the burden of communicable disease has remained high in developing countries, including Nepal. Studies show that Nepal has been facing a double burden of diseases (communicable and non-communicable diseases) for a few decades.

Table 4:

Leading Causes of Death in Lower and Middle-Income Countries, 2021

SN	Leading Causes of Death		
	Low-Income Country	Lower-middle-income countries	Global
1	Lower respiratory infections	COVID-19	Ischemic heart disease
2	Stroke	Ischemic heart disease	COVID-19
3	Ischemic heart disease	Stroke	Stroke
4	Malaria	Chronic obstructive pulmonary disease	Chronic obstructive pulmonary disease
5	Preterm birth complications	Lower respiratory infections	Lower respiratory infections
6	COVID-19	Tuberculosis	Trachea, bronchus, lung cancers
7	Diarrheal diseases	Diarrheal diseases	Alzheimer diseases
8	Tuberculosis	Diabetes diseases	Diarrheal diseases
9	Birth asphyxia	Cirrhosis of Liver	Kidney diseases
10	HIV/AIDS	Preterm birth complications	Tuberculosis

Source: WHO, 2024

The causes of death in early and later years have changed in Nepal over the last 30 years. The burden of lower respiratory infection was higher (17.2 percent) in 1990, but that has decreased to 6.9 percent in 2019. The burden of diarrheal diseases also decreased from 11 percent in 1990 to 2.7 percent in 2019, but the burden of HIV/AIDS, typhoid fever, and neonatal jaundice has increased in Nepal.

Table 5:*Changing Pattern of Proportion of Deaths in Nepal, 1990-2019*

Causes of Death	Years	
	1990	2019
Lower respiratory infection	17.2	6.9
Neonatal disorder	6.2	5.8
Drugs-susceptible TB	4.8	3.4
Diarrheal diseases	11	2.7
Neonatal encephalopathy due to birth asphyxia and trauma	4.2	2.2
Neonatal sepsis and other neonatal jaundice	1.3	1.7
Hemolytic disease	2.3	1.2
Neonatal preterm birth	2.5	1.2
Typhoid fever	1	1.1
HIV/AIDS results in other diseases	0	1.1

Source: NHRC, 2021

A study shows that there are mainly six communicable diseases that have a higher impact on the death of the population in Karnali province. They are Malaria, Tuberculosis, Leprosy, HIV/AIDS, Dengue, and Kala-azar.

There were 48 active cases of Malaria in the year 2079 in Karnali province, about 25 wards are at a high risk of Malaria. Kandel et al. (2024) argue that out of 3029 positive cases of malaria, the majority of them (79.9 percent) were male, and nearly two-thirds (65 percent) were between the ages of 20-49 years in Nepal, and about 14.9 percent of the total positive cases are in Karnali province.

Although there are 856 active TB cases, the government of Karnali province has contributed more efforts to control and prevent TB. Pal et al (2022) argue that the tuberculosis prevalence varies widely from one region to another. The dynamics of tuberculosis differ from climate, population density, and health care infrastructure. They found that two districts of Karnali province (Humal and Jumla) have the lowest number of TB patients than other parts of Nepal.

There were 89 Leprosy patients (73 new patients, 3 relapsed cases, 7 with treatment restarted, and 6 transferred cases) in Karnali province. Studies show that there are 2047 new cases have been identified over the county. The prevalence rate of Leprosy in Karnali remained stable at 0.53 per 10,000 population, which is below the Leprosy elimination threshold of less than 1 per 10,000 population. Rukum West exhibited the highest (6.5 percent) NCDR, and Jumla (3.3 percent) had the fewest new cases in Karnali province. Females have the fewest Leprosy cases than males, and the proportion of females among new cases was 32.9Percent in FY 2079/80 (HSD, 2024).

There are 56 new cases of HIV positive in the fiscal year 2079/80 in Karnali province. Studies show that the number of clients for HIV/AIDS and related services has been increasing in Nepal over the last six years. There were around 8549 clients in 2017, and the number increased to 12441 in the year 2022.

Studies show that the number of dengue cases slightly decreasing in Karnali province. There were 1468 cases reported in Karnali province in the year 2080 (DOHS, 2025). The trends of dengue prevalence were observed (22 percent) in the year 2077/78, which decreased by 3.5 percent in 2078/79, and again peaked at 13.5 percent in the year 2079/80 in 10 districts of Karnali province (HSD, 2024).

The number of Kala-azar cases was observed to be 68 cases in 2079 in Karnali. Pradhan et al. (2022) argue that climate change has an effects on the development cycle of Leishmanial promastigotes in sand files. It is also known as diseases of the poor, it mostly impacts to remote rural village and marginal communities with poor household and no access to health care facilities. Due to the climate change, Kala-azar diseases is spreading not only to warm terai but also in cool hill districts. The three districts of Karnali province (named Jumla, Kalikot, and Surkhet) have found active cases.

To protect from the risk of communicable diseases, Karnali province has set several protective measures. The IEC program, which primarily focused on communication and social mobilization to strengthen routine immunization by implementing the HBR card during school enrollment, developing a jingle in the local language, and broadcasting it to the districts. On the other hand, the health insurance program covered 31.4 percent population to help protect against the burden of major diseases.

Conclusion

More than six communicable diseases have been actively impacting the health of people in Karnali province, Nepal. They are Malaria, Tuberculosis, Leprosy, HIV/AIDS, Dengue, and Kala-azar. Among others, Tuberculosis and HIV/AIDS is are major issue in Karnali province. There are there are 856 active TB cases, HIV 56 new cases, 68 new cases of kala-azar, 48 active cases of Malaria in Karnali Province.

There are several IEC programs in Karnali Province. They focus on communication and social mobilization for public health issues to control and decrease the impact of communicable diseases. The health insurance program has covered 31.4 percent population. But, some diseases have difficult-to-treat coverage and care due to the changing climate, population migration, and overcrowding.

The effort to control highly transmitted diseases is not success due to several reason, therefore it is suggested to collaboration with other agencies cover the challenges of changing climate, population migration, and overcrowding in the province. So it is suggests forming a multi-sectoral plan to save from the double burden of diseases in Karnali province in Nepal.

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